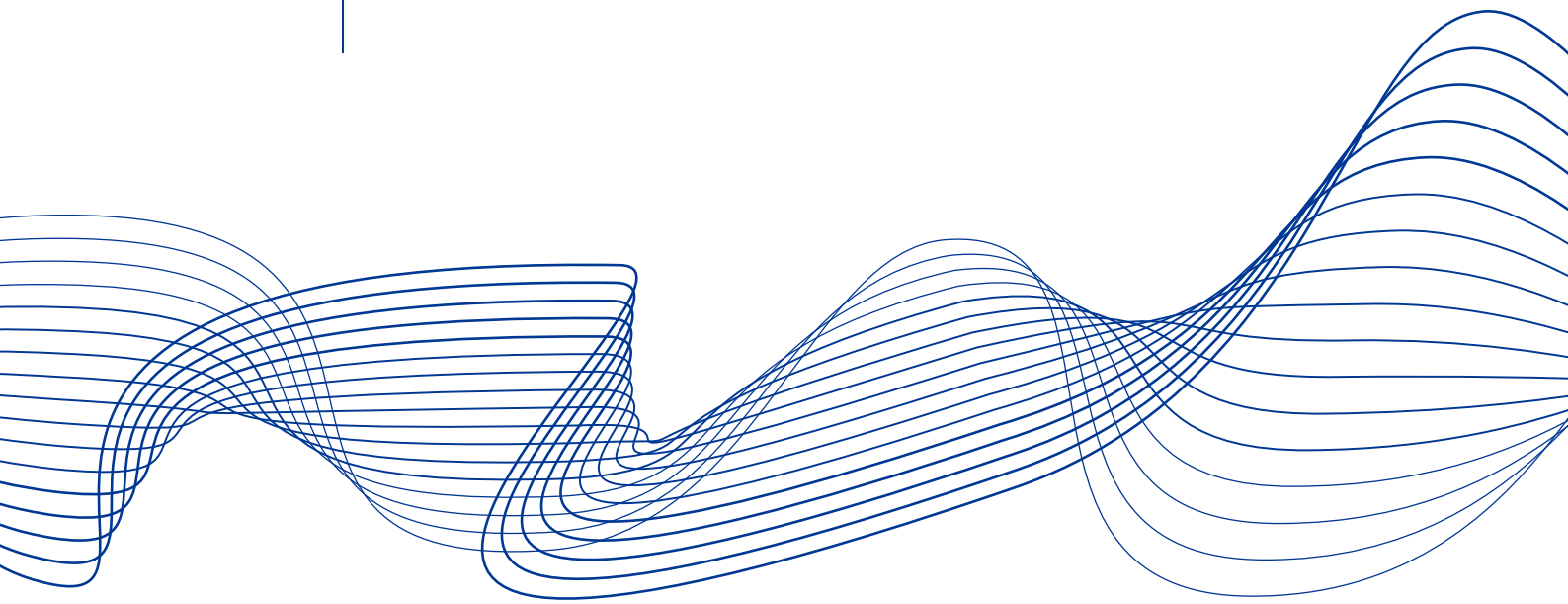
A system-wide approach to macroprudential policy

November 2024

ESRB response to the European Commission's consultation assessing the adequacy of macroprudential policies for non-bank financial intermediation



ESRB
European Systemic Risk Board
European System of Financial Supervision

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Foreword

Christine Lagarde, Chair of the European Systemic Risk board

Integrated capital markets are vital to financing the necessary transformation of the EU economy. For this to happen, it must become easier and more attractive for EU citizens to invest in our capital markets. The capital markets union is an indispensable project in this context.

More integrated capital markets will likely accelerate the growth of non-banks in our financial system. The banking sector remains at the core of the EU financial system. But activities that have typically been conducted by banks, including lending and market making, are increasingly also being done by others.

To support a stable financial system and a successful capital markets union, non-bank financial intermediation must be resilient. There is growing evidence that vulnerabilities in non-bank financial intermediation can be a source and amplifier of shocks. We therefore need to have in place a financial stability toolkit that ensures the resilience of banks, non-banks and the markets where they interact.

The European Commission needs to tackle gaps in the regulatory framework that leave risks to financial stability unaddressed. This ESRB report aims to inform and feed into the Commission's review of the macroprudential framework. It acknowledges where progress has been made, and it highlights areas where the ESRB has already identified a need for urgent regulatory action to address money market fund vulnerabilities, among other areas. Another priority is to improve data quality and the sharing of data among authorities that oversee financial stability.

At the same time, our macroprudential approach needs to evolve, to better identify, analyse and respond to ever-changing risks. This report puts forward a system-wide approach for assessing and addressing financial stability risks in the financial sector. This approach combines the traditional perspective of looking at different types of entities with a perspective that considers the different activities that banks and non-banks engage in.

More integrated capital markets also require more cooperation among authorities. Systemic risks that transcend borders challenge existing cooperation models. There are different ways to foster cooperation, but ultimately, truly system-wide risks require a system-wide response. The European Supervisory Authorities must have the powers they require – including direct supervisory powers – to deliver this response when it is needed.

This report is decidedly ambitious, with a view to ensuring that the EU's macroprudential framework keeps pace with an ever-evolving financial system. It sets out an agenda, including on topics that were not raised by the Commission in its consultation. And it provides a conceptual framework that will guide the ESRB's approach to macroprudential policy.

Christine Lagarde
ESRB Chair

Executive summary[1]

This document is the ESRB's response to the European Commission's targeted consultation assessing the adequacy of macroprudential policy for non-bank financial intermediation. Non-bank financial intermediaries (NBFI entities) comprise different types of entities that have diverse business models and that are subject to different regulatory frameworks. They include NBFI entities that act as agents on behalf of clients, such as asset managers, and those that hold assets on their own balance sheet, such as insurers. The ESRB has for many years provided advice to the EU co-legislators to help ensure that the regulatory framework for NBFI entities supplies EU and national authorities with the means to identify and address risks to financial stability wherever they arise in the financial system. This response to the European Commission's consultation builds on this advice.

It also builds on the ambitious tasks the ESRB and its members set themselves in the strategy for macroprudential policy beyond the banking sector published in 2016.[2] Similar to a previous response by the ESRB on key macroprudential topics[3], this response therefore goes beyond providing answers to the specific questions considered in the Commission's targeted consultation. In particular, this response presents a conceptual approach to macroprudential oversight and financial regulation. This conceptual approach combines the prevailing focus on entities[4] with a focus on activities, thereby providing a system-wide perspective. As different types of entities typically perform any given activity in combination with other activities, addressing risks and vulnerabilities will typically require several entity-based regulations (EBRs), with each EBR tailored to each type of entity to reflect the diversity of business models. But an activity may also create risks and vulnerabilities that are independent of the types of entities involved in the activity. Addressing such risks and vulnerabilities may require complementing EBR with activity-based regulation (ABR). This conceptual approach, which the ESRB will use to consider vulnerabilities and risks to financial stability across the financial system, is described in more detail in Section 1.

The ESRB acknowledges the existential challenges facing the EU and the importance of completing the capital markets union (CMU) to help meet those challenges. The EU needs to mobilise a vast amount of private savings to meet challenges arising from climate change, an ageing society, deglobalisation and a war taking place at its borders. Mobilising these private savings requires better developed and less fragmented capital markets than is currently the case. This need gives fresh impetus to make the CMU a reality.

As this "Kantian shift for the CMU"[5] has profound implications for financial stability, the EU regulatory framework must put greater emphasis than is currently the case on…

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1 References in the executive summary are limited to key documents. More detailed references are provided in the introduction and later sections.

2 See European Systemic Risk Board (2016a).

3 See European Systemic Risk Board (2022b).

4 The term "entity" is used akin to the term "sector". It refers to a group of firms with the same core business model rather than individual firms within that group. For example, banks and insurers are considered different types of entities, and the term entity is used to refer to all banks or to all insurers.

5 See Lagarde (2023).

…ensuring that NBFI entities and market-based finance are resilient. Non-bank financial intermediation and market-based finance can act as a complement to bank-based financial intermediation during normal times and as an alternative during times when banks are under stress. They can also provide sources of long-term funding and risk capital that the traditional banking sector cannot easily supply. With the CMU designed to leverage these benefits, the importance of NBFI entities and of market-based finance will continue to grow. This means that as a precondition for a successful CMU, market-based finance and NBFI entities need to be resilient and not propagate or amplify stress in the financial system.

…ensuring that the wider financial system is resilient. Ensuring that NBFI entities are resilient is necessary for financial stability but not sufficient in itself to ensure that the financial system is resilient. The financial system enables households, firms and other economic actors to transact, save, borrow and share risk. This relies on different types of entities undertaking a wide range of activities, such as processing payments, taking deposits, trading and managing assets, providing credit and equity funding, and sharing risk via insurance and financial instruments. Many of these activities depend on each other and rely on liquid markets, which means that the financial system is a complex web of interdependent activities and entities. Some of this complexity is inherent to the financial system and will persist under the CMU.

Progress has been made in enhancing the resilience of NBFI entities and market-based finance, but important gaps that the ESRB has highlighted previously need to be closed. In early 2024 EU co-legislators completed the revision of several important EBRs concerning key NBFI entities – central counterparties, insurers and investment funds. By improving regulation, strengthening the powers of supervisors with new microprudential tools and establishing recovery and resolution regimes, these changes will help address several vulnerabilities that the ESRB previously highlighted in letters to the co-legislators. But important gaps remain, and it is essential that the European Commission completes its work to address the risks and vulnerabilities highlighted by the ESRB. These relate to money market funds (MMFs), other investment funds, margin and margin preparedness, and crypto-assets. The ESRB's policy positions regarding these topics are summarised in four "policy digests" in Section 2.

To enhance the resilience of the wider financial system, this response advocates a conceptual approach combining a focus on entities with a focus on activities. A focus on different types of entities is the natural starting point of microprudential EBR, and several macroprudential tools are also enshrined in EBR. But on its own, a focus on different types of entities does not deliver a system-wide perspective that is at the core of macroprudential oversight. It is therefore also important to consider risks and vulnerabilities by focusing on activities. Many risks and vulnerabilities that result from entities undertaking an activity will be specific to the business model of the type of entity undertaking the activity. For example, while providing long-term credit exposes a bank to liquidity risk, this risk is less important for certain NBFI entities that have longer-term liabilities. Such risks can be effectively addressed by EBR. But some risks and vulnerabilities are independent of the entities involved in the activity. For example, excessive credit growth, and the resulting risk of excessive leverage and excessive increases in asset prices, is independent of whether credit is provided by banks or by NBFI entities. Addressing such risks with EBR alone can result in measures being circumvented as activities migrate to other types of entities. Reflecting this, when targeting risks and vulnerabilities that an activity might create for the

wider financial system irrespective of the entity that is undertaking the activity, ABR may be more effective than EBR, as any measure would be identical for all entities performing the activity. A focus on activities can also serve as a cross check to help ensure that different EBRs are consistent, whereby entities posing similar risks to financial stability are regulated with similar stringency, although not necessarily in an identical manner. It can also help identify entities that perform an activity outside the regulatory perimeter. By combining a focus on entities with a focus on activities, this conceptual approach provides a system-wide perspective.

The ESRB applies this conceptual approach to three activities that it considers important for financial stability – asset management, clearing and lending. The ESRB selected these activities because they have a significant actual or potential cross-border dimension, and the ESRB therefore believes their resilience will be pivotal to a successful CMU. Moreover, global developments are rapidly affecting how these activities are conducted. Asset management is central to the functioning of the CMU, as it helps mobilise and allocate capital and supports cross-border investment. To date, the international policy discussion has been focused on investment funds, which can be susceptible to the risk of investor runs and fire sales. But asset management is an activity that is also performed in various forms by several other entities. Central clearing can enhance the resilience of government bond cash and repo markets, which have experienced episodes of illiquidity and market dysfunction in recent years. The functioning of these markets is critical for the financial system, including for NBFI entities, whose footprint in these markets has been growing. But while centrally cleared transactions are subject to margin requirements, a lack of such requirements for bilaterally cleared transactions may disincentivise greater central clearing in these markets. Lending is a key source of funding for the real economy, and the diversity of lending products has increased beyond the banking sector. In addition to the growing role of debt markets globally, the lending activities of NBFI entities such as investment funds, finance companies and insurers have also increased. Although there have been important global and EU regulatory initiatives related to these three activities, notably on addressing risk related to investment funds, the ESRB believes that this conceptual approach will provide a greater system-wide perspective. The ESRB anticipates that it will apply this conceptual approach to other activities in the future.

To employ tools designed to address risks and vulnerabilities in the most effective way, two operational elements need to be strengthened – data and cooperation. To identify, monitor and assess risks and vulnerabilities in the financial system, authorities need more comprehensive and better-quality data, easier access to data and adequate resources to analyse data. As many NBFI entities operate across borders, there is also a need for cooperation between authorities both before and during crises. This is particularly important in the context of the CMU, which aims to deepen market integration in the EU, thereby also making it easier for activities and their associated risks to migrate across borders. These two operational elements are described in more detail in Section 3.

The ESRB has identified several areas where legislative action by the European Commission is needed to support financial stability and the CMU.[6] The actions are split into

[6] Although it is important that the EU Commission follow up on the areas identified, this response does not constitute an ESRB recommendation in the form of Article 16 of **Regulation 1092/2010 of the European Parliament and of the Council of 24 November 2010 on European Union macro-prudential oversight of the financial system and establishing a European Systemic Risk Board** (OJ L 331, 15.2.2010, p.1). This response is therefore not subject to the corresponding "comply or explain" mechanism, as set out in Article 17 of the same Regulation.

two blocks according to their priority: those to be implemented during the first half of the legislative term (near term) and those to be implemented during the second half of the legislative term (medium term). Areas that the ESRB considers of high priority and where it therefore sees a need for near-term action are those where the ESRB has previously highlighted gaps that need to be closed (Section 2) and those that relate to data (Section 3). The ESRB believes that the actions relating to cooperation (Section 3) and to the three activities described above (Section 4) should be implemented in the medium term as they require more preparatory work. These actions are set out below and summarised in an overview table at the end of this executive summary. The ESRB is mindful that legislative changes resulting from any of these proposed actions would as a matter of course be preceded by a cost-benefit analysis conducted by the European Commission. Beyond these actions, the ESRB also encourages the European Commission to make use of the conceptual approach described in Section 1 in its regular reviews of legislation or when considering new legislation.

1. Near term

- **Address vulnerabilities in EU MMFs – Section 2, Policy Digest 1.** Vulnerabilities in MMFs remain unaddressed and continue to pose risks to financial stability. While these vulnerabilities are being addressed in the United States and the United Kingdom, the EU is falling behind international regulatory developments. It is key that the European Commission expedites reforms to the MMF Regulation and that these reforms reflect the recommendation of the ESRB and the opinion of the European Securities and Markets Authority (ESMA). These include increasing liquidity requirements and abolishing amortised cost accounting for MMFs.

- **Progress the work to address vulnerabilities in investment funds – Section 2, Policy Digest 2.** The regulatory and supervisory framework for investment funds continues to improve, but further efforts are required to reduce liquidity and leverage-related risks. The ESRB is exploring new policy tools to mitigate liquidity risk from a financial stability perspective and enhance investment fund resilience. These include tools that would give authorities the power to mitigate liquidity risk in a similar way that Article 25 of the Alternative Investment Fund Managers Directive (AIFMD) enables them to address risks associated with leverage. Once this work is finalised, the ESRB will communicate its conclusions to the European Commission. In the meantime, in order to mitigate risks associated with excessive leverage, the European Commission should revisit metrics and limits prescribed in the Undertakings for Collective Investment in Transferable Securities (UCITS) Directive and AIFMD.

- **Implement proposals and recommendations by international bodies on margining to ensure liquidity preparedness for margin calls – Section 2, Policy Digest 3.** The Basel Committee on Banking Supervision (BCBS), the Committee on Payments and Market Infrastructures (CPMI), the International Organization of Securities Commissions (IOSCO) and the Financial Stability Board (FSB) are finalising several proposals and recommendations, covering both centrally cleared and bilaterally cleared derivatives and securities markets, to ensure that participants in these markets are better prepared to meet margin calls, particularly when margin requirements surge in times of stress. It is important that the European

Commission reviews whether EU legislation needs to be enhanced to fully reflect these proposals and recommendations and proceeds accordingly.

- **Clarify the regulatory perimeter for crypto activities – Section 2, Policy Digest 4.** The Markets in Crypto-Assets Regulation (MiCAR) has laid the groundwork for regulating parts of the crypto market. This initiative should be pursued in the next legislative review to address the activities and related risks left unregulated in segments of the crypto markets. This is because several crypto activities mirror activities performed in traditional finance without a comparable regulatory framework. One way to ensure greater consistency would be to extend MiCAR to activities involving crypto-assets that it does not yet fully cover, such as lending and decentralised finance. This would also mean clarifying how decentralisation should be assessed and distinguishing the line between fully and partially decentralised finance. Another way – provided crypto-assets become widely adopted – would be to regulate them in the same way as the traditional finance activities they are mirroring. The regulation of these activities could also apply when they are carried out in a fully decentralised way. The feasibility of this will be assessed by the European Banking Authority (EBA) and ESMA for a report that the European Commission will deliver to the European Council and the European Parliament.

- **Harmonise the classification of crypto-assets across EU Member States – Section 2, Policy Digest 4.** The definition of a financial instrument is not harmonised across Member States, which leads to differences in how crypto-assets are classified. As the Markets in Financial Instruments Directive (MiFID) is a directive, its definition of financial instruments has not been transposed into national laws in a fully harmonised way. This situation will be partially addressed by forthcoming ESMA guidance for national competent authorities (NCAs) on the criteria for classifying crypto-assets as financial instruments. However, there may be a need to harmonise the classification of financial instruments and crypto-assets in level I legislation. As there is also uncertainty about the legal status of crypto deposits at EU level, similar considerations apply.

- **Ensure that authorities have the data and analytical resources they need – Section 3, Chapter 1.** To address risks to financial stability, authorities need (i) more comprehensive and better-quality data, (ii) easier access to data, and (iii) more resources to analyse data. To ensure more comprehensive data, a joint monitoring mechanism like the one established under the European Market Infrastructure Regulation (EMIR 3.0) might be a model to close data gaps and allow the ESRB to develop further policy proposals for the activities of asset management, clearing and lending. To improve data quality, the ESRB sent a letter[7] to the European Commission in July 2022 pointing out that persistently poor data quality poses risks to financial stability. The letter made several proposals to improve the situation. To improve access to data, the ESRB sent a letter[8]to the co-legislators in August 2024 stressing the need for “access by default”. In the letter, the ESRB expressed its opinion that enhanced data sharing between the European System of Financial Supervision (ESFS) as proposed by the European Parliament in March 2024 would improve the situation. To harness increasing volumes of valuable data using sophisticated analytical tools, authorities also need the

7 See European Systemic Risk Board (2022c).

8 See European Systemic Risk Board (2024d).

financial resources to invest in IT and human capital. This should be adequately reflected in the budget of the European Supervisory Authorities (ESAs).

2. Medium term

- **Consider how reciprocity under Article 25 of the AIFMD could be implemented – Section 3, Chapter 2.** Recent experiences with implementing leverage limits under Article 25 AIFMD have highlighted the importance of engagement between Member States and coordination to ensure the effectiveness of these measures. Given the cross-border nature of the investment fund sector, a reciprocation framework – coordinated by ESMA – is needed to ensure that alternative investment funds (AIFs) do not have an incentive to move to different jurisdictions to avoid regulation and would help ensure consistency across the EU in the implementation of such measures. Such a framework is already applied to banking but would need to be adapted to reflect the higher levels of cross-border activity in the investment fund sector.

- **Review existing arrangements for policy cooperation across the EU – Section 3, Chapter 2.** It is important that the European Commission reviews existing arrangements for policy cooperation concerning NBFI entities to ensure that they remain fit for purpose and promote the CMU. To do this in a consistent manner, the European Commission should develop a methodology to guide its approach. The ESRB has sketched out a methodology that could inform the European Commission. In line with this methodology, the ESRB believes that – in general – the wider the geographical impact and the reach of policies, and the more systemic the risks are at a European level, the greater the case for more cooperation at the European level and for giving enhanced powers, which may include direct supervisory powers, to the ESAs.

- **Assess and work on the conditions for enabling the ESAs to supervise the most systemically relevant cross-border actors in financial markets – Section 3, Chapter 2.** It is important that the European Commission follows up on the conclusions of the European Council of 17 and 18 April 2024, which invite the European Commission to assess and work on the conditions for enabling the ESAs to effectively supervise the most systemically relevant cross-border capital and financial market actors. The ESRB believes the methodology that it has sketched out might be helpful for the European Commission and that further analysis should be done to outline the systemic importance of different categories of NBFI entities.

- **Enhance transparency in asset management activities and better incorporate a macroprudential perspective in associated regulation – Section 4, Chapter 3.** In addition to investment funds, asset management is performed in various forms by several entities, some of which are exposed to similar vulnerabilities as those in investment funds. Current regulation does not sufficiently account for their potential impact on financial stability, and some entities are not subject to any prudential EU-wide regulation. To enhance financial stability, the European Commission should consider expanding the regulatory perimeter and introducing reporting requirements for more opaque forms of asset management. Depending on the findings drawn from these data, it should also consider introducing ABR that would establish common minimum standards for disclosure, risk management and governance, as well as adapting Article 25 AIFMD to give authorities powers to limit leverage and liquidity

mismatches. Given the global nature of asset management activities, the European Commission should – through its participation in the FSB and other global fora – promote the need to enhance transparency, develop a macroprudential perspective and address risks associated with asset management activities beyond investment funds.

- **Incentivise the central clearing of government bond cash and repo markets – Section 4, Chapter 4.** The functioning of government bond cash and repo markets is critical for the financial system, including for NBFI entities, whose footprint in these markets has been growing. These markets have experienced several episodes of illiquidity and dysfunction in recent years. The European Commission should consider introducing margin requirements in bilaterally cleared government bond cash and repo transactions and ways to facilitate the central clearing of such transactions. This would incentivise a move to central clearing, thereby reducing the risk of episodes of illiquidity and funding stress, and contribute to a much-needed strengthening of the resilience of these markets.

- **Establish ABR that would enable authorities to set (i) borrower-based measures (BBMs) and (ii) exposure concentration limits on highly indebted firms – Section 4, Chapter 5.** BBMs are intended to reduce the risk of excessive credit growth and counterparty risk and should be applicable to all lending to households and non-financial corporations (NFCs), regardless of the provider. This should be developed in different phases. First, a legal framework should be created regarding BBMs for residential real estate (RRE) loans to households. Second, after an analysis of the practical feasibility of BBMs for loans to NFCs, the legal framework should be expanded to include commercial real estate (CRE) loans to NFCs, and eventually to other NFC loans. Finally, the feasibility of also capturing market-based finance with BBMs should be studied to avoid circumvention of any measure applied to loans through bond issuance. The measures should be calibrated and activated by the relevant national authorities. Similarly to BBMs, exposure concentration limits on highly indebted firms would address excessive credit growth and counterparty risk.

Overview table

Need for the European Commission to take legislative action

Action	Location in the report	Timing
Address vulnerabilities in EU MMFs	Section 2, Policy Digest 1	Near term
Progress the work to address vulnerabilities in investment funds	Section 2, Policy Digest 2	Near erm
Implement proposals and recommendations by international bodies on margining to ensure liquidity preparedness for margin calls	Section 2, Policy Digest 3	Near term
Clarify the regulatory perimeter for crypto activities	Section 2, Policy Digest 4	Near term
Harmonise the classification of crypto-assets across EU Member States	Section 2, Policy Digest 4	Near term
Ensure that authorities have the data and analytical resources they need	Section 3, Chapter 1	Near term
Consider how reciprocity under Article 25 of the AIFMD could be implemented	Section 3, Chapter 2	Medium term
Review existing arrangements for policy cooperation across the EU	Section 3, Chapter 2	Medium term
Assess and work on the conditions for enabling the ESAs to supervise the most systemically relevant cross-border actors in financial markets	Section 3, Chapter 2	Medium term
Enhance transparency in asset management activities and better incorporate a macroprudential perspective in associated regulation	Section 4, Chapter 3	Medium term
Incentivise the central clearing of government bond cash and repo markets	Section 4, Chapter 4	Medium term
Establish ABR that would enable authorities to set (i) BBMs and (ii) exposure concentration limits on highly indebted firms	Section 4, Chapter 5	Medium term

Section 1 – Introduction

Financial stability is a precondition for the real economy to provide jobs and growth[9]

A strong economy and the ability to mobilise private savings are crucial for the EU to tackle the fundamental challenges facing it. These challenges include climate change, an increasingly complex geopolitical situation reflected in more vulnerable supply chains, an ageing society with associated labour shortages, and a growing innovation gap vis-à-vis other economies.[10] Several reports have been commissioned by the EU to look at ways to strengthen the economy by enhancing its long-term competitiveness and boosting its productivity. These reports underline the importance of having a strong financial system that can mobilise private savings.[11] Mobilising private financing requires better developed and less fragmented capital markets than is currently the case. This need gives fresh new impetus to complete the capital markets union (CMU) project.[12]

The financial system performs several key functions that are needed for a strong economy. The main purpose of the financial system is to serve the real economy. It does this by performing several key functions. These key economic functions are transacting, saving, borrowing, investing and sharing risk. They allow households, firms and other economic actors to purchase goods and services, to smoothen consumption over time and to raise external finance to support investment. They also make it possible to align economic exposures to physical or financial risks with the appetite for risk and the ability to bear it. Markets play a key role in establishing prices related to these key economic functions, such as interest rates for saving and borrowing or the price of risk.

Financial stability is a precondition for the financial system to be able to perform its key economic functions reliably. A large body of research[13] has examined episodes of instability such as the global financial crisis. This research shows that periods of financial instability are typically characterised by (i) sharp contractions in credit provision, which impede the ability of households and firms to borrow; (ii) a flight of savings from riskier asset classes to cash and other cash-like assets that reduces the ability of capital markets to provide long-term funding; and (iii) heightened economic uncertainty that increases the price and/or reduces the availability of products used to offset financial risk. Financial instability can also weaken the balance sheets of key financial intermediaries. Weakened balance sheets can in turn lead to the failure of financial institutions

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9 Recital (1) of **Regulation (EU) No 1092/2010**.

10 See, for example, European Council (2023).

11 In September 2023 the European Commission requested Enrico Letta **to prepare an independent high-level report on the future of the Single Market and** Mario Draghi **to prepare a report on the future of European competitiveness**. The reports were published in 2024. See Letta (2024) and Draghi (2024).

12 See von der Leyen (2024). See also Lagarde (2023).

13 For an overview of the financial crisis, see, for example, Lo (2012). For information on the financial crisis in general, see, for example, Jordà, Schularick and Taylor (2015), Sufi and Taylor (2022) and Brunnermeier and Oehmke (2013).

and/or the need for substantial public support to either avoid or mitigate the consequences of such failure.[14]

A more diversified financial system envisaged by the CMU can support financial stability and bring economic benefits

The financial system's key economic functions are delivered through a range of activities that are undertaken by entities and on markets. For example, households, firms and other economic actors need access to (i) payment, settlement and electronic record-keeping, so that when transacting, payments are processed safely and swiftly and ownership and transfer of assets are recorded accurately; (ii) deposit-taking and asset management, so that when saving, deposits are available for withdrawal and investment assets are managed with fiduciary duty; (iii) lending and capital market financing, so that there are alternative ways of obtaining external funds; and (iv) contingent contracts, so that when managing risk, all or part of it can be transferred to other parties through insurance products or derivatives. These activities are not self-contained and often depend on each other. For example, deposit-taking, asset management, lending and capital market financing all depend on payment, settlement and record-keeping. These activities are ultimately undertaken by entities such as banks or non-bank financial intermediaries (NBFI entities). This can be through direct contracts between financial entities and counterparties (e.g. banks providing loans to firms or insurers underwriting risk that firms want to insure against) or through markets (e.g. bond markets to issue debt or derivatives markets to transfer risk). The latter case requires interaction between several entities, such as pre-trade and post-trade financial market infrastructures, and intermediaries receiving, transmitting and placing orders on behalf of clients, as well as providing access to clearing and settlement services. Table 1 (at the end of this section) maps the four key economic functions – transacting, saving, borrowing and managing risk – into activities and the entities and markets that perform them.[15]

A growing share of these activities are undertaken by NBFI entities. NBFI entities comprise different types of entities that have diverse business models and that are subject to different regulatory frameworks.[16] They include NBFI entities that act as agents on behalf of clients, such as asset managers, and those who hold assets on their own balance sheet. They also include NBFI entities that are tightly regulated as entities (e.g. investment funds, insurers and financial market infrastructures), those that are less tightly regulated as entities (e.g. e-money and payment institutions, creditors and credit intermediaries supervised under the Consumer Credit Directive

[14] The fiscal impact of financial support for the banking sector in the EEA between 2008 and 2014 was estimated at 4.7% of EEA 2014 GDP. See European Central Bank (2015).

[15] There is no single taxonomy for these activities, but the taxonomies employed tend to be similar to each other. For example, the identification of activities that are critical for the functioning of the economy is a key element of recovery and resolution planning. See, for example, Financial Stability Board (2013a) and Single Resolution Board (2017). Similar taxonomies are described in Cecchetti and Schoenholtz (2020) and Borio, Claessens and Tarashev (2022).

[16] The term "entity" is used akin to the term "sector". It refers to a group of firms with the same core business model rather than individual firms within that group. For example, banks and insurers are considered different types of entities, and the term entity is used to refer to all banks or to all insurers.

(CCD2)[17] and licensed entities under national regimes[18]), and those that may not be regulated (e.g. family offices[19] and supply chain finance companies). Many activities and related services and products are provided by specialised NBFI entities: insurers provide insurance services and asset management companies provide collective investment products such as funds. But for several activities that have traditionally been the preserve of banks, or where banks have been the main actors, the role of NBFI entities has grown. For example, loans from NBFI entities now represent around 20% of lending (loans and purchase of debt securities) to euro area non-financial corporations (NFCs)[20], up from about 15% in 2008 and similar to the corresponding proportion of loans from US NBFI entities to total lending to US NFCs. Including the purchase of debt securities by NBFI entities, the share of lending from NBFI entities in total lending to NFCs is about 33% for the euro area and 50% for the United States.[21] Furthermore, investment firms have increased their role in market making and liquidity provision, which were formerly almost exclusively conducted by bank dealers.[22]

This growth is likely to continue and may gather pace as political momentum to unlock the EU's growth potential builds, including through stronger capital markets. Unlocking this potential was the objective of the European Commission's action plan for a CMU launched in 2015.[23] There is now strong political momentum to complete the CMU to help mobilise and channel private savings into the investments needed to meet the above-mentioned challenges facing the EU. This includes a new proposal to launch a European savings and investments union[24], several initiatives to foster equity investments and a relaunch of the EU securitisation market.[25]

The execution of the same activities by entities with different business models or through their interaction in markets can bring diversification benefits and support financial stability. The EU needs to maintain a strong and resilient banking sector.[26] At the same time, the global financial crisis showed that over-reliance on banks can reduce access to finance during periods when the banking sector becomes impaired, putting the real economy at risk.[27] The global financial crisis also showed that more developed market-based finance can help mitigate this risk. In 2008 firms in the United States were able to continue to access credit via bond markets. This meant that when credit in the form of loans contracted, bond financing increased to make up most of the gap.[28] Reflecting this, opening up a wider range of funding sources to make the economy less vulnerable

17 Creditors and credit intermediaries registered and supervised under Article 37 CCD2 that are not credit institutions, payment institutions or e-money institutions.

18 For example, entities with a mortgage intermediary licence (Ireland), a financial services provider licence (the Netherlands), a financial services institution licence (Germany), a credit intermediary licence (Spain) or a financial intermediary licence (France, Italy).

19 As the term "family office" does not have an explicit regulatory definition in the EU, in some cases family offices may be covered by MIFID II.

20 These data include the lending of other financial institutions (OFIs) within corporate groups, without any link to entities outside that corporate group.

21 See European Systemic Risk Board (2023b) and Board of Governors of the Federal Reserve System (2024).

22 See Sánchez Serrano (2021) and references therein for an overview. See also Scheicher (2023).

23 See European Commission (2015).

24 See von der Leyen (2023).

25 See European Council (2024).

26 For the concept of "resilience", see Lagarde (2022). See also Brunnermeier (2021).

27 See, for example, Langfield and Pagano (2015).

28 See Adrian, Colla and Shin (2012).

to banking contractions was one of the motivations for the original CMU action plan in 2015.[29] In addition to providing an alternative when banks are under pressure[30], resilient NBFI entities and market-based finance can act as complements to banks during normal times. By undertaking different activities from banks – or undertaking the same activities in different ways – NBFI entities complete markets and support the overall financial system's functions. At the same time, there is increasing evidence that for certain activities such as credit provision, NBFI entities may behave in a more procyclical manner than banks.[31] Moreover, depending on their licence, NBFI entities might not be subject to prudential consolidation requirements. This could result in an incomplete capture of risks arising from interlinkages within financial groups, increased potential for regulatory arbitrage and difficulties in assessing the overall risk profile of a group.

To reap the benefits of the more diversified financial system envisaged by the CMU, NBFI entities and markets need to be resilient

Several recent episodes, which include idiosyncratic events like failures of individual firms and market-wide stresses involving NBFI entities, have put the resilience of NBFI entities in the spotlight.[32] These episodes, which are described in more detail in Box 1, include the following: (i) the default in September 2018 of a clearing member active on Nasdaq Clearing's commodity market[33]; (ii) losses on illiquid bonds held by H2O in June 2019 that caused a sharp drop in the share price of its parent bank; (iii) the onset of the COVID-19 pandemic in March 2020, which manifested itself in financial market turmoil and acute liquidity stress affecting several NBFI entities (for example, hedge funds were among the largest sellers of US Treasury bonds[34]); (iv) the insolvency of Greensill Capital in March 2021, which resulted in the suspension of redemptions for several investment funds with direct or indirect exposures to the company; (v) the collapse, in the same month, of Archegos Capital Management, a US family office pursuing hedge fund strategies, causing large losses to some major banks; (vi) the unravelling in September 2022 of liability-driven investment (LDI) strategies offered by several investment funds to defined benefit pension schemes, which amplified turmoil in the gilt market that was triggered by the UK mini-budget; and (vii) the surge in energy prices following Russia's full-scale invasion of Ukraine, which in 2022 put energy producers and traders under liquidity strain from margin calls.

These episodes show how interconnectedness allows risk to move through the financial system and how that risk can transform, which together can pose risks to financial stability.

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29 See European Commission (2015), p. 3.

30 See, for example, International Monetary Fund (2015) and European Systemic Risk Board (2016a).

31 For example, Fleckenstein et al. (2020) find that NBFIs' supply of loans is roughly three times more cyclical than banks', suggesting that NBFIs are the main drivers of syndicated lending cycles. Irani et al. (2021) find that, although NBFIs step in when banks are subject to capital constraints, loans funded by non-banks with fragile liabilities are less likely to be rolled over. Aldasoro, Doerr and Zhou (2023) find that NBFIs curtail their syndicated loans by significantly more than banks during crises. Nicoletti et al. (2024) find that while NBFIs in general support firm financing by acting as a spare tyre when banks do not, their own stress can trigger a contractionary credit supply effect for firms. Focusing on the insurance sector, O'Hara, Rapp and Zhou (2024) find that during the COVID-19 liquidity crisis, insurers increased their corporate bond positions, particularly in bonds facing fire sales by mutual funds, whereas Fay and Ghiselli (2023) find more differentiated cyclical investment behaviour with differences across issuer and holder countries of domicile.

32 Additionally, the ESRB documented several earlier episodes where non-bank financial intermediation posed risks to financial stability. See European Systemic Risk Board (2016a).

33 In this case, the default concerned a natural person which affected a financial market infrastructure.

34 See, for example, Office of Financial Research (2020) and Kruttli et al. (2021).

The financial system is highly interconnected and complex, with banks and NBFI entities connected to the point that they have become symbiotic.[35] Such interconnectedness allows risks to move through the financial system. From a financial stability perspective, this risk migration can bring benefits but also pose threats. Risk migration brings benefits when a risk moves to a place where it can be better managed and/or where it can be better absorbed if it does materialise. But risk migration poses a threat when it becomes a channel of contagion. This can be the case if opaqueness makes it more difficult to trace and monitor the risk and/or if the risk gets amplified because of underlying vulnerabilities in its ultimate holder. For example, the fact that Archegos Capital was able to build up large leveraged exposures through its prime brokerage relationship with several banks is an example of such opaqueness and risk amplification.[36] Opaqueness and amplification can increase further when risks get transformed as they migrate. For example, both the unravelling of LDI strategies and the liquidity strain on energy companies in 2022 illustrated how the use of derivatives and securities financing transactions (SFTs) can result in market and counterparty credit risk being transformed into liquidity risk. An additional emerging risk involves the transmission of non-financial risks to the financial sector through groups engaged in mixed activities.

These episodes also highlighted that more needs to be done to address well-known structural vulnerabilities which the ESRB identified more than ten years ago.[37] The episodes described above were triggered by different events, and the ways risk moved through the financial system also differed. Their root cause can, however, often be traced back to the following structural vulnerabilities that are relevant for banks and non-banks alike: (i) excessive credit growth and leverage (e.g. Archegos); (ii) excessive maturity and liquidity mismatch and market illiquidity (e.g. the COVID-19 pandemic, LDI strategies); (iii) direct and indirect exposure concentrations (e.g. H2O, Archegos); (iv) misaligned incentives (e.g. Greensill); and (v) threats to the resilience of financial market infrastructures (e.g. the default of a clearing member of Nasdaq Clearing). Several of the above episodes were only contained because governments, central banks and supervisory authorities intervened (Box 1). This resulted in a situation where initial gains were private, but later losses were socialised. Moreover, some of these episodes weakened Credit Suisse, a global systemically important bank that failed in March 2023 at significant social cost. These episodes and their implications show that it is important to address known vulnerabilities.

The need to improve the resilience of NBFI entities and the wider financial system is more important and more urgent under a CMU. As a growing share of activities are undertaken by NBFI entities, addressing vulnerabilities in NBFI entities has become increasingly important for financial stability. It has also become more important and more urgent in view of completing the CMU. The reasons are threefold. First, a CMU implies that the importance of NBFI entities and market-based finance as a funding source to households, firms and other economic actors will increase, meaning that the implications for financial stability from a disruption to this funding source also increase. Second, as long as there are regulatory and reporting gaps, the build-up of vulnerabilities and excessive risk-taking may be spotted too late. Third, another financial crisis

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35 See, for example, Andersen and Sánchez Serrano (2024), Franceschi et al. (2023), Jackson (2024) and Gai et al. (2019).

36 Several banks that provided prime brokerage services to Archegos Capital made losses when it defaulted in 2021, with Credit Suisse recording the biggest single loss of USD 5.5 billion. See Credit Suisse (2021).

37 See **Recommendation of the European Systemic Risk Board of 4 April 2013 on intermediate objectives and instruments of macro-prudential policy (ESRB/2013/1)** (OJ C 170, 15.6.2013, p. 1).

would negate the benefits that the CMU is meant to bring about and may dent confidence in the EU's ability to rise to the challenges it is facing.

Ensuring the resilience of an interconnected financial system requires the combination of a focus on entities and a focus on activities to gain a system-wide perspective

A focus on entities considers how structural vulnerabilities related to different types of entities can be addressed for each type of entity given its typical business model. As different types of entities typically perform any given activity in combination with other activities, addressing risks and vulnerabilities will typically require several entity-based regulations (EBRs), with each EBR tailored to each type of entity to reflect the diversity of business models. For example, lending and deposit-taking are activities that are central to the business model of banks. Making long-term loans, such as mortgages, and taking short-term deposits creates a maturity and a liquidity mismatch. This is a structural vulnerability that exposes banks to liquidity risk, and is therefore addressed by regulation. By contrast, making long-term loans would not expose life insurers to the same liquidity risk (although it still exposes them to other risks, such as credit risk, which are not regulated in a harmonised manner[38]). This is because underwriting mortality risk – an activity that is central to the business model of a life insurer – results in liabilities that are long-term and that typically have contractual limitations on lapses. In this case, the combination of different activities means that one of the vulnerabilities (maturity and liquidity mismatch) and the associated risk (liquidity risk) resulting from one of the activities (lending) differ between the entities. This is why the EBR[39] for banks (the Capital Requirements Directive(CRD)/Capital Requirements Regulation (CRR)) regulates liquidity risk more tightly than the EBR for insurers (Solvency II).[40] This example also shows that the principle of "same activity, same risk, same regulation" is contingent on the same activity generating the same risk.[41] Because of differences in business models, this will typically not be the case. By looking column-by-column at the matrix of activities and entities in Table 1, a focus on entities therefore helps ensure that differences in business models are reflected in each EBR that applies to a given type of entity.

A focus on entities underpins recent changes to EBR that increase the resilience of several NBFI entities, thereby contributing to financial stability.[42] In early 2024 EU co-legislators completed the revision of several important EBRs concerning key NBFI entities – central

38 Own funds calculations in accordance with credit risk are not harmonised. See European Central Bank (2024a).

39 Entity-based regulation should be distinguished from individual firm regulation, which would regulate each individual firm separately. Individual firm regulation often applies to sovereign wealth funds, for example.

40 See also Restoy (2021), who notes that "the risk transformation business of banks requires a specific (prudential) regulatory treatment that is not necessary for credit providers that cannot accept deposits".

41 See also Borio, Claessens and Tarashev (2022).

42 Beyond NBFIs, the ongoing legislative negotiations on the Commission's proposed reform of the bank crisis management and deposit insurance (CMDI) framework are intended to further strengthen financial stability in the EU.

counterparties (CCPs), insurers and investment funds.[43] By improving regulation, strengthening the powers of supervisors with new microprudential tools and establishing recovery and resolution regimes, these changes will help address several vulnerabilities that the ESRB previously highlighted in letters to the co-legislators.[44],[45] For example, CCPs should act less procyclically, the winding-down of an insurer should be more orderly and insurance supervisors should be better equipped to deal with liquidity risk. Furthermore, investment fund managers will be required to have harmonised liquidity management tools at their disposal to aid with liquidity pressures in times of stress, there will be common rules on loan-originating alternative investment funds (AIFs) that should mitigate potential risks to financial stability and harmonised reporting for undertakings for collective investment in transferable securities (UCITS) will offer authorities improved visibility of the investment fund sector.

On its own, however, a focus on entities and the resulting EBR may not suffice to ensure the resilience of the financial system. This fallacy of composition[46] arises because the level of risk does not increase in direct proportion to the structural vulnerabilities of the entities that make up the financial system due to interconnections and feedback loops. In other words, the whole is more than the sum of its parts. Situations can occur that require a macroprudential response but which, on their own, EBRs cannot easily handle. One such situation arises when the structural vulnerability stems from the volume of activity at the aggregate level. For example, excessive credit growth can lead to overvaluation in property prices, resulting in borrowers becoming overindebted and ultimately threatening financial stability. Another situation is where regulation needs to be tailored to reflect contributions to systemic risk. If there is only one type of entity and the contributions to systemic risk vary across firms, EBR will suffice. For example, EBR has allowed for the identification and enhanced supervision of the most systemically important banks, and similarly in April 2024 the European Council invited the European Commission to improve the supervision of systemically important NBFI entities.[47] However, different types of entities in the system require regulatory stringency to be tailored both to different firms and to different types of entities to reflect their relative contributions to systemic risk.[48]

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43 These are (i) the Alternative Investment Fund Managers Directive – **Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010** (OJ L 174, 1.7.2011, p. 1); (ii) the Undertakings for the Collective Investment in Transferable Securities Directive – **Directive 2009/65/EC of the European Parliament and of the Council of 13 July 2009 on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS)** (OJ L 302, 17.11.2009, p. 32); (iii) the Solvency II Directive – **Directive 2009/138/EC of the European Parliament and of the Council of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance (Solvency II)** (OJ L 335, 17.12.2009, p. 1); (iv) the European Market Infrastructure Regulation – **Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories** (OJ L 201, 27.7.2012, p. 1); (v) the proposed Insurance Recovery and Resolution Directive – **Proposal for a Directive of the European Parliament and of the Council establishing a framework for the recovery and resolution of insurance and reinsurance undertakings and amending Directives 2002/47/EC, 2004/25/EC, 2009/138/EC, (EU) 2017/1132 and Regulations (EU) No 1094/2010 and (EU) No 648/2012** (COM/2021/582 final).

44 These letters, which were sent in 2022 and 2023, can be found on the **ESRB website**.

45 For an overview of recent changes to the microprudential toolkit for NBFIs that serve macroprudential objectives, see Appendix 1 of European Commission (2024a).

46 The fallacy of composition refers to an assumption that the parts of the whole will share the same properties as the whole. For more information, see Samuelson (1955) and Caballero (1992). For an application to financial regulation, see Daníelsson (2022).

47 See European Council (2024).

48 Article 2(c) of **Regulation (EU) No 1092/2010** defines systemic risk as "a risk of disruption in the financial system with the potential to have serious negative consequences for the real economy of the Union or of one or more of its Member States and for the functioning of the internal market".

On its own, a focus on entities and the resulting EBR can also lead to activities and associated risks migrating to other parts of the financial system. As regulation imposes costs, EBR can create an incentive for activities and the associated risks to migrate to other types of entities that do not bear the same regulatory cost. For example, following the enactment of the Dodd-Frank Act, several hedge funds were reclassified as family offices to avoid disclosure requirements.[49] A migration of activities can represent a genuine competitive advantage if the entity that has started to undertake an activity can combine it with other activities as part of its business model in a manner that enables it to better bear that risk. If this reduces the overall contribution to systemic risk, the risk migration is positive. However, EBR could also encourage activities to migrate to entities that are less regulated relative to their contribution to systemic risk, or even to entities outside of the regulated perimeter, where data and oversight are sparse. In some cases, activities and risks may appear to migrate but some or all of the risk is ultimately channelled back to the original risk bearer. For example, while loan funds have become a new source of lending, they rely in many cases on bank lending.[50] This increases interconnectedness and makes the financial system more complex. On its own, a focus on entities may be slow to adapt to the creation of new types of entities or the modification of existing entities' business models.

The ESRB believes that a conceptual approach combining a focus on entities with a focus on activities provides the system-wide perspective that is needed for macroprudential policy. In contrast to a focus on entities that looks at the matrix of activities and entities in Table 1 column-by-column, a focus on activities looks at this matrix row-by-row. A conceptual approach focusing on both entities and activities can – for any given activity – result in EBR, activity-based regulation (ABR) or a combination. It involves several steps. First, for any given activity, it considers the risks and vulnerabilities that can result from the activity. Second, it considers whether these risks and vulnerabilities are specific to the business model of entities undertaking the activity or whether they are independent of the business model of the entities. If the risks and vulnerabilities are specific to the business model of the entities, the conceptual approach looks across the rows in Table 1 to identify the main entities that undertake the activity. For those entities identified, it then looks at the columns of Table 1 to identify which other activities the entity performs and how this combination of activities may mitigate or amplify the risks and vulnerabilities associated with the activity. These risks and vulnerabilities would then be most appropriately addressed with EBR. This could include amending existing EBRs for entities that have started to materially engage in an activity or creating new EBRs for new types of entities. If the vulnerabilities and associated risks are independent of the business models of the entities undertaking the activity, this conceptual approach would result in ABR, which may be more effective than EBR in helping to ensure that measures are not circumvented. For the above example of a credit boom driving up property prices and creating overindebtedness, borrower-based measures (BBMs) (such as restrictions on loan-to-value (LTV) ratios) that all entities providing loans must apply identically, are an example of ABR. Another example of ABR is the Securities Financing Transactions Regulation (SFTR)[51] which

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49 See Burton (2011).

50 For the United States, see, for example, Platt (2024). See also Block et al. (2024), who report that 5% of US private funds use no leverage, whereas 67% of EU debt funds use no leverage. See also European Systemic Risk Board (2024b), which notes that with a ratio of assets under management to net asset value of around 140% in 2022, the fund-level leverage of private debt AIFs was in aggregate small.

51 See **Regulation (EU) 2015/2365 of the European Parliament and of the Council of 25 November 2015 on transparency of securities financing transactions and of reuse and amending Regulation (EU) No 648/2012** (OJ L 337, 23.12.2015, p. 1).

applies identical rules (subject to exemptions reflecting proportionality) to all entities engaging in SFTs.[52]

A conceptual approach combining a focus on entities with a focus on activities can help ensure that activities undertaken by different entities are regulated consistently. Consistency means that entities posing similar risks to financial stability are regulated with similar stringency, although not necessarily in an identical manner.[53] This reduces financial stability risks associated with activities. It also reduces blind spots because it lowers the likelihood of activities migrating to other types of entities that do not bear the same regulatory cost. Consistency is particularly important when considering new and rapidly evolving fintech innovations such as the adaptation of distributed ledger technology (DLT), which have resulted in new ways of performing and/or combining existing activities and which can be subsumed under the label "crypto" (Policy Digest 4).[54] It is also important in the context of mixed activities, where technology firms may perform financial activities. Furthermore, it can help ensure that the required level of resilience of different entities is commensurate with their actual or potential contribution to systemic risk. The conceptual approach thus advances on the ambitious tasks the ESRB and its members set themselves in the strategy for macroprudential policy beyond the banking sector published in 2016.[55] More specifically in the context of the Commission's consultation, by helping to mitigate and address systemic risks that originate and/or are amplified by NBFI entities, this conceptual approach contributes to ensuring that NBFI entities are resilient components of the financial system and supports the objectives of the CMU.

A macroprudential policy framework requires three operational elements: data, tools and cooperation

Data, tools and cooperation are important operational elements for a macroprudential framework to help prevent or mitigate risks to financial stability. Authorities need more comprehensive and better-quality data, easier access to data and adequate analytical resources to identify, monitor and assess risks and vulnerabilities in the financial system. Authorities also need tools to address risks and vulnerabilities that cannot be addressed by product design and microprudential rules. This is because the increased importance of NBFI entities requires a commensurate policy framework. Finally, a macroprudential framework needs to incentivise and facilitate cooperation both before and during crises to achieve effectiveness in a context where many NBFI entities operate across borders. While there is a global aspect to this, it is particularly important in the context of the CMU, which aims to deepen the integrated nature of markets in the EU, thereby also making it easier for activities and their associated risks to migrate across borders. Figure 1 shows the flow from economic functions to these requirements.

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52 When considering policy objectives other than financial stability, such as consumer protection or market integrity, activity-based regulation is a typical form of regulation. See, for example, Restoy (2019).

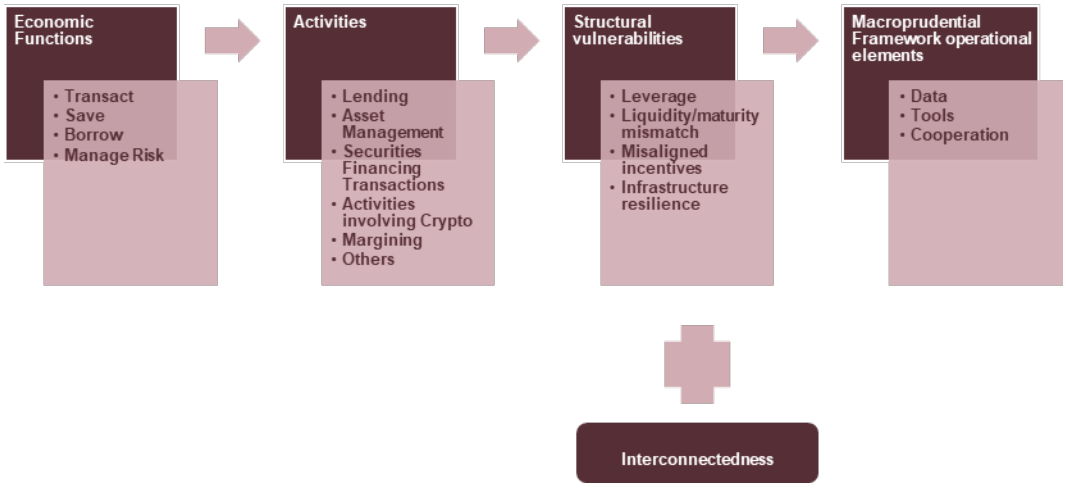
53 While the term "consistency" is used in public policy, this is referred to in the academic literature as congruence. Regarding the importance of congruence, see also Metrick and Tarullo (2021).

54 Several of the referenced papers considering activities do so in the context of such new technologies and big tech firms. See, in particular, Restoy (2019), Cecchetti and Schoenholtz (2020), Restoy (2021) and Borio, Claessens and Tarashev (2022).

55 See European Systemic Risk Board (2016a).

Figure 1

Economic functions, activities, structural vulnerabilities and operational elements of a macroprudential framework



Source: ESRB.

Authorities need more comprehensive and better-quality data, easier access to data and more resources to analyse data. The EU has made substantial progresses in collecting and analysing granular datasets. However, more progress is needed to improve the coverage and the quality of data. More progress is also needed to ensure that authorities have "access by default" to data and that group-wide activities in financial and ancillary activities can be identified. Authorities also need the financial resources to invest in IT and human capital. More comprehensive data, better-quality data, easier access to data and more resources to analyse data would enable authorities to build better cross-sectoral risk monitoring systems and conduct desktop-based system-wide stress tests. Coverage, quality, access and resources are also essential for authorities to be able to develop next-generation analytical tools such as non-structured data analysis and pattern detection, which can be leveraged with machine learning and artificial intelligence. Lack of rapid progress in this area will result in the capacity gap that is already forming between market participants and authorities to widen further.

Authorities need macroprudential tools to complement microprudential rules and tools. The macroprudential policy framework in the EU remains focused on banking, and the tools applicable to NBFI entities typically serve microprudential objectives and apply to individual firms, even though they often contribute to financial stability.[56] For example, margin rules that apply to centrally and bilaterally cleared derivatives prevent the build-up of uncollateralised exposures. And rules that restrict how CCPs can set initial margin requirements are designed to reduce procyclicality (Policy Digest 3). Similarly, the requirement for investment fund managers to have harmonised liquidity management tools at their disposal will help reduce risks associated with liquidity mismatches between assets and liabilities. Supervisors also have policy tools at their disposal to restrict the activities of individual firms. For example, under Solvency II, insurance supervisors can – in

[56] See Appendix 1 of European Commission (2024a).

exceptional circumstances – restrict payouts of individual insurance firms. But there are few policy tools that enable authorities to deal with externalities that apply to NBFI entities or across activities. The use of Article 25 of the Alternative Investment Fund Managers Directive (AIFMD) (Box 2), the ability of authorities to request the suspension of subscriptions and redemptions of funds in cases of financial sector disruption, and the application in some Member States of BBMs such as LTV limits to certain NBFI entities (Chapter 5) are among the few macroprudential policy tools available.

Authorities need access to structured cooperation channels and pathways to ensure consistency across borders. The episodes that put NBFI entities in the spotlight (Box 1) show that many different authorities can have stakes in the matter. For instance, in the case of the LDI episode, the authorities involved included a central bank (the Bank of England), a market supervisor (the UK Financial Conduct Authority), a pension supervisor (the UK Pensions Regulator), two cross-border investment fund supervisors (the Central Bank of Ireland and the Luxembourg Financial Sector Supervisory Commission) and the European Securities and Markets Authority (ESMA). Looking beyond the LDI episode, different authorities have a subset of the data and powers needed to identify and prevent risks from materialising and/or mitigate problems ex post. To support consistency, a complete macroprudential framework for NBFI entities therefore needs to provide a mechanism for cooperative assessment and action among all these types of authorities, both within and across borders. EU legislation already foresees several models of cooperation that can be broadly grouped under the heading of collaborative, coordinated and centralised. These models tend to involve the European Supervisory Authorities (ESAs) and the ESRB to varying degrees (Chapter 2).

With this response to the consultation of the European Commission, the ESRB sets out its thinking and identifies areas where action is needed

Section 2 focuses on known vulnerabilities that the ESRB has previously and that must be addressed. These vulnerabilities and related actions to help address them are set out in four policy digests. Policy Digest 1 summarises existing ESRB positions on money market funds (MMFs), noting that the ESRB recommendation on the topic needs to be implemented. Policy Digest 2 summarises and builds on existing ESRB positions on investment funds, highlighting where further work is needed. Policy Digest 3 summarises and builds on existing ESRB positions on margining and margin preparedness, highlighting the need to implement the proposals and recommendations of the Basel Committee on Banking Supervision/International Organization of Securities Commissions (BCBS/IOSCO) and the Financial Stability Board (FSB) on this topic in EU legislation. Policy Digest 4 summarises existing ESRB positions on crypto, highlighting that several activities related to crypto-assets mirror activities performed by the traditional financial system but are not regulated in a consistent way.

Section 3 considers those operational elements of the macroprudential framework that cut across NBFI entities – data (Chapter 1) and coordination (Chapter 2). Chapter 1 shows that regarding data, coverage and quality needs to be improved, prompt access for authorities needs to be facilitated and financial resources for investment in IT and human capital need to be increased.

Chapter 2 highlights the need for cooperation across authorities and analyses existing cooperation models between authorities across the EU.

Section 4 applies this conceptual approach to three activities that the ESRB considers important for financial stability – asset management, lending and clearing. The ESRB selected these activities because they have a significant actual or potential cross-border dimension, and the ESRB therefore believes their resilience will be pivotal to a successful CMU. Moreover, global developments are rapidly affecting how these activities are conducted.

- **Asset management (Chapter 3).** Asset management is an activity that is growing in importance. It is central to the functioning of the CMU, as it helps mobilise and allocate capital and supports cross-border investment. To date, the identification of structural vulnerabilities – specifically leverage and liquidity mismatch – has focused on investment funds. But asset management is also performed by other entities, which may be subject to similar risks and vulnerabilities as those associated with investment funds.

- **Clearing (Chapter 4).** Central clearing could enhance the resilience of government bond cash and repo markets, which have experienced episodes of illiquidity and market dysfunction in recent years. The functioning of these markets is critical for the financial system, including for NBFI entities, whose footprint in these markets has been growing. However, there are currently several factors that may disincentivise greater central clearing in these markets. These include the fact that risk management practices in bilaterally cleared transactions and centrally cleared transactions are not consistent.

- **Lending (Chapter 5).** Lending is a key source of funding for the real economy. In addition to the growing role of debt markets globally, the lending activities of NBFI entities such as investment funds, finance companies and insurers have also increased.[57] Reflecting this, recent changes in the AIFMD establish uniform regulations for loan-originating alternative investment funds (AIFs) within the EU.[58]

[57] See, for example, European Systemic Risk Board (2024b).

[58] See **Directive (EU) 2024/927 of the European Parliament and of the Council of 13 March 2024 amending Directives 2011/61/EU and 2009/65/EC as regards delegation arrangements, liquidity risk management, supervisory reporting, the provision of depositary and custody services and loan origination by alternative investment funds** (OJ L 2024/927, 26.3.2024).

Table 1

Illustration of key economic functions, related activities and entities through which they are delivered

Key economic functions	Activities		Entities								
			Banks	Investment funds	MMFs	Insurers	Pension funds	CCPs	Family offices	Sovereign wealth funds	Investment firms
Transacting	→Payment		✓								
	→Clearing		✓	✓*		✓*	✓*	✓		✓*	✓
	→Custody		✓								✓
	→Market intermediation		✓								✓
	→Settlement		✓								✓
Saving	→Deposit-taking		✓								✓***
	→Asset management		✓	✓	✓	✓	✓		✓	✓	✓
Borrowing	→Lending and loan servicing	→Directly	✓	✓		✓	✓				✓
		→Via credit markets	✓	✓	✓	✓	✓	✓****	✓	✓	✓
	→Securitisation		✓	✓**	✓**	✓**	✓**		✓**	✓**	✓**
Sharing and managing risk	→Insurance					✓	✓				
	→Derivatives	→OTC	✓	✓		✓	✓	✓*****	✓	✓	✓
		→Via public markets	✓	✓		✓	✓	✓	✓	✓	✓

Sources: Bank of England, Borio, Claessens and Tarashev (2022), Cecchetti and Schoenholtz (2020), FSB, SRB and ESRB.
Notes: The terminology of key economic functions draws on several sources (see above). The list of activities is illustrative and not exhaustive. The table does not include all activities that serve the smooth functioning of financial markets, such as credit ratings, data provision, trading and market making. Non-financial firms are not shown, even though some non-financial firms also undertake activities or provide essential services.
✓ Clearing members in CCPs are typically banks and investment firms. But asset managers, insurers and pension fund managers can also choose to become clearing members. These entities may also be involved in bilateral clearing and or central clearing as clients of clearing members.*
*✓** Securitisations are mainly issued by banks, but other parties may also be involved in the activity by trading or purchasing the securitised assets. For example, securitisation and asset-backed commercial paper are eligible assets for MMFs to the extent that these assets meet certain requirements (Article 11 MMFR).*
*✓*** Investment firms collect client deposits on cash accounts used for investment purposes.*

✓**** CCPs buying bonds and/or using repo to invest in margins and default fund contributions.
✓***** Some CCPs clear certain OTC derivatives.

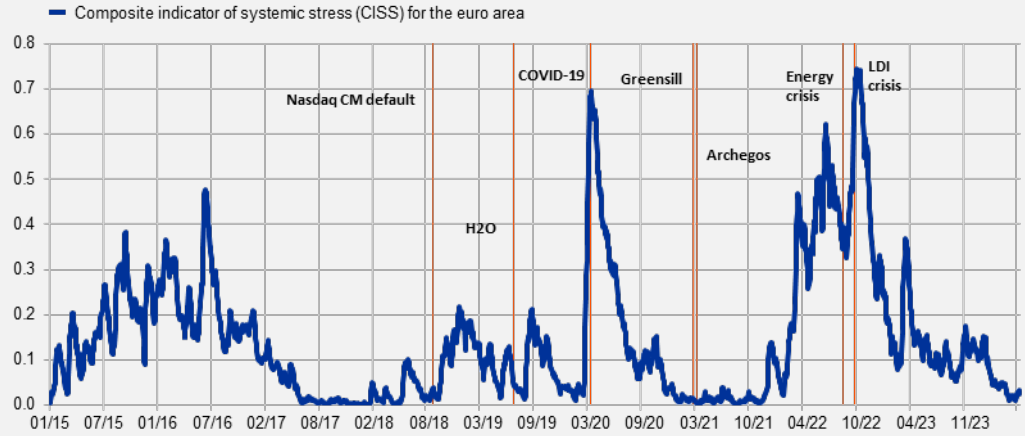
Box 1

Episodes of market turmoil and other incidents related to NBFI entities

This box provides an overview of instances of market stress and idiosyncratic incidents related to NBFI entities that have put the resilience of NBFI entities in the spotlight. It describes the circumstances that led to these episodes and incidents, how shocks propagated across sectors, the actors that were affected, the consequences for the financial sector and actions taken by public authorities to mitigate risks to financial stability. While these episodes differ in several specific aspects, together they demonstrate how structural vulnerabilities and interconnections can lead to risks amplifying and spreading through the financial system. In the chart below, these episodes and incidents are depicted together with a composite indicator of systemic stress. The chart shows that several of them coincided with increases in the indicator of systemic stress, even if that may reflect the effect of common factors rather than imply causation.

Chart A

Episodes of market turmoil and other incidents related to NBFI entities, and the composite indicator of systemic stress



Notes: The composite indicator of systemic stress (CISS) measures the current level of frictions, stresses and strains in the financial system. It includes 15 raw, mainly market-based financial stress measures that are split equally into five categories: the financial intermediaries sector, money markets, equity markets, bond markets and foreign exchange markets. The contribution to overall systemic risk by financial intermediaries takes into account agents' uncertainty, investor disagreement and information asymmetries. Compared with other indicators, the CISS puts relatively more weight on situations in which stress prevails in several market segments at the same time. For further details, see Holló et al. (2012).

Nasdaq Clearing member default.[59] In September 2018 a clearing member active on Nasdaq Clearing's commodity market defaulted. This followed a sharp increase in the spread between Nordic and German electricity prices, which resulted in the clearing member not being able to meet Nasdaq Clearing's margin calls. Nasdaq Clearing followed internal default management processes

[59] See Nasdaq Clearing AB (2019), p. 5.

and closed out the position of the defaulted member. The default resulted in a loss of around €114 million.[60] Part of this loss was born by Nasdaq Clearing, but clearing members incurred significant losses as they needed to replenish the default fund after part of it had been utilised. An investigation by Finansinspektionen concluded that there had been unacceptable risks in Nasdaq Clearing's operations and issued a fine. In its report, Finansinspektionen noted that the incident could have had a serious impact on the financial system.[61]

H2O.[62] In June 2019 the Financial Times published an article concerning H2O LLP, a United Kingdom-based asset manager.[63] The article noted that, according to H2O's latest filings, six of its funds collectively held investments of more than €1.4 billion in illiquid bonds, accounting for 3.7% of the net asset value of these funds. Around the same time, the research firm Morningstar Inc. suspended its rating of one of H2O's funds, Allegro Fund, citing liquidity concerns.[64] H2O faced a large increase in net outflows over the following weeks and activated several liquidity management tools, which allowed it to meet redemption requests. Over this period H2O also sold €300 million of its funds' exposures to these illiquid bonds and revaluated the remaining positions. While H2O did not suspend any of its six funds, the case illustrated the importance of interconnections and possible spillover risks between sectors. In particular, the share price of Natixis – a French bank which was the majority owner of H2O LLP – fell by 15% in a single trading day following negative news headlines regarding the use of liquidity management tools by its subsidiary.

The COVID-19 pandemic.[65] In March 2020, after the outbreak of the coronavirus and announcements of lockdowns, global sovereign bond yields fell sharply amid portfolio rebalancing away from risky assets and surging demand for safe assets. Redemptions from investment funds, margin calls and the need to unwind leveraged positions resulted in sudden spikes in the demand for cash. Besides commercial papers and certificates of deposit, the selling eventually started to affect safer assets such as US Treasuries and other advanced economy government bonds. The resulting tightening of financing conditions pushed corporates towards selling their investments and drawing down their existing bank credit lines and revolving credit facilities. The dash-for-cash lasted until significant interventions and announcements were made by central banks, including asset purchases, the creation of liquidity facilities and the establishment and expansion of dollar swap lines. These were part of a package of measures that included the temporary relaxation of certain regulatory restrictions by some securities regulators and fiscal support by many governments.[66]

Greensill.[67] In March 2021 Greensill Capital, a United Kingdom-authorised company specialising in supply chain finance, filed for insolvency. Greensill paid suppliers for their invoices with a small discount when they delivered goods to their corporate clients, and the firms receiving the goods would pay Greensill some weeks later. To obtain higher returns, Greensill resorted to riskier practices by providing loans to companies secured by "prospective receivables" from "prospective buyers". Greensill purchased credit guarantee insurance for, and securitised, its loans and sold

60 See Sveriges Riksbank (2018).

61 See Finansinspektionen (2021).

62 See also European Systemic Risk Board (2020d).

63 See Smith and O'Murchu (2019a).

64 See Smith and O'Murchu (2019b).

65 See Financial Stability Board (2020c).

66 See Financial Stability Board (2020a) for further details.

67 See also European Systemic Risk Board (2021c), pp.33-34.

them to investors via Greensill Bank, a bank that it owned.[68] In 2020 Greensill's credit insurance was withdrawn due to concerns about the creditworthiness of creditors. Investors stopped purchasing the securitised loans, some companies that had previously been financed by Greensill declared insolvency, and Greensill's bank was closed. These events resulted in the suspension of redemptions for seven EU funds and one alternative investment fund domiciled in Liechtenstein investing in the supply chain notes. This also led to a fall in the share price of Credit Suisse, which owned the asset manager managing these funds.

Archegos.[69] In March 2021 Archegos Capital Management, a US family office, defaulted on margin calls from several derivatives counterparties. Archegos used derivatives to obtain large exposures and leverage, pursuing an investment strategy focused on synthetic long positions in a few stocks – usually in the technology sector – by means of equity swaps. The use of leverage magnifies profits and losses based on the performance of the underlying stocks. In fact, a sharp drop in the stock prices of firms Archegos was synthetically exposed to precipitated its collapse. When Archegos defaulted, the dealer counterparties had to liquidate their underlying long positions in the stocks, since the banks were no longer hedged. Because Archegos' market footprint was substantial in those stocks, large sales aggravated the decline in prices, leading to material losses for some of the dealers, especially those who were slower to liquidate their positions. Several banks that provided prime brokerage services to Archegos Capital made losses when it defaulted in 2021, with Credit Suisse recording the biggest single loss of USD 5.5 billion.[70]

Energy crisis.[71] In February 2022, after Russia's full-scale invasion of Ukraine, energy prices rose for a variety of reasons, including the Russian supply squeeze. Prices then rose more steeply in July and August 2022. Electricity producers that had sold electricity futures contracts to hedge against falling prices were solvent but faced liquidity pressures from variation margin calls and increases in initial margins. This covering of short positions skewed demand towards long positions in futures, creating a liquidity squeeze. Due to high concentration among market participants, this further exacerbated the increase in prices and volatility.[72] A large proportion of the liquidity needs were met by banks through lending and credit lines. Banks also increased their exposure to the sector through bilateral electricity derivatives contracts, which producers substituted for futures positions over the course of the stress to avoid future margin calls. In addition to this liquidity provision by banks, support in the form of guarantees, credit lines and loans was offered or provided to electricity producers by many governments, including Austria, the Czech Republic, Germany, Finland, Denmark, Norway, Sweden, Switzerland and the United Kingdom. In November 2022 the European Commission proposed the market correction mechanism, a temporary instrument to automatically intervene on the gas markets in case of extreme gas price hikes. The mechanism aimed to reduce the volatility on European gas markets while safeguarding the security of gas supply.[73]

68 See Mavin and Steinberg (2021).

69 See also European Systemic Risk Board (2022d), pp. 26-30, and European Securities and Markets Authority (2022b).

70 See Credit Suisse (2021).

71 See Acharya, Cetorelli and Tuckman (2024).

72 See European Systemic Risk Board (2024a).

73 See European Commission (2022).

Liability-driven investment (LDI) crisis.[74] In September 2022 stress in the UK gilt market spread to LDI funds, including those domiciled in the EU and denominated in GBP, amplifying the pressure on gilt markets. Following the release of the mini-budget, gilt yields spiked, with the 30-year yield increasing by more than 130 basis points in one week. Some bonds lost more than 25% in value, and UK pension funds and LDI funds faced margin and collateral calls amounting to more than €80 billion.[75] Given the magnitude and speed of the shock, liquid assets of leveraged LDI funds depleted rapidly. Liquidity strains were particularly severe for pooled LDI funds, which faced coordination problems and struggled to raise new capital from investors. LDI funds started selling gilts to deleverage and meet collateral requirements. However, the combination of high volatility, low market liquidity and the large market footprint of LDI and UK pension funds in index-linked and very long-dated bonds made the sale of the bonds challenging. The selling pressure could not be absorbed by the market, resulting in additional downward pressure on prices, creating a feedback loop and jeopardising financial stability.[76] This stressed environment highlighted that buffers maintained by LDI funds were too low and less effective than expected because of the concentrated nature of the positions held in the long-dated gilt market. Bond market liquidity improved and yields declined substantially following an announcement by the Bank of England that it would carry out temporary purchases of long-dated UK government bonds on whatever scale required to restore orderly market conditions.[77] Since then, EU and UK authorities have taken steps to increase LDI resilience to interest rate risks.[78] The UK Financial Policy Committee set out recommendations on steady-state minimum levels of resilience for LDI funds, including a yield buffer recommendation.[79] Supervisory authorities in Ireland and Luxembourg[80] introduced macroprudential measures by imposing a minimum yield buffer on GBP-denominated LDI funds via the use of Article 25 of the Alternative Investment Fund Managers Directive (AIFMD). LDI fund managers are asked to maintain an appropriate level of resilience, including by restricting the amount of fund leverage contingent on the portfolio duration and having sufficient liquid assets to cover a 300 basis point rise in GBP interest rates.

74 See also European Systemic Risk Board (2023b), pp. 27-30.

75 See Bank of England (2022c).

76 See Bank of England (2022b).

77 See Bank of England (2022a).

78 See European Systemic Risk Board (2024b), pp. 29-30.

79 See **FPC assessment of required resilience for systemic risk**.

80 See **CSSF** and **Central Bank of Ireland** communications.

Section 2 – Addressing known vulnerabilities

This section includes four policy digests summarising and building on existing positions of the European Systemic Risk Board (ESRB) to address known vulnerabilities. Policy Digest 1 considers money market funds, noting that the ESRB recommendation on the topic needs to be implemented. Policy Digest 2 looks at investment funds, highlighting where further work is needed. Policy Digest 3 examines margining and margin preparedness, pointing out the need to implement the proposals and recommendations of the Basel Committee on Banking Supervision (BCBS/International Organization of Securities Commissions (IOSCO)) and the Financial Stability Board (FSB) in EU legislation. Policy Digest 4 summarises the current ESRB positions on crypto, demonstrating that several activities related to crypto-assets mirror activities performed by the traditional financial system but are not regulated in a way that is consistent with those activities.

Policy Digest 1
Addressing vulnerabilities in EU money market funds

The financial market turmoil at the onset of the COVID-19 pandemic revealed systemic vulnerabilities in certain sub-sectors of money market funds (MMFs) that need to be addressed. The Money Market Fund Regulation (MMFR)[81] of 2017 was designed to address vulnerabilities revealed during the global financial crisis.[82] The "dash-for-cash" at the onset of the COVID-19 pandemic (see Box 1) showed that the regulatory reforms after the global financial crisis had been insufficient to mitigate systemic risks in the industry. Some funds investing in private-sector debt securities experienced acute liquidity strains when faced with a high level of redemptions by investors combined with a lack of liquidity in the underlying markets. This led to concerns that liquidity strains would amplify the effects of the pandemic shock in other parts of the financial system. The situation improved following exceptional measures taken by the Eurosystem, the Federal Reserve System and the Bank of England under their monetary policy mandates.

To address these vulnerabilities, it is important to implement the ESRB's 2021 Recommendation on MMFs,[83] which was mirrored in proposals by the European Security and Markets Authority (ESMA) on the review of the MMFR.[84] The 2021 ESRB Recommendation reflects an earlier 2012 ESRB Recommendation, which aimed to reduce the deposit-like features offered by certain MMFs via redemption at par. The ESRB recommends that the Commission (i) reduce threshold effects that might generate first-mover advantage and lead to runs, including by

81 **Regulation (EU) 2017/1131 of the European Parliament and of the Council of 14 June 2017 on money market funds** (OJ L 169, 30.6.2017, p. 8).

82 The ESRB had asked the EU Commission to address these vulnerabilities in 2012. Many of its recommendations were included in the MMFR. See **Recommendation of the European Systemic Risk Board of 20 December 2012 on money market funds (ESRB/2012/1)** (OJ C 146, 25.5.2013, p.1) and European Systemic Risk Board (2019), "**Compliance assessment of the implementation of the Recommendation of the European Systemic Risk Board of 20 December 2012 on money market funds (ESRB/2012/1)**", March.

83 **Recommendation of the European Systemic Risk Board of 2 December 2021 on reform of money market funds (ESRB/2021/9)** (OJ C 129, 22.3.2022, p. 1).

84 See European Securities and Markets Authority (2022a).

requiring all low-volatility net asset value (LVNAV) MMFs to have a fluctuating net asset value;[85] (ii) introduce higher liquidity requirements and encourage MMFs to use liquidity buffers to meet redemptions; (iii) require MMFs to have at least one liquidity management tool (LMT) in place that passes trading costs on to departing and incoming investors; and (iv) enhance monitoring and stress testing frameworks. To date the Commission has not proposed a revision of the MMFR, although it has published a report[86] that – similarly to the consultation paper – identifies several areas which should be further assessed with a view to strengthening resilience.[87]

Recent market developments and analytical insights underscore the need for MMF reforms. First, during the gilt market turmoil in 2022 (see Box 1), funds pursuing liability-driven investment (LDI) strategies raised liquidity through MMF redemptions. As a result, several LVNAV MMFs suffered large outflows and an increasing deviation between the market value of their assets and the amortised cost valuation.[88] For some, this deviation came close to the regulatory limit of 20 basis points. If it had exceeded that level, they would have needed to convert to variable net asset value (VNAV) MMFs.[89] Outflows from EU LVNAV MMFs only lessened after intervention by the Bank of England, which eased liquidity pressures for LDI funds. Second, the stress test results reported to national competent authorities (NCAs) and ESMA in 2021 show that in a stress scenario more than 80% of LVNAV MMFs would breach the 20 basis points cap.[90] Such breaches, and the associated switch to mark-to-market valuation, could have systemic implications, including potential run dynamics and spillover effects.

Regulatory changes outside the EU and the global role played by EU MMFs denominated in the US dollar and sterling further reinforce the call for reforms. In 2023 the U.S. Securities and Exchange Commission (SEC) finalised its regulatory updates intended to strengthen the resilience of MMFs used by institutional investors to invest in private debt, and the UK FCA launched a consultation considering similar amendments for UK LVNAV MMFs.[91] These initiatives imply materially higher liquidity requirements for US and UK MMFs compared with those in the EU.[92] Less stringent prudential regulation of EU MMFs would not only make them more vulnerable, but also more likely to transmit shocks to global markets. Transmission arises due to the considerable cross-border interlinkages of EU MMFs: around one-half of their investor base is made up of non-EU investors, who mainly use funds denominated in non-EU currencies that are of the LVNAV type

85 One of the key policy proposals ESMA made in its opinion on the review of the MMFR (see footnote 82) was removing the possibility to use amortised costs for LVNAVs. More recently, market supervisors from Austria, France, Italy and Spain have called for banning amortised cost accounting for LVNAV and constant net asset value MMFs alike. See Autorité des marches financiers et al. (2024).

86 **Report from the Commission to the European Parliament and the Council on the adequacy of Regulation (EU) 2017/1131 of the European Parliament and of the Council on money market funds from a prudential and economic point of view**, July 2023.

87 According to the recently amended AIFMD and UCITS Directive, managers of open-ended funds need to select at least two appropriate LMTs, after assessing the suitability of those tools in relation to the fund's investment strategy, its liquidity profile and its redemption policy. ESMA was tasked with developing draft Regulatory Technical Standards (RTS) to specify the characteristics of LMTs and Guidelines on the selection and calibration of LMTs by UCITS and alternative investment fund managers of open-ended alternative investment funds to manage liquidity risk and mitigate financial stability risks. The ESRB brought up the point on the use of anti-dilution LMTs by MMFs in its response to the ESMA consultation. See European Securities and Markets Authority (2024d) and European Systemic Risk Board (2024a).

88 See Section 3.1 in European Systemic Risk Board (2023b).

89 See Chart 9 in European Systemic Risk Board (2023b).

90 See European Securities and Markets Authority (2023a).

91 See U.S. Securities and Exchange Commission (2023a) and FCA (2023).

92 See Section 2.3 in European Systemic Risk Board (2024b).

(i.e. more susceptible to liquidity strains than VNAV funds). At the same time, EU MMFs provide more funding to issuers outside the euro area than those inside it. The size of cross-border exposures further corroborates the urgency of reforms.

The MMFR should be revised without further delay to reflect the ESRB 2021 Recommendation. MMFs play a key role in investors' liquidity management. This function makes them particularly vulnerable during market turmoil, as liquidity pressures originating in other parts of the financial system are often transmitted to them. At the same time, stress test results point to material weaknesses of the LVNAV structure and raise concerns about the capacity of such MMFs to maintain their stable value in the absence of public backstops. As investors often use such funds because of the stable NAV promise, conversion to VNAV MMFs could lead to large-scale redemptions and contagion and exacerbate shocks. Given the global nature of MMFs, by not taking regulatory action the EU is weakening international coordination in closing policy gaps to increase MMF resilience and strengthen financial stability.

Policy Digest 2

Finalising work to address vulnerabilities in investment funds

The regulatory and supervisory framework for investment funds continues to improve, but further efforts are required to reduce risks and vulnerabilities. The ESRB welcomes the recent adoption of the amendments to the Alternative Investment Fund Managers Directive (AIFMD) and the Undertakings for Collective Investment in Transferable Securities (UCITS) Directive.[93] The revised directives introduce several new provisions that enhance the regulatory and supervisory framework for investment funds from a financial stability perspective. These include the increased availability and consistent use of LMTs by fund managers; enhanced reporting requirements for AIF managers and harmonised reporting requirements for UCITS funds, as proposed by the ESRB;[94] and introducing common rules on lending activities by alternative investment funds (AIFs). ESMA is undertaking important work to develop Regulatory Technical Standards (RTSs) and Guidelines[95] to implement the new provisions. While the availability of LMTs is instrumental, it is equally crucial that these tools be actively used to alleviate liquidity pressures. This underscores the importance of ESMA's work on RTSs and Guidelines facilitating the practical application of LMTs. Nevertheless, the overall framework for investment funds should be enhanced. This includes addressing vulnerabilities in EU MMFs (see Policy Digest 1) and developing the policy proposals set out by the ESRB to reduce further liquidity and leverage-related risks.

Some aspects of liquidity risk can be addressed by adapting policy tools in the regulatory framework for investment funds to better serve financial stability purposes.[96] First, structural liquidity mismatches in funds investing in inherently illiquid assets, such as real estate, should be reduced by introducing longer notice periods and a lower redemption frequency. Second, investment funds, including MMFs, should use antidilution LMTs as part of their day-to-day management. Third, the current liquidity stress testing framework for investment funds could be amended to incorporate liquidity risk stemming from margin and/or collateral more effectively (see also Policy Digest 3). The ESRB offered additional insights into those three aspects in its response to the ESMA consultation on LMTs,[97] putting forward the view that the forthcoming ESMA Guidelines should include not only guidance on extending notice periods but also guidance on the appropriate baseline notice periods for open-ended real estate funds.

In addition to adapting existing policy tools, new ones may be required to enhance the resilience of investment funds and reduce systemic risk.[98] Avenues for policies include

93 **Directive (EU) 2024/927**.

94 **Recommendation of the European Systemic Risk Board of 7 December 2017 on liquidity and leverage risks in investment funds (ESRB/2017/6)** (OJ C 151, 30.4.2018, p. 1).

95 In addition to RTSs and guidelines related to LMTs, UCITS reporting and lending activities by AIFs, ESMA has also been tasked with developing guidelines providing indications to guide the competent authorities in their exercise of the powers to activate or deactivate suspension of subscriptions, repurchases and redemptions. Furthermore, ESMA has a mandate to prepare a report regarding the development of the integrated collection of supervisory data, which shall focus on how to (i) reduce areas of duplication and inconsistencies between the reporting frameworks in the asset-management sector and other sectors of the financial industry, and (ii) improve data standardisation and efficient sharing and use of data already reported within any Union reporting framework by any relevant competent authority, at Union or national level.

96 See European Systemic Risk Board (2023c).

97 See European Systemic Risk Board (2024c).

98 See European Systemic Risk Board (2023c).

building on the FSB recommendations[99] with a view to combining liquidity bucketing of fund assets with other measures aimed at increasing resilience, and also developing new macroprudential tools to mitigate the build-up of liquidity. Such tools could be conceived in a similar way as the leverage limit under Article 25 AIFMD. In addition, given that the incentives of fund managers and financial stability goals may not always be aligned, authorities may need to play a more prominent role in addressing shocks triggered, transmitted and/or amplified by investment funds (see also Chapter 2). Any discussion on the role of authorities should also consider the challenges related to data availability and the potential unintended consequences of applying such policy tools (see also Chapter 1).

More work is needed to address risks related to excessive leverage in the investment fund sector. First, the UCITS Directive and AIFMD present inconsistencies in leverage definitions and metrics.[100] These should be aligned, so authorities can assess the investment fund sector's overall leverage more effectively. Second, some UCITS that employ complex investment strategies rely on the value-at-risk (VaR) approach to compute their global exposure, instead of the commitment approach. Such funds are subject to VaR limits, but not to direct leverage restrictions. Therefore, such UCITS may reach high levels of leverage, similarly to AIFs.[101] All UCITS should be required to regularly report on and disclose their leverage under the reporting regime recently introduced, e.g. based on the commitment approach and harmonised between the UCITS Directive and the AIFMD. Furthermore, implementing direct leverage restrictions for all UCITS – again based on the commitment approach, for example – would be an effective way to prevent the build-up of excessive leverage. The VaR measures should be used only as a complement to rather than a substitute for direct leverage restrictions, which should ideally be consistent for all UCITS. Nevertheless, if regulatory amendments result in different levels of leverage restrictions for various types of UCITS (sophisticated and non-sophisticated), then those employing leverage levels comparable to substantially leveraged AIFs should be subject to similar safeguards.[102] Third, current leverage metrics may not provide an accurate reflection of the associated risks. Complementary measures designed to identify key risks associated with leverage should also be developed.[103] Those should illustrate, in particular, the potential losses and liquidity demands from use of leverage. They should be consistent between UCITS and AIFs. Finally, there should be greater transparency around how private equity and private debt funds use leverage and engage in lending activities, as they could contribute to financial imbalances and procyclicality (see also Chapter 5).[104] In particular, the absence of a look-through approach in the regulation of private equity AIFs hampers the assessment of risk (see also Chapter 1).

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99 See Financial Stability Board (2023c).

100 See also Financial Stability Board (2023a).

101 See Box 5 in European Systemic Risk Board (2024b),.

102 These safeguards include enhanced reporting requirements for substantially leveraged AIFs and the AIFMD Article 25 monitoring framework (see ESMA, 2020). In contrast to the AIFMD, the UCITS Directive does not allow competent authorities to impose limits to the level of leverage or other restrictions to limit the extent to which the use of leverage contributes to the build-up of systemic risk in the financial system or risks of disorderly markets.

103 See European Systemic Risk Board (2021a). That response also builds on other ESRB proposals communicated in European Systemic Risk Board (2020b).

104 See Section 2.2 in European Systemic Risk Board (2024b).

Policy Digest 3

Mitigating financial stability risks resulting from margin calls

Regular exchange of margin to collateralise transactions has made the financial system safer. One aim of the package of reforms after the global financial crisis was to reduce counterparty credit risk in derivatives transactions.[105] To prevent the build-up of unsecured exposures when market prices move, most derivatives transactions involving both financial and non-financial counterparties are now collateralised, either because they are centrally cleared or because they are subject to bilateral margin requirements. This exchange of collateral through margining is an example of activity-based regulation that applies across all entities engaging in derivatives transactions.[106] Margins are calculated by focusing on the portfolio of transactions of each counterparty, rather than on a transaction-by-transaction basis. They come in two forms: variation margin (VM) and initial margin (IM). VM is designed to cover current exposures arising from the gains or losses as market prices move. It must be paid frequently from one counterparty to the other and typically needs to be provided in cash. IM is designed to cover future exposures that could arise from losses on the counterparty's position after it has defaulted. It must be paid at the inception of a transaction, and needs to be provided in cash or other liquid, high-quality collateral. As future exposures are unknown, IM needs to be estimated and is therefore recalculated regularly to reflect changes in the composition of the portfolio and volatility. A haircut is applied to protect the surviving counterparty from a fall in the value of the defaulter's collateral. VM, IM and haircuts are fundamental for the management of counterparty credit risk.

The liquidity risk that can result from sudden margin calls during times of heightened market volatility needs to be managed better. A known side effect of the greater use of collateral is that liquidity risk has increased.[107] This is because when prices move sharply, market participants with loss-making positions need to meet large margin calls at short notice. This may force them to close out their positions by entering offsetting trades, thereby amplifying price movements. Or it may force them to raise liquidity by selling other assets (potentially at a steep discount if they are low quality and/or illiquid), thereby creating contagion. The resulting effects can threaten financial stability. For example, the March 2020 market turmoil, the energy crisis in the EU, and the UK gilt turmoil in 2022 resulted in unprecedented interventions by public authorities that helped maintain the resilience of the clearing ecosystem.[108] These episodes highlight that further work is needed to ensure liquidity risk resulting from margin calls is better managed.

Central counterparties (CCPs), and their clearing members (CMs) in particular, need to ensure their behaviour does not put unnecessary strain on the clearing ecosystem. For transactions that are mandated to be cleared centrally, or for those that participants choose to clear centrally, CCPs become the buyer to every seller and the seller to every buyer. This means they

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105 See G20 (2009).

106 There are several exceptions reflecting proportionality. For example, intra-group transactions are exempted under certain conditions and non-financial counterparties are exempted from bilateral margin requirements. See the **ESMA website** for more details.

107 See, for example, Benjamin (2024).

108 For the March 2020 market turmoil, see, for example, Buiter et al. (2023), Carraro et al. (2021) and Basel Committee on Banking Supervision, Committee on Payments and Market Infrastructures and Board of the International Organization of Securities Commissions (2022). For the energy crisis in Europe, see, for example, KfW (2022), the **Energy Markets Financing Scheme (EMFS) page on the Bank of England's website** and Sveriges Riksbank (2022). For the UK gilt turmoil in 2022, see, for example, Alexander et al. (2023).

are central nodes in a broader clearing ecosystem of CMs – typically large banks – who transact with the CCP on their own account or on behalf of clients. To ensure resilience, CCPs are subject to more stringent regulatory requirements than counterparties in bilateral transactions. For example, they must call VM at least daily and the collateral they can accepted is more tightly prescribed than what counterparties in bilateral transactions can accept. To protect their resilience during times of market stress, they may have to increase IM and haircuts. Given their centrality in the clearing ecosystem it is important that CCPs do not do this in a way that puts unnecessary strain on CMs and their clients. The ESRB has pointed to ways to reduce such procyclical behaviour in various reports[109] and a Recommendation.[110] The European Market Infrastructure Regulation (EMIR)[111] already requires EU CCPs to include measures to limit procyclicality in their IM models,[112] and the revised EMIR (EMIR 3) provides further rules designed to reduce procyclical behaviour.[113] Similarly, the ESRB has argued that when CMs pass on increases in IM or haircuts that a CCP requires to their clients, it is important they do not unnecessarily use add-ons or multipliers that amplify the liquidity demand.[114]

All market participants entering into transactions that require exchange of margin need to be prepared to meet margin calls during times of stress. While CCPs will be required under EMIR 3 to take measures to reduce the procyclicality of IM and haircuts, during times of exceptional market volatility they may not be able to avoid increasing them without compromising resilience. There are currently no rules combating procyclicality of IM increases in bilaterally cleared transactions. Moreover, because VM depends on market movements and market-to-market gains and losses, some counterparties will always be faced with having to provide cash at short notice and may need to liquidate non-cash liquidity reserves. All market participants need to be prepared so that they can meet margin calls in a timely fashion, even during times of heightened market volatility.[115]

Once finalised, the following proposals and recommendations by international bodies therefore need to be implemented.

- **The proposals by the BCBS-CPMI-IOSCO for centrally cleared markets that aim to help CMs and their clients anticipate and prepare for margin calls need to be implemented.** Their consultative report on transparency and responsiveness of IM in centrally cleared

109 See European Systemic Risk Board (2017), European Systemic Risk Board (2020a) and European Systemic Risk Board (2020c).

110 See in particular Recommendations A and C of **Recommendation of the European Systemic Risk Board of 25 May 2020 on liquidity risks arising from margin calls (ESRB/2020/6)** (OJ C 238, 20.7.2020, p. 1).

111 **Regulation (EU) No 648/2012**.

112 Article 41 EMIR requires CCPs to take into account any potentially procyclical effects of margin revisions. Article 28 of Commission Delegated Regulation (EU) No 153/2013 of 19 December 2012 supplementing Regulation (EU) No 648/2012 of the European Parliament and of the Council with regard to regulatory technical standards on requirements for central counterparties proposes three different options of anti-procyclicality tools that CCPs can apply.

113 For example, the revised Article 41 EMIR states that when collecting margin intraday "…a CCP shall consider, to the extent possible, the potential impact of its intraday margin collections and payments on the liquidity position of its participants and on the resilience of the CCP" and revised Article 46 EMIR states that "…a CCP shall take into account the need to minimise any potential procyclicality effects of such revisions when revising the level of the haircuts that it applies to the assets and the guarantees it accepts as collateral".

114 See European Systemic Risk Board (2020c).

115 ibid.

markets was published at the start of 2024.[116] This made ten policy proposals that aim to improve the understanding of IM calculations and potential future margin requirements by CMs and their clients. For example, CCPs should provide additional public disclosures on their margin models and provide CMs and their clients with margin simulation tools. CMs should also provide greater transparency to their clients and the CCPs of which they are members. In its response to the consultation, the ESRB supported these proposals,[117] noting that EMIR already incorporates several of them. For example, Article 38(6) EMIR requires EU CCPs to provide their CMs with a non-binding simulation tool on a secured access basis, enabling them to estimate the additional IM required for new transactions on a gross basis. It also requires EU CCPs to provide detailed information on the IM model they use, including a clear explanation of the model's design and operation, a comprehensive description of its key assumptions and limitations, and the conditions under which these assumptions may become invalid, all of which must be documented.[118] The existing EMIR requirement may need to be amended to reflect the fact that the BCBS-CPMI-IOSCO proposals provide for these simulation tools to be offered to clients as well, and that they should include the use of historical and hypothetical market conditions. It is important that this change and the other proposals be implemented.

- **The recommendation by the BCBS and IOSCO for non-centrally cleared markets that encourage good practices**. In a separate consultative report, the BCBS and IOSCO have set out eight recommendations to participants in non-centrally cleared markets to encourage the widespread implementation of good market practices related to (i) VM processes; and (ii) the responsiveness of IM models. The first four recommendations aim to address challenges that could inhibit a seamless exchange of VM during a period of stress. The other four highlight good practices for market participants to smoothly implement initiatives to ensure calculation of IM is consistently adequate for contemporaneous market conditions, and proposes that supervisors should monitor whether these developments are sufficient to make the model responsive enough to extreme market shocks.[119] Once finalised, it is important that the European Commission considers whether implementation of these proposals would require changes in EU law.

- **The recommendations by the FSB to manage and mitigate the impact of spikes in margin and collateral calls at non-bank financial intermediaries (NBFI entities).** The FSB published a consultative report on liquidity preparedness for margin and collateral calls in spring 2024.[120] This proposes eight policy recommendations on managing and mitigating the impact of spikes in margin and collateral calls for NBFI entities. The proposals apply to non-bank market participants, including insurers, pension funds, investment funds and family offices that may face margin calls. They cover liquidity risk management and governance, stress testing and scenario design, and collateral management practices. Recent changes to

116 See Basel Committee on Banking Supervision, Committee on Payments and Market Infrastructures and Board of the International Organization of Securities Commissions (2024) and Basel Committee on Banking Supervision (2024a).

117 See European Systemic Risk Board (2024a).

118 ESMA has issued guidance on the documentation to be shared with CMs in the revised EMIR Regulatory Technical Standards (RTS). See European Securities and Markets Authority (2023b).

119 See Basel Committee on Banking Supervision and Board of the International Organization of Securities Commissions (2024) and Basel Committee on Banking Supervision (2024b).

120 See Financial Stability Board (2024a and 2020b).

EU legislation mean that implementing some of these recommendations would not require further changes to EU law. For example, regarding liquidity risk management and governance, Article 144 of Solvency II[121] provides a legal basis for the European Insurance and Occupational Pensions Authority (EIOPA) to include relevant standards on liquidity risk management and governance in technical standards it is preparing. As far as collateral management practices are concerned, it is important for the European Commission to review whether entity-based regulations would need to be amended to explicitly state that NBFI entities too should regularly review and test their operational capacity to transform highly liquid assets into cash under normal and stressed conditions within relevant timeframes.

The ESRB believes that stress testing is a key tool for testing margin preparedness and welcomes the fact that the EU-wide stress tests of the European Supervisory Authorities (ESAs) are considering this aspect. For example, while testing the resilience of CCPs forms the core of ESMA's regular stress test of CCPs, the authority notes that CCPs may impact the resilience of their CMs, clients, and markets through abrupt margin calls during times of high prices and market volatility. Reflecting this, ESMA's fifth CCP stress test includes an analysis of the central clearing ecosystem to complement the core components of the test. ESMA used data submitted by CCPs on VM that would need to be exchanged under the market stress scenario to estimate the potential liquidity impact on CMs and their clients in the EU clearing system. The analysis shows that the net largest liquidity demands from VM calls fall on the largest financial groups. While these groups should have access to liquid resources, ESMA notes that a significant amount of stressed VM calls may be passed to clients.[122] EIOPA's 2024 stress test also includes a liquidity component that also captures margin calls.[123] In addition, the ESRB has proposed that ESMA should review its stress testing guideline for investment funds so these would be required to consider the impact of margin calls on their liquidity.[124] It is important that the European Commission reviews whether NCAs have sufficient powers to address any deficiencies in liquidity risk management these stress tests might reveal.

121 **Directive 2009/138/EC of the European Parliament and of the Council of 25 November 2009 on the taking-up and pursuit of the business of Insurance and Reinsurance** (OJ L 335, 17.12.2009, p. 1).

122 See Chapter 7 in European Securities and Markets Authority (2024e).

123 See EIOPA (2021) and EIOPA (2024).

124 The ESRB made this proposal in its response to ESMA's consultation on liquidity management tools for investment funds. See European Systemic Risk Board (2024c).

Policy Digest 4

Crypto-assets and activities

This policy digest describes how crypto-assets and activities mirror traditional finance and points to areas that warrant further consideration for potential future regulatory action. Crypto-assets are a type of private-sector digital asset that depend primarily on cryptography and distributed ledger or similar technology and can be transferred and stored electronically. Activities involving crypto-assets largely mirror those in traditional finance, such as asset management, clearing, lending, deposit-taking and payment services. Reflecting this, these activities can result in similar vulnerabilities and associated risks. In addition, crypto activities have broader risk implications stemming from vulnerabilities such as their borderless nature, being decentralised. Crypto-assets that qualify as financial instruments fall under the Markets in Financial Instruments Directive (MiFID II),[125] although the definition of a financial instrument is not harmonised across Member States. The Markets in Crypto-Assets Regulation (MiCAR)[126] complements existing regulation by introducing a new regulatory framework for certain crypto-asset activities. MiCAR regulates the public offer and marketing of crypto-assets, the issuance of stablecoins and the provision of several services in relation to crypto-assets.[127] However, it does not extend to activities such as crypto lending, nor decentralised finance if this is provided in a fully decentralised manner without any intermediary.[128] The need for and feasibility of regulating these activities will be assessed in a report to be delivered by the EU Commission by the end of 2024 after consulting ESMA and the EBA.[129] In a report published in 2023 the ESRB concluded that because of their size and interconnections with the traditional financial system, crypto-asset markets were not yet systemic, but that systemic risks could arise rapidly.[130] Since then, the integration between crypto-assets and traditional finance has only grown. ESAs and national authorities are engaged in ongoing work to create and improve monitoring tools. This Policy Digest considers whether further regulatory action is needed.

1. Activities considered in Section 4 that are mirrored by crypto-assets

1.1 Crypto-asset management

Crypto-asset management services are available for investment products, as in traditional finance. Like traditional asset management, the objective of crypto-asset management is to generate profits by selling and buying and allocating assets under a defined strategy within the client's risk tolerance limits. This objective can be reached through active or passive management, using for instance crypto index funds and exchange-traded products (ETPs), or more complex products such as crypto derivatives (futures, options and swaps). Services can be automated with

125 **Directive 2014/65/EU of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Directive 2002/92/EC and Directive 2011/61/EU (recast)** (OJ L 173, 12.6.2014, p. 349).

126 **Regulation (EU) 2023/1114 of the European Parliament and of the Council of 31 May 2023 on markets in crypto-assets, and amending Regulations (EU) No 1093/2010 and (EU) No 1095/2010 and Directives 2013/36/EU and (EU) 2019/1937** (OJ L 150, 9.6.2023, p. 40).

127 Activities covered by MiCAR include custody and administration, operation of a trading platform, exchange of crypto-assets for funds or other crypto-assets, execution of orders, reception and transmission of orders, placing, advice, portfolio management and transfer services.

128 Recital 22 MiCAR.

129 Article 142 MiCAR.

130 See European Systemic Risk Board (2023a).

emerging algorithm-driven robo-advisers or artificial intelligence-driven platforms. According to internal estimates by ESMA staff, investment funds providing exposure to crypto-assets had a combined net asset value of less than €5 billion as at February 2024, representing 0.02% of the total EU fund universe of around €17.8 trillion as at end-2023. Further growth may stem from products such as spot crypto ETPs allowing investors to gain exposure to crypto-assets without directly owning the underlying. Monitoring is therefore needed to assess potential wider adoption. A key challenge facing crypto-asset management is that liquidity is highly fragmented across multiple centralised and decentralised exchanges and may cause price discrepancies across these.[131]

Under some circumstances, the financial stability risks from the broad category of stablecoins may be similar to those from MMFs. These are a type of mutual fund invested in cash, cash equivalents and short-term debt securities. They aim to provide investors with a money-like instrument with advantages such as counterparty diversification and liquidity. Some stablecoins are backed by liquid assets and aim to maintain a stable price in fiat money, making them economically similar to certain types of MMF that aim to maintain a constant net asset value, and similar risk characteristics. Compared to MMFs, stablecoins are typically easier to transfer to another party as they can be used to transact through crypto payment gateways. Nevertheless, like these MMFs, stablecoins are vulnerable to runs and flight-to-safety dynamics[132] if users believe their value will not be maintained under adverse conditions. Sudden changes in the liquidity of the assets backing a stablecoin can still occur and spread, causing deviation from the pegged value. As highlighted by the ESRB report on crypto-assets,[133] a run on a reserve-backed stablecoin may result in the fire sale of the underlying reserve assets and create broader stress. Authorities should have proper monitoring tools for stablecoins, such as Project Pyxtrial[134] of the Bank of International Settlements and the Bank of England, which aims to enable monitoring of the balance sheets of asset-backed stablecoins. In the EU, stablecoins that fulfil certain requirements are regulated under MiCAR, which refers to them in technical terms as e-money tokens (EMTs) or asset-referenced tokens (ARTs). MiCAR mitigates some of the risks previously mentioned, notably with prudential rules concerning segregation and custody of reserve assets.[135]

1.2. Centrally cleared crypto products

Several European CCPs have recently begun to offer central clearing of crypto products. As an illustration, BME Clearing of Spain has been authorised to offer clearing of US dollar-settled Bitcoin and Ethereum futures. LCH SA of France will offer clearing of cash-settled Bitcoin index futures and options contracts traded on a UK trading venue. German CCP Eurex also clears a portfolio of products such as options on FTSE Bitcoin and Ethereum index futures and options in US dollars and euro. Eurex reports that a notional of USD 3.5 billion has been traded since the launch of FTSE Bitcoin Index in April 2023.[136] The risk frameworks designed by CCPs to clear these products can be very different, even while all still being EMIR-compliant. Differences pertain notably to the extent of segregation from other clearing activities, including a dedicated default fund

131 See Kaiko (2024).

132 See Anadu et al. (2023).

133 See European Systemic Risk Board (2023a).

134 See the **BIS website**.

135 Article 36 et seq. MiCAR.

136 See the **Eurex website**.

and specific membership criteria, different margining frameworks (VaR models or standardised portfolio analysis of risk models) and the construction of the data series used for the risk framework. Procedures for managing defaults also vary in terms of measures to incentivise surviving CMs to bid for the defaulter's portfolio. The more incentivised CMs are to bid, the greater the chance of the CCP returning quickly to a matched book where all positions are offset.

1.3. Crypto lending

Both centralised crypto firms and decentralised finance (DeFi) lending protocols provide crypto loans. A crypto loan can take the form of a fixed-term secured loan in which crypto holdings are used as collateral in exchange for lending crypto-assets. The lender receives interest in crypto-assets over the period, and the crypto-assets that have been lent are returned at the end of the term. The purpose of the loan is for the borrower to acquire more crypto-assets, with the increased leverage amplifying gains in case the price increases. Crypto loans offered via centralised lending platforms, for which no data are available, operate off-chain in the sense that they rely on private records from centralised intermediaries. They are also provided via DeFi that is considered "on-chain", where all transactions are recorded on the blockchain using automated contracts with predefined protocols (smart contracts). Although proponents often claim that DeFi functions in a completely decentralised way, in reality there are elements that are centralised, in particular in relation to governance.[137] The total value locked for lending-based DeFi protocols has increased exponentially since 2020, reaching a peak in 2021 due to the surge in crypto-asset prices fuelled by speculation in a context of low interest rates. This was followed by a sharp drop in 2022, mainly caused by rising interest rates, the collapse of Terra and its contagion effects on the crypto market. Since mid-2022 the value has remained fairly stable, before rising significantly since the beginning of 2024 (Chart A).

[137] See Aramonte, Huang and Schrimpf (2021).

Chart A

Lending (total value locked in DeFi)

(USD billions)

Source: ECB dashboard sourcing data from DeFiLlama.
Note: The data cover protocols that allow users to borrow and lend assets including against non-fungible tokens or tokenised real world assets as collateral, as well as without collateral.

Although the activity is similar to traditional credit, crypto loans from centralised or decentralised platforms are largely unregulated and subject to high risks due to the design of the loans and the extreme volatility of crypto-assets. Crypto loans can be collateralised by crypto-assets. Firms offering such loans are then exposed to wrong-way risks due to the correlation between the exposure from the loan and the collateral. If the market collapses, this leads to procyclical effects where the liquidation of collateral drives prices down further. Conversely, when markets are booming, the increase in the value of the collateral allows users to borrow more crypto-assets. Crypto loans subject to collateralisation are mostly provided without any credit check. Platforms offering uncollateralised crypto lending rely mainly on credit checks or credit scores, without any further due diligence. In recent years some crypto lending platforms have failed, partly due to credit risk controls that were too negligent.[138] When platforms use a metric to assess lending risk, they mostly rely only on the loan-to-value (LTV) ratio, usually calculated as: LTV = (loan amount: principal + interest) / collateral amount x 100%. Depending on the type of crypto-asset used, collateral can have different LTVs. Article 142 of MiCAR stipulates that after consulting the EBA and ESMA, the Commission must submit a report to the European Parliament and Council on recent developments in crypto-assets, including an assessment of the necessity and feasibility to regulate lending and borrowing of crypto-assets, by the end of 2024.

2. Other activities involving crypto-assets

2.1. Deposit-taking-like activities

Like banks with fiat currencies, platforms can offer similar deposit-taking services for crypto-assets. Some platforms offer crypto saving accounts, where crypto-assets deposited are directly used to be loaned to other clients.

[138] See Mourselas (2022).

Crypto deposit-taking-like activities bear various specific risks. Although crypto interest rates tend to be much higher than in traditional saving accounts, a sharp fall in the crypto-asset price can easily wipe out interest revenues. Platforms can enforce discretionary withdrawal limits preventing assets from being fully pulled out in situations such as a financial emergency. Clients can sustain considerable losses from the failure of platforms, which generally have a high risk appetite. A case in point would be losses due to the inability of the platform to get back assets lent to other clients, as illustrated by the failure of Celsius in 2022.[139] Moreover, no deposit insurance is offered in Europe on crypto-assets at present.[140] Another key point concerns the high number of crypto-asset providers offering a wide range of vertically integrated functions, including trading, transaction services, margin trading and custodian services. This conglomeration of activities can lead to heightened complexity in business models and opacity in organisational structures, on top of the cross-border and cross-sectoral nature of risks that provide a cumulation of prudential risks.[141] More work is needed to assess and address the potential overall market and financial stability implications of such business models. "Empty shells" that do not have proper local risk management and governance structures to manage risks effectively are a particular concern. While these are not permitted under MiCAR, it is nevertheless challenging for NCAs to identify and prevent such situations. Indeed, crypto conglomerates may have incentives to preserve the benefits from the disintermediated aspect of their business model by gaining access to EU clients without sufficiently moving their activities and the associated risk management capacities in to the EU.[142]

2.2 Use of crypto-assets for payment purposes

Contrary to the traditional definition and features of money, crypto-assets other than EMTs under MiCAR are not payment instruments, although they can be used as a means of payment on some platforms. Money is usually defined as an asset widely accepted as a unit of account, a store of value and a means of exchange to pay for goods and services.[143] Fiat money typically experiences less fluctuation in its purchasing power than crypto-assets, which makes it more suitable as a store of value and a unit of account. Some crypto-assets typically do not fulfil these functions. Indeed, the first generation of crypto-assets, such as Bitcoin or Ether, have no intrinsic value and their prices fluctuate sharply. Stablecoins are designed to be less volatile than other crypto-assets by pegging their value to a currency or basket of currencies, or a commodity such as gold (reserve-backed stablecoins), or to an algorithm to control supply without providing any intrinsic value (algorithmic stablecoins). The crash of one major algorithmic stablecoin, Terra (linked to Luna), demonstrated the fragility of such constructs. Reserve-backed stablecoins can also experience deviations from their pegged value, as illustrated in 2023 when USDC broke its peg to the dollar for several days after its issuer, Circle, publicly stated that USD 3.3 billion were at risk due to the collapse of Silicon Valley Bank. Stablecoins cannot be regarded as a secure store of value, as there is no guarantee that the issuers can redeem users' stablecoins in full and on demand unless there is regulation in place with compliance monitored by a competent authority (i.e. MiCAR in Europe). For the EU, MiCAR will subject e-money and asset management tokens to

139 See Bank for International Settlements (2023b).

140 More generally, there is uncertainty about the applicable regulatory regime for crypto deposits. This is because MiCAR cross-references the definition of deposits under the deposit guarantee schemes directive, which is a *lex specialis* and thus has its own perimeter. This gives rise to different interpretations at national level about the applicable regulatory regime.

141 See Financial Stability Board (2023b).

142 See European Securities and Markets Authority (2024f).

143 See *The New Palgrave Dictionary of Economics*.

regulation, ensuring such compliance. However, other crypto-assets and unregulated stablecoins continue to be used for some retail payments of goods and services provided by companies through dedicated crypto payment gateways. From a global perspective, unregulated stablecoins are the main means of exchange to enter and exit the crypto market, by converting fiat currencies into stablecoins and vice-versa. This implies an incidental use of unregulated stablecoins as a store of value. Hence unregulated stablecoins still function as a critical bridge connecting traditional finance and crypto markets, notably for crypto trading activities.

The growing use of crypto-assets for payment purposes could entail financial stability risks that need to be further monitored. A material increase in the adoption of unregulated stablecoins and other crypto-assets for payments could lead clients to partially replace their deposits with stablecoins, if a provider were to offer a user-friendly alternative allowing widespread adoption. This could also reduce the intermediation capacity of banks, which would need to shift from deposits to other sources of funding or rely on deposits placed not by retail clients but by stablecoin issuers (which translates into lower stability of funding and interconnection concerns), increasing the cost of loans. On the other hand, we see that major banks are themselves engaging or drawing up plans to engage in issuing EMTs under MiCAR. With traditional payment companies moving to interconnect traditional payments with crypto-assets,[144] third-party concentration risks could increase as both crypto and traditional payment share common third parties.

3. Possible regulatory responses

MiCAR is an important leap forward for the EU, but there is still a need to clarify the regulatory perimeter, in particular with respect to DeFi activities.[145] This Policy Digest has illustrated several types of crypto activities similar to traditional finance that are mostly unregulated, such as crypto lending and decentralised finance not regulated by MiCAR and have therefore the potential to raise regulatory arbitrage.

There are different ways in which the activities described above could be regulated consistently. One would be to introduce new regulations specifically for crypto-asset activities or extend existing regulations in the aspects considered not covered adequately. This could be done by extending MiCAR, which has been a major step in establishing an EU regulatory framework for a wide range of activities involving crypto-assets, to other activities such as crypto lending and truly decentralised finance. Another way – provided crypto-assets become widely adopted – would be to regulate these activities in the same way as the traditional finance activities they are mirroring. This would take the form of amending the relevant entity- or activity-based regulations or creating new ones. On top of these initiatives, continuous efforts are required to monitor these activities properly with standardised and reliable data. In particular, there is a need to:

- **Clarify the regulatory perimeter for crypto activities.** This also requires clarifying how decentralisation should be assessed and how to distinguish between fully and partially decentralised finance. The regulation of these activities could also apply when they are carried out in a fully decentralised way. The opportunity and feasibility of this will be assessed by the

144 **Mastercard website**, **Visa website**.

145 See European Systemic Risk Board (2023a).

EBA and ESMA for a report that the European Commission will deliver to the EU Council and the Parliament.

- **Harmonise the classification of crypto-assets across the EU.** The definition of a financial instrument is not harmonised across Member States, which leads to differences in how crypto-assets are classified. MiFID being a directive, its definition of financial instruments has been transposed into national laws in a way that is not fully harmonised. This situation will be partially addressed by forthcoming ESMA guidance for NCAs to consider criteria to classify crypto-assets as financial instruments. However, there may be a need to harmonise the classification of financial instruments and crypto-assets in Level I legislation. As there is also uncertainty about the definition and the legal status of crypto deposits at EU level similar considerations apply here too.

Section 3 – Operational elements of a macroprudential policy framework

This section considers those operational elements of macroprudential framework that cut across NBFI entities: data (Chapter 1) and coordination (Chapter 2). Chapter 1 shows that data coverage and quality need to be improved, prompt access for authorities needs to be facilitated and financial resources for investment in IT and human capital need to be increased. Chapter 2 highlights the need for cooperation across authorities and considers existing cooperation models between authorities across the EU.

Chapter 1 – Data

This chapter sets out why authorities need timely access to a broad range of granular, high-quality, data to identify, monitor and assess financial stability risks and formulate a policy response. Timeliness is key to identifying risks and vulnerabilities early and developing policy responses promptly. The data available to authorities also need to cover a broad range of sectors and activities, enabling them to identify risks stemming from various components of the financial system. Inadequate coverage creates blind spots, allowing risks and vulnerabilities to build up unnoticed. Granularity is necessary to capture and reflect the complexity and interconnectedness of the financial system. It also ensures greater flexibility for both reporting institutions and supervisors, since risks can then be monitored efficiently at various levels of aggregation. High-quality data are essential for exploiting this wealth of information and achieving the post-crisis objective of transparency. Inaccurate signals due to poor data quality can impair monitoring activities and hinder the development of appropriate policy responses.[146]

The EU has made significant progress in collecting and analysing granular datasets, and EU authorities are now in a much stronger position than they were immediately after the global financial crisis. For instance, their experience with collecting large-scale, transaction-level data on derivatives contract under EMIR demonstrates the ability to establish, collect and analyse complex and large datasets – an achievement that would have seemed infeasible in the immediate aftermath of the global financial crisis. A recent example of improvements in data collection is the revision of the AIFMD and the UCITS Directive addressing data deficiencies within the investment fund sector.[147] ESMA has been tasked with developing the details and appropriate level of standardisation for UCITS reporting, as well as amending regulatory reporting templates for AIF managers.

Reporting entities must make further efforts to enhance the quality of the data they report. Although the data can and are being used by authorities in the EU, the efforts by authorities have not been matched by those of some reporting entities, including CCPs, in establishing frameworks to assess and improve the quality of the data they report. In its letter to the European Commission

[146] This is described in more detail in European Systemic Risk Board (2018) and Agostoni et al. (2022).

[147] The ESRB has previously put forward several proposals to improve AIFMD reporting. See European Systemic Risk Board (2020b) and European Systemic Risk Board (2021a).

in July 2022 the ESRB emphasised how poor data quality poses risks to financial stability. The letter made several concrete proposals as to how the quality of the data reported under EMIR could be improved.[148] These can be adapted to any type of data reporting and have been set out in the next section. In addition, ECB Banking Supervision has repeatedly emphasised that banking institutions have long-standing unaddressed deficiencies in how they deal with and report data, including insufficient attention and oversight by management bodies, weaknesses in data architecture, fragmented and non-harmonised IT landscapes, low capacity for data aggregation, and ineffective governance frameworks.[149]

EU authorities and those within Member States also need to be able to access and share data promptly to enable them to identify, monitor, assess and respond to financial stability risks. A broad range of granular, high-quality data are a necessary but not sufficient condition for authorities to deliver on their mandate. Several legal, technical, and technological impediments hinder their ability to share data with each other without having to go through lengthy, resource-intensive processes. For example, lack of timely access to balance sheet data of banks and insurers hampered the ESRB's ability to gauge the interplay between risks on the asset side and the liability side of financial institutions during the March 2020 market turmoil, the period of rapidly rising interest rates in 2023 and the ensuing banking turmoil. Reflecting this, the ESRB sent a letter to the co-legislators in August 2024 stressing the need for "access by default". The letter noted that the ESRB believes that the enhanced data sharing amongst the European System of Financial Supervision (ESFS) the European Parliament proposed in March 2024 would improve the situation.[150] Although both the letter and this report focus on data sharing across the ESFS, the arguments made also carry over to data sharing between authorities within Member States.

Authorities also need the financial resources to secure the technological and human capital required to perform sophisticated analysis of increasing volumes of valuable data. Beyond access to a broad range of granular, high-quality data, authorities also need the resources to analyse that data. Specifically, authorities – notably the ESAs – need to be able to develop next-generation analytical tools, including by exploiting new technologies such as machine learning and Artificial Intelligence. Lack of rapid progress in this area would result in the capacity gap that is already building up between market participants and authorities widening further and seriously hamper the monitoring of complex, opaque interconnections that underpin several financial stability risks.

Ensuring better data quality, efficient data access and more resources for data analysis would also serve the EU Commission's goal of reducing reporting requirements. The Commission's strategy on long-term competitiveness set out the goal of reducing reporting requirements by 25%, without undermining the policy objectives of the concerned initiatives.[151] This goal is not specific to the financial sector, but the proposals made here nevertheless support this goal. Improved data sharing across authorities would reduce duplicated reporting requests and

148 See European Systemic Risk Board (2022c).

149 See European Central Bank (2023).

150 See European Central Bank (2024d).

151 See European Commission (2023).

therefore costs to the financial sector. The remainder of this chapter provides more detail what is needed in terms of (i) quality, (ii) access and (iii) resources.

Data coverage and data quality

Gaps in the coverage of data, unclear or inadequate reporting requirements and persistent poor data quality hinder the effective monitoring of financial stability risks. They (i) impede the adequate monitoring of risks by authorities, which was one of the goals of the post-crisis reforms; (ii) compel policymakers to devote substantial resources and time to following up on data quality; (iii) create blind spots due to implausible values, which in some cases de facto result in reporting firms being excluded from monitoring; and (iv) may be symptomatic of a more fundamental problem of poor risk management at certain reporting entities. Gaps in data coverage, unclear or inadequate reporting requirements and poor-quality data can also give rise to unintended consequences when interventions are being designed. For example, leverage measures reported under AIFMD data collection have been of low quality. In response, ESMA together with NCAs have designed and implemented a data quality framework designed to improve it. Despite noticeable progress– including a large reduction in anomalous values – the quality of the data remains unsatisfactory. This increases the difficulties that countries may face in applying leverage limits under Article 25 AIFMD in a targeted way.

Data coverage

One important aspect relates to closing data gaps, including for cross-border activities. The ESRB has noted that during times of crisis and when trying to monitor risks, additional information is often needed that is not included under mandatory reporting. The ESRB is, however, mindful that frequent ad hoc amendments to reporting requirements impose costs on reporting entities. To reduce the need for these, it would be desirable to ensure that the coverage offered by mandatory reporting is sufficiently broad and granular to prevent data gaps emerging. While this may increase the volume of data collected in the short term, it could be done in such a way as to reduce the overall reporting burden over the medium to longer horizon. This might be by reducing the number of complex aggregated data points firms must report, and instead collecting the granular data underpinning them. NCAs, ESAs and other macroprudential authorities would then be able to conduct their own analyses and aggregations as necessary, reducing the needs for additional data reporting. It would also aid in interpreting self-reported assessments, such as the liquidity profiles of AIFs. While these assessments provide valuable insights into the risk profiles of funds, they may also underrepresent certain risks.

The application of a system-wide approach to asset management, clearing and lending has highlighted several gaps in data coverage. The gaps that have been identified tend to relate to (i) entities and products that fall outside the regulatory perimeter, such as family offices, and (ii) entities and products engaged in activities they have not typically undertaken in the past.

Data gaps related to asset management are most prevalent for entities subject to less intense regulation than, for example, investment funds. Concerns have been recurrently noted

in the ESRB NBFI Monitor.[152] In particular, important gaps remain in the other financial institutions (OFI) domain, including captive financial institutions (the largest component of the OFI sector), preventing comprehensive monitoring of risks and interlinkages with other parts of the financial system. There are also few official statistics on the activities (particularly cross-border activities) of family offices and sovereign wealth funds, although some information on their portfolios can be obtained indirectly via securities holdings data. In the case of discretionary mandates, both contractual terms and assets under management are difficult for public authorities to identify.

Data gaps related to lending include granular portfolio loan and bond exposures by NBFI entities. Such data could be used to identify where the ultimate risk lies, as well as relevant characteristics of the borrower. This could be achieved by enhancing and expanding existing credit registers such as AnaCredit (currently applicable only to bank loans) to non-bank lenders too. In addition, granular data are currently not available for all countries on the lending standards for loans issued by NBFI entities.

Data gaps related to clearing concern some of the activities of CCPs. The amount of clearing at CCPs via sponsored or direct access models (which affects their connection to banks) is not known. Authorities need to be mindful of possible new gaps emerging. For instance, in a response to an ESMA consultation, the European Association of CCP Clearing Houses argued that daily changes in contract values, which result in cash exchanges as VM payments, should lead to both contract valuations and variation margins being reported at zero value under specific accounting models.[153] This approach challenges basic asset valuation principles and makes it impossible for authorities to accurately assess the risks associated with derivatives and the liquidity risks related to margin calls. It is crucial that EMIR reporting rules are structured to ensure authorities can access this vital information to fulfil their mandates effectively.

A joint monitoring mechanism may help to close these and other data gaps. Some gaps related to the activities analysed in this document can likely be closed by changes to the reporting rules and/or scope of existing collections, while in other cases new collections may be needed. Further work will be needed to identify all relevant data gaps and the best response in each case. For example, extending AnaCredit beyond euro area countries would address some of the gap with regard to lending to incorporate risks that may spill over from beyond the euro area. Similarly, new data collections may be needed to understand the investment management activities undertaken via discretionary mandates, which comprise a substantial share of activity. A joint monitoring mechanism like the one established under EMIR 3.0 might be a model to help the ESRB identify the most effective method for identifying and closing data gaps related to asset management, clearing and lending.

Data quality

Low data quality persists across several data collections, reflecting long-standing deficits in market transparency, standardisation, internal governance and risk controls. Transparency has been a key objective of several collections of granular data, notably for derivatives, securities

[152] See **NBFI Monitor 2023**, p. 13 and **NBFI Monitor 2022**, p. 48; also previous editions of the report.

[153] See European Association of CCP Clearing Houses (2021).

financing transactions and AIFs, and this has resulted in dedicated regulatory frameworks to provide the relevant data to authorities. Low data quality reduces transparency and impairs effective policy responses. It also makes it challenging to distinguish whether observed anomalies in reported data are signalling a build-up of risk or are the result of reporting errors.[154] Misreporting can result in information that is wrong (e.g. incorrectly reported), incomplete (e.g. transactions are not reported and/or miss some values), does not adhere to internationally adopted standards, or is delayed. The low quality of the data currently reported by CCPs under EMIR is of particular concern, as it undermines one of the key objectives of the reforms after the global financial crisis that motivated the move to central clearing – increased transparency.[155] Addressing these shortcomings is critical to improving the overall effectiveness of evidence-based policy making.

ESRB analysis indicates that low data quality typically does not stem from the reporting frameworks, but from long-standing problems within financial institutions.[156] ESMA, alongside other ESAs and the ECB, will develop a report aimed at enhancing the efficiency of the reporting framework for investment fund managers and other sectors of the financial industry. This will focus on eliminating duplication and inconsistencies in reporting frameworks, as well as standardising and optimising the use and sharing of data already reported at EU or national level. The initiative should lead to more streamlined reporting processes, reduced administrative burdens, and improved data quality, ultimately fostering a more transparent financial system and enhanced analysis of systemic risk. While reporting frameworks can be improved, financial institutions dealing with complex instruments and using sophisticated risk management processes should already collect and maintain high-quality granular data. When the data are reported to authorities, it should therefore be complete, accurate and up to date. The fact that the quality of data submitted to authorities varies significantly across reporting firms indicates that the problem lies predominantly with the institutions rather than the reporting framework.

These long-standing problems within financial institutions could reflect poor reporting practices or poor risk management. For example, ESRB analysis reveals that the low quality of the data reported by EU CCPs is in large part due to the absence of internal procedures and controls before submitting data to authorities. Despite several years of feedback, EU CCPs have not addressed this satisfactorily. As a result, central clearing is not delivering the transparency that was one of the motivations behind the reforms in the aftermath of the global financial crisis. The ESRB welcomes the fact that EMIR gives Member States the ability to issue penalties in cases where the data reported contains manifest errors.[157] Such incentives for reporting entities could be extended to other data collections. More fundamentally, low data quality can also be indicative of poor risk management.[158] The global financial crisis demonstrated that banks' inadequate IT and data architectures hindered comprehensive risk management, preventing accurate and timely aggregation of risk exposures across various levels. Weak data aggregation and reporting practices

[154] See, for instance, Agostoni et al. (2022).

[155] See G20 (2009).

[156] See the section entitled "Data and transparency" in European Systemic Risk Board (2024a).

[157] See Article 12 EMIR.

[158] The ESRB raised this concern about poor data being indicative of poor risk management in European Central Bank (2022c).

led to significant risks for individual banks and the overall financial system.[159] Recent work by the ECB shows that this remains a concern.[160]

Low data quality reflects the inability of financial services, unlike other industries, to agree, develop, and adopt common standards and identifiers without being pushed by authorities. These are fundamental for effective data transmission and reporting. Historically, financial transaction data have lacked standardisation, and the industry has lagged in adopting international standards such as the Legal Entity Identifier (LEI) without public sector initiatives.[161] For derivatives, the development of essential standards to unambiguously identify transaction counterparties with the LEI, contracts with the Unique Trade Identifier (UTI) and products with the Unique Product Identifier (UPI) was driven by public authorities. This underscores the financial industry's reluctance to autonomously develop and adopt industry-specific identifiers and highlights the reliance on public authorities and the need for specific regulatory requirements. Industry-led initiatives, such as the Common Domain Model for derivatives proposed by the International Swaps and Derivatives Association (ISDA) in 2017, emerged well after the global financial crisis and have not been widely adopted. As acknowledged by the industry,[162] the lack of automation and standardisation in collateral management is a long-standing problem. Manual intervention remains prevalent, which contrasts with the needs arising from post-crisis regulatory reforms and the subsequent requirements to manage liquidity and counterparty risk effectively.

Ensuring data integrity is first and foremost the responsibility of reporting entities, not public authorities, although the latter can provide incentives. A reporting handbook that provided more clarity on specifics might be a useful addition for some data collections, but this must not detract from the fact that authorities should receive accurately reported and verified data. Entities must establish better data reporting practices, address weaknesses in their governance frameworks, and improve their reporting capabilities. The ESRB believe that the following points would help incentivise reporting entities to meet their responsibilities:[163]

(a) **Extending reconciliation requirements and checks.** For derivatives and securities financing transactions, EMIR and the SFTR require reconciliation checks between the two counterparties of transactions. These should become the norm for all types of transactions. Where possible, checks should be undertaken to ensure that data are reconciled within a report and against aggregates reported under any other reporting obligations to help identify obvious mistakes before submitting the data to authorities.

(b) **Appointing a reporting officer.** Requiring reporting entities to appoint an officer responsible for regulatory reporting would increase accountability. The Commission

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159 See Basel Committee on Banking Supervision (2013).

160 See European Central Bank (2018) and European Central Bank (2024b).

161 The LEI is a key global identifier for legal entities with well-established governance and processes. It is a key data element in all analytical processes carried out by EU financial market authorities and used to cross-reference different datasets. Departures from further adoption of the LEI would put the ability to detect risks in financial markets at severe risk. They would also go against the **Recommendation of the European Systemic Risk Board of 24 September 2020 on identifying legal entities (ESRB/2020/12)** (OJ C 403, 26.11.2020, p. 1).

162 See ISDA (2023).

163 These have been generalised from points the ESRB made in the context of EMIR reporting. See European Systemic Risk Board (2022c).

should consider whether this, or other governance arrangements for reporting entities, could be amended to ensure better-quality data are delivered to authorities.

(c) **Making reporting machine-readable/automated.** Existing technologies such as automated and standardised reporting in machine-readable formats, coupled with consistent and regular checks and testing, could help improve the quality of data. This has been reflected in EMIR, MiFIR[164] and SFTR[165] reporting. Structuring the reporting system in this way for other data collections too would reduce the potential for human error at the reporting entity. The ESRB suggests that the European Commission consider whether there are legal obstacles to introducing machine-readable and/or automated reporting and refers to the Commission's strategy on supervisory data in EU financial services,[166] which also investigates this possibility.

Access

Timely data are necessary to monitor the increasingly complex and cross-border activities by NBFI entities.[167] The financial system is interconnected, evolving and complex, with aspirations towards even greater integration as envisioned by the capital markets union (CMU). This facilitates risk-sharing across various sectors, enhancing the resilience and efficiency of financial markets. However, it also poses a risk of contagion; shocks in one sector can quickly propagate and take on cross-sectoral dimensions. Interconnectedness creates the potential for cross-border feedback loops to emerge. To effectively monitor these risks and develop an appropriate policy response, it is therefore crucial that authorities have access to granular data to link data across markets, sectors and counterparties. Monitoring and assessing systemic risks before they materialise (in "normal times") requires continuous access to information that encompasses the various components of the financial system and their interdependencies, based on a broad set of relevant macroeconomic and micro-financial data and indicators.

The ability to access and share data in a timely manner between authorities is limited by the current legal framework. These limitations apply to different degrees to national authorities, ESAs and other EU authorities, such as the ECB and the ESRB. The ESRB has statutory access to specific data collections, such as data reported under the AIFMD, EMIR and the SFTR, on a regular ongoing basis (i.e. as soon as it is reported). However, in many cases it has access to data only on request, on an ad hoc basis, and with a delay. With the ESAs in particular, the ESRB can obtain the information necessary to achieve its objectives only on request, following a detailed institutional procedure.[168] This applies to granular data collected by the ESAs within structured regular supervisory reporting frameworks such as the COREP/FINREP data reported under the

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[164] **Regulation (EU) No 600/2014 of the European Parliament and of the Council of 15 May 2014 on markets in financial instruments and amending Regulation (EU) No 648/2012** (OJ L 173, 12.6.2014, p. 84).

[165] **Regulation (EU) 2015/2365**.

[166] See European Commission (2021).

[167] See European Central Bank (2024d).

[168] See Article15(3) and 15(5)-(7) of Regulation (EU) No 1092/2010.

[168] This applies to the ESAs, the European System of Central Banks (ESCB), the Commission, the national supervisory authorities and national statistics authorities.

Capital Requirements Directive (CRD)/Capital Requirements Regulation (CRR),[169] data reported under Solvency II, data reported under the MMF Regulation, and data reported under MiFID II and MiFIR. While cooperation between the ESAs and the ESRB has been excellent – and all ESRB requests for access to data have been always met – due to the lengthy consultation and approval process, the data becomes available to the ESRB only with a considerable delay.[170]

Granting the ESRB ex ante access to granular data collected by the ESAs as structured regular supervisory reporting should be a priority for the Commission. Ex post access to a large share of data hampers the ESRB's capability to continuously monitor and mitigate risks to financial stability, as required by its mandate.[171] The ESRB should by default have access to detailed and granular data collected by the ESAs within the structured regular supervisory reporting, i.e. ex ante, in a continuous, timely and regular manner. Exchange of data should be aligned with the mandate of the ESRB and cover the data necessary to fulfil its tasks. This would improve the consistency and effectiveness of macroprudential oversight across sectors and also improve statistical and analytical cooperation to the mutual benefit of both sides. The ESRB brought this to the attention of the co-legislators in its letter of August 2024.[172] This legislation would also allow EU and national institutions to access information within the framework of the ESRB. Although the letter from the ESRB, and this response, focus on data sharing between the ESAs and the ESRB, the arguments also apply to arrangements between authorities within Member States.

The Commission should also continue longer-term work to reduce legal and process requirements that limit the timely sharing of data. The recent proposal by the Commission on amending reporting requirements in the fields of financial services and investment support represents a step forward.[173] Similarly, improved data sharing arrangements in the recent updates to the AIFMD and the UCITS Directive are also a welcome development. However, complex process requirements remain, which affect both cross-border sharing for NCAs and sharing arrangements for the ESAs. These play an important role in ensuring that any data requested is necessary for authorities to perform their duties while preserving the confidentiality of the information. However, their lengthy nature can reduce the timeliness of the data received, limiting its usefulness. Where possible and appropriate, the Commission should continue to work to streamline the processes involved, reduce any unnecessary process duplication and ensure all

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169 **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** (OJ L 176, 27.6.2013, p. 338); **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** (OJ L 176, 27.6.2013, p. 1).

170 The ESRB needs not only to explain systemic relevance and necessity of obtaining data on the respective individual financial institution but also to consult the relevant ESA on each request for information of a supervisory nature which is not in summary or aggregate form to ensure that the request is justified and proportionate. As mentioned above, this process needs to be followed and governed in institutional terms at the ESRB and at the relevant ESAs. There were no objections by the ESAs to provide the data to the ESRB upon such requests. It is worth noting that – as demonstrated by the 2023 banking turmoil in the United States – a distress can be caused by a single institution, which illustrates the importance of having access to data on individual financial institutions. Moreover, the interconnectedness of financial institutions and markets implies that the monitoring and assessment of potential systemic risks must be based on a broad set of relevant macroeconomic and micro-financial data and indicators, including balance sheet data for individual institutions.

171 See Article 3(1) of Regulation (EU) No 1092/2010.

172 See European Systemic Risk Board (2024d).

173 See **Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EU) No 1092/2010, (EU) No 1093/2010, (EU) No 1094/2010, (EU) No 1095/2010 and (EU) 2021/523 as regards certain reporting requirements in the fields of financial services and investment support** (COM/2023/593 final).

authorities have legal access to the data they need to fulfil their roles within the EU regulatory framework.

Sharing data will support a shift towards more evidence-based policy and decision-making. As more granular data becomes available through improved access and data analytics, it will become increasingly possible to understand developments in the financial sector beyond currently accepted knowledge or views. This approach will challenge existing assumptions where needed and support the development of evidence-based policies.

Resources

It is crucial that any investment in data quality is matched by parallel investment in data analytics. High-quality data are necessary, but not in itself sufficient to identify risks or develop policy responses. To effectively monitor the financial system, high-quality data must be matched by high-quality analysis. The latter is resource-intensive and requires appropriate skills and tools.

Appropriate resourcing for the ESAs is essential to ensure available data can be exploited to maximum effect. Resourcing of NCAs falls to the respective Member States. However, the ESAs are also responsible for an increasing share of the data analysis, especially given the cross-border nature of NBFI activity (see Chapter 5). As non-bank financial intermediation continues to grow and the CMU develops, the complexity of the financial system Is likely to increase. This will likely require a correspondingly larger role for the ESAs in data analysis that needs to be matched by a commensurate increase in the budget of the ESAs. These additional resources can be leveraged by sharing infrastructure, skills and knowledge between the ESAs and the NCAs. This would result in efficiency gains, allowing information to be shared more rapidly and effectively, especially in times of crisis.

Chapter 2 – Cooperation

This chapter focuses on aspects of the framework that deal with how EU and national authorities work together to achieve the common goal of financial stability. As outlined in the introduction. a system-wide approach to macroprudential regulation requires entities undertaking the same economic activity to be regulated consistently, and commensurate with their actual or potential contribution to systemic risk. This ensures the costs of regulation are also apportioned commensurately, which reduces the incentives for activities and the associated risks to migrate to less regulated entities and more opaque parts of the system. Because the system contains many different entities falling under entity-specific (and in some cases also country-specific) regulations and that are typically supervised by different supervisory authorities, consistency can only be achieved through cooperation between authorities.

Policy cooperation models in the EU

In the EU, banking has to date largely remained a national, or even local and proximity-based, activity. For example, in May 2024 domestic loans accounted for about 75% of the outstanding loans of both EU and euro area banks.[174] Euro area supervisors have expressed concern that despite the establishment of the Single Supervisory Mechanism (SSM) and the Single Resolution Mechanism (SRM), the euro area banking sector remains fragmented along national lines.[175] Lenders and borrowers are typically situated in the same jurisdiction and are subject to the same legislation and the same court system. For example, at the end of 2023 direct intra-euro area cross-border lending amounted to about 14% of euro area bank lending to non-banks.[176] Lenders are also typically protected by the same domestic fiscal resources that guarantee borrowers. Despite banking union and European banking supervision, 33 national deposit guarantee schemes exist in the EU.[177]

The governance of macroprudential policy for banking mirrors the national focus of key banking activities, which is primarily a national competence. Specifically, macroprudential instruments such as additional capital buffers, liquidity buffers or other macroprudential regulatory requirements[178] are in the first instance set by national macroprudential authorities, although for those countries that participate in the banking union the ECB can apply higher and more stringent macroprudential requirements in the case of instruments that are harmonised in EU law.[179] This alignment of macroprudential powers with the geographical focus of banking activity has meant that most of the institutional cooperation required to operationalise it (for example between supervisors and central banks) can also be handled at national level.

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174 Source: ECB data on MFI balance sheet items.

175 See Enria (2023).

176 See Box 5 in European Central Bank (2024c).

177 See **deposit guarantee schemes data** on the EBA website. Some members (e.g. Germany, Italy, Austria and Poland) have multiple schemes.

178 For an overview of macroprudential instruments, see European Systemic Risk Board (2022b).

179 See Article 5(2) of **Council Regulation (EU) No 1024/2013 of 15 October 2013 conferring specific tasks on the European Central Bank concerning policies relating to the prudential supervision of credit institutions** (OJ L 287, 29.10.2013, p. 63).

Although macroprudential policy for banking rests in the first instance with national authorities, there is an EU dimension in the form of cross-border cooperation and alignment. First, to preserve the single rulebook, there are EU-wide limits and procedures to which national authorities are bound when taking macroprudential measures. These are set by the CRR and CRD and involve the intervention of the ESRB, the EBA and ultimately the European Commission.[180] Since the CRR and CRD IV entered into force, the ESRB has issued 31 opinions on national macroprudential measures and 20 recommendations on reciprocation. Second, to enhance policy effectiveness and reduce the incentives for risk to migrate due to regulatory arbitrage, there are reciprocation arrangements between jurisdictions for national macroprudential measures. These can take the form of mandatory reciprocation in the case of the countercyclical capital buffer,[181] or national authorities can ask other national authorities to reciprocate (e.g. for systemic risk buffers, and stricter national measures pursuant to Article 458 of the CRR). The ESRB has put in place a reciprocity framework for the latter case which lays the basis for a coordinated approach to voluntary reciprocation of macroprudential measures in the form of a recommendation. Third, in the areas covered by the CRD and the CRR, the ECB has been assigned the power to top-up national measures for countries in the banking union.[182] Finally, the European Commission has the power to issue macroprudential measures for the entire EU under specific conditions (Article 459 CRR). This power has to date not been exercised.

In contrast to banking, cross-border activities are the ordinary course of business for some types of NBFI entities, notably investment funds. This feature not only relates to large institutions (e.g. global insurance groups, asset managers, etc.), but even individual investment funds. For example, an investment fund may be domiciled in one EU country, the manager of the fund may be domiciled in a second EU country, the fund may be marketed to investors across the EU, the fund may invest in assets globally and day-to-day management of the fund's assets may be delegated to an asset manager in yet another country (see Figure 2). For instance, in 2022 the share of investment funds held in another EU country was 28%.[183] On the asset side, funds can collectively hold a significant share of real assets and financial instruments in cross-border markets. For example, real estate AIFs domiciled in Germany, Luxembourg and France, have a large footprint in the EU property market.[184] Further integration in capital markets under the CMU is likely to further increase the degree of cross-border activity by NBFI entities.

[180] The ESRB has to issue an opinion if (i) stricter national measures are applied, such as risk weight floors for real estate exposures of banks using the internal ratings-based approach (Article 458 CRR), (ii) a change is made to risk weights for real estate exposures of banks using the standardised approach (Article 124 CRR), (iii) higher minimum LGD values are set for real estate exposures of banks using the internal ratings-based approach (Article 164 CRR), and (iv) if the O-SII buffer or the SyRB rate is set above 3% or the combination of the two exceeds 5% (Articles 131 and 133 CRD). In some of these cases, only an ESRB opinion or recommendation is needed, without an authorisation act from the Commission.

[181] In the case of the countercyclical capital buffer, reciprocity is automatic and mandatory for banks up to 2.5% (Article 140 CRD).

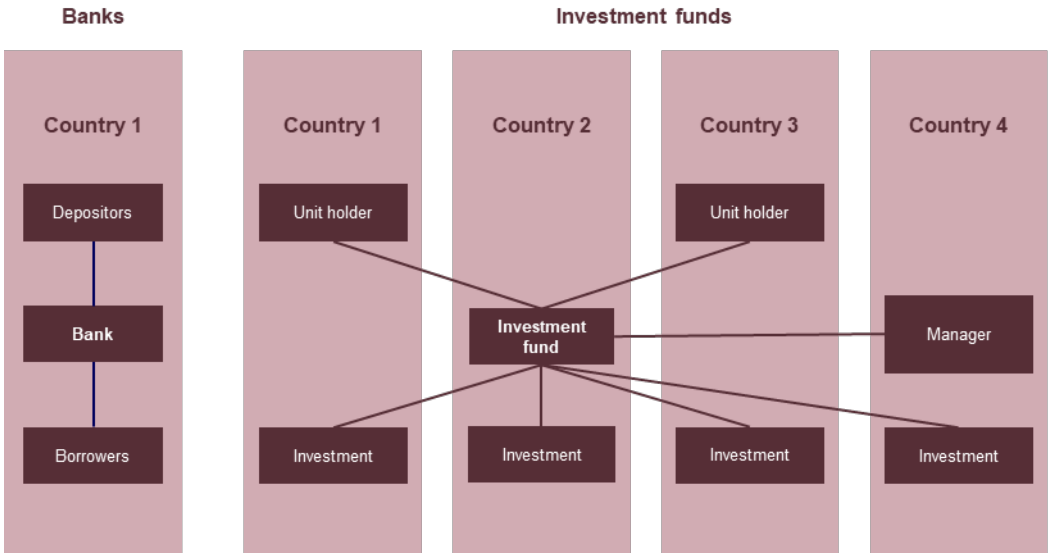
[182] See Article 5 in Chapter II of Council Regulation (EU) No 1024/2013.

[183] See European Fund and Asset Management Association (2023a).

[184] See European Securities and Markets Authority (2024a).

Figure 2

Stylised bank and investment fund financial chains by predominant location



Source: ESRB.

In contrast to banking, few macroprudential tools exist for NBFI entities, but there are several supervisory tools that can serve macroprudential objectives. Macroprudential policy was established in the wake of the global financial crisis, which had led to several banks becoming impaired and caused widespread strain on the financial system and the real economy. Consequently, most of the tools developed apply only to the banking sector. In contrast, outside banking few macroprudential tools exist, but there are several supervisory tools that can serve macroprudential objectives. These include, for example, powers for national market supervisors to request suspension of redemptions in investment funds, powers for national insurance supervisors to request temporary suspension of redemption rights of policyholders on life insurance,[185] and the power to set other restrictions on the management of AIFs under Article 25 AIFMD.

The degree of cross-border activities, in particular for investment funds, can result in the involvement of several authorities across the EU, which increases the importance of cooperation. A variety of different governance models and guiding principles for domestic cooperation are outlined in the ESRB's recommendation on the macroprudential mandate of national authorities.[186] In practice, macroprudential oversight for NBFI entities at the national level is typically shared between the national macroprudential authority and the national competent

[185] For suspension of redemptions, see Article 46 AIFMD and Article 45 of the UCITS Directive. For temporary suspension of redemption rights of policyholders on life insurance, see Article 144b of the Solvency II Directive. A comprehensive list of such tools is provided in the annex to European Commission (2024c).

[186] **Recommendation of the European Systemic Risk Board of 22 December 2011 on the macro-prudential mandate of national authorities (ESRB/2011/3)** (OJ C 41, 14.2.2012, p. 1).

supervisory authorities.[187] In general, the national competent macroprudential authority is either the central bank or a financial stability council. Responsibility for supervision of NBFI entities might be divided between an insurance supervisor, a pension supervisor and a market supervisor.[188],[189] At the EU level, there are also multiple authorities with a degree of macroprudential oversight covering some subset of the NBFI sector. These include the three ESAs – the EBA, EIOPA and ESMA – as well as the ESRB. At the global level, several fora such as the FSB, the BCBS, IOSCO and the International Association of Insurance Supervisors (IAIS) are involved in setting standards and guidelines.

There are several forms of cross-EU cooperation, which can be broadly grouped into three models, from most decentralised to most consolidated: (i) collaborative, (ii) coordinated, and (iii) centralised. This is reflected in the variety of arrangements for the entity-based regulation for NBFI entities, notably the AIFMD and the UCITS Directive for different types of investment funds, Solvency II for insurers and EMIR for central counterparties.

(i) **A collaborative model is where decisions are made by a group of separate authorities working together.** Such arrangements can be informal or formal, and between two authorities or larger groups. Examples of an informal collaborative model include the regular meetings of the national supervisory authorities under the framework of the EBA, EIOPA and ESMA decision-making bodies to exchange information on conditions in financial markets following the shocks from the onset of the pandemic and Russia's full-scale invasion of Ukraine. Larger, more formal arrangements include supervisory colleges comprised of the supervisors of home and host countries for specific banks or NBFI entities. The supervisory colleges for EU CCPs consist of many different authorities, reflecting the substantial cross-border activity of CCPs and their mixed membership bases. CCP colleges work together to form a single opinion on important questions, e.g. the extension of services or material changes in the risk model.

(ii) **A coordinated model is where decisions are made by national authorities based on their own mandate, but under the guidance of a central body to align decisions.** Under a coordinated model, actions must eventually be implemented by relevant national authorities in parallel. Most forms of cross-border cooperation for the banking sector described above fall under this model. For NBFI entities, Article 25 AIFMD provides an example; this allows NCAs to specify measures for AIFs managed by fund managers domiciled in their jurisdiction. ESMA has a facilitation and coordination role to try to ensure a consistent approach by NCAs. Similarly, in the case of MiFIR's product intervention powers, ESMA is required to consider whether a measure taken by a national authority should be

[187] Note that in some cases the designated authority for macroprudential instruments under CRD IV/CRR is not the same as the macroprudential authority. In several countries, for example, the designated authority is the central bank, while the macroprudential authority is a financial stability council. In a few cases a financial supervisory authority is also the macroprudential authority and/or is the designated authority for the use of macroprudential instruments specified in CRD IV/CRR.

[188] In some countries (for example Ireland and Sweden), the national competent macroprudential authority is also the supervisor for most NBFIs.

[189] Distinction follows the different business models and risk profiles of the types of entities supervised (e.g. a non-life insurance corporation as opposed to an investment fund). This distinction is, however, less clear in conglomerates.

extended to other EU authorities and issue an opinion on the matter.[190] The creation of a Joint Monitoring Mechanism (JMM), as decided by the co-legislators as part of the revision to EMIR in February 2024, is another example of a coordinated model. The JMM is tasked with monitoring the reduction of exposures to substantially systemically important clearing services at non-EU CCPs and significant developments in clearing practices at EU CCPs. ESMA will chair the JMM, which will also include representatives from the ESRB, central banks, and relevant Union bodies involved in the supervision of Union CCPs. The JMM will contribute to supervisory convergence in the area of CCPs and publish an annual report that may include recommendations for potential Union-level actions to address horizontal risks identified.

(iii) **A centralised model is where powers are assigned to a single European authority.**[191] This can take the form of centralised supervision of a subset of significant firms. For example, ESMA directly supervises all EU-registered credit rating agencies, trade repositories and securitisation repositories, along with certain data reporting service providers and benchmark administrators. Another example is ECB Banking Supervision, which supervises the significant banks of participating countries with Joint Supervisory Teams formed of staff from the ECB and the relevant national supervisors.[192] A centralised model can also take the form of centralisation of single powers. For example, under Article 40 MiFIR, under certain conditions ESMA has temporary EU-wide powers of intervention. Specifically, it can temporarily prohibit or restrict the marketing, distribution or sale of certain financial instruments or financial instruments with certain specified features, or a type of financial activity or practice.[193]

An illustrative methodology for selecting policy cooperation models

There is a need to review existing arrangements for policy cooperation across the EU for NBFI entities to ensure they remain fit for purpose and promote the CMU. As noted above, in contrast with banking, cross-border activities are the ordinary course of business for some types of NBFI entities, notably investment funds. Reflecting this, the regulatory framework includes several models to ensure cooperation across authorities in the EU. The CMU implies that the importance of NBFI entities and market-based finance as a funding source to households, firms and other economic actors will increase. Greater centralisation of supervision may also act as a catalyst to the CMU.[194] This means existing arrangements for cooperation models should be reviewed and if necessary enhanced to ensure they continue to meet new demands.

190 See **Regulation (EU) No 600/2014**.

191 See also Ross (2024).

192 Note that while the ECB is responsible for supervision of the most systemically important investment firms, it requires them to obtain a banking licence, and they therefore cease to be NBFIs.

193 See **Regulation (EU) No 600/2014**.

194 See Lagarde (2023) and Draghi (2024).

Selection of the appropriate cooperation model requires a methodology reflecting at least two dimensions: policy reach and geographical impact. Policy reach means that authorities must determine whether the policy intervention should be at the level of the individual firm (firm-specific), the sector (entity-specific) or the activity (system-wide). Geographical impact reflects whether the activities being regulated are assessed to have potential financial stability impact in their home jurisdiction only (domestic), in other jurisdictions instead of, or as well as, the home jurisdiction (cross-border), or across the EU (EU-wide). For the purposes of the illustrative, preliminary methodology described here, the assumption has been made that the geographical reach of the policy response will reflect the geographical impact of the activity. Together, these two dimensions give some indication of how systemic the activities of the entities are likely to be, as more systemic entities will engage in activities with a wider geographic impact with system-wide implications. Table 2 maps the three coordination models set out above along the dimensions of policy reach and geographical impact. For example, a policy intervention on a small local firm, such as sanctions on a credit union, would fall into the top left corner of Table 2. This would typically not require any formalised cooperation with other authorities in the EU,[195] and therefore not require a cooperation model. In contrast, restricting certain activities across the EU under Article 40 MiFIR has implications across the entire EU financial system. This would therefore fall into the bottom-right corner of Table 2 and is an example of a centralised model. While the table gives a suggested cooperation model for each combination, the ultimate decision will depend on other dimensions too. These could include, for example, the severity of the impact at each geographic level, the degree of flexibility required and the cost effectiveness of the solution. Where likely severity is low, less centralised models may be appropriate.

Table 2

Selecting a cooperation model under the illustrative methodology

		Policy reach		
		Firm-specific	Entity-specific	System-wide
Geographic impact of activities	Domestic	No formalised cross-EU cooperation	No formalised cross-EU cooperation	No formalised cross-EU cooperation
	Cross-border	Collaborative model	Coordinated model	Coordinated model
	EU-wide	Coordinated model/centralised model	Centralised model	Centralised model

Source: ESRB.
Note: This table focuses on cross-EU cooperation models and therefore abstracts from any additional coordination that would need to take place at national level.

[195] In some cases informal cooperation between authorities may be desirable to avoid potential contagion associated with reputational issues, for example.

In general, this illustrative methodology suggests that the wider the geographical impact and policy reach, the greater the degree of centralisation and vice-versa. This is because the greater the EU-wide impact of activities, the greater the need for harmonisation of policies to protect against financial stability risks, and the higher the costs related to duplication of financial stability policy work across different authorities and/or inaction are likely to be. National expertise will always be useful, but the greater the EU-wide impact of activities, the less important national specificities are likely to be in optimal policy design, and the less important specific local information may become. This is reflected in the rows in Table 2 labelled "Domestic" and "EU-wide". When the geographical impact is mainly domestic, the illustrative methodology proposes that – regardless of the policy reach – there is no need for formalised cross-EU cooperation, provided the implications of policy actions are largely limited to their home jurisdiction (the row labelled "Domestic"). For example, a vulnerability in the credit union sector might have system-wide implications, but these implications are limited to the home jurisdiction. In this case there is no need for cooperation across the EU (indicated in the top-right corner of Table 2), although there may be a need for cooperation between the relevant domestic authorities. When the geographical impact is EU-wide, the illustrative methodology suggests that – regardless of policy reach – greater centralisation is needed. For example, where vulnerabilities related to a single firm, such as a large asset manager, have implications across the EU, a centralised model may be most appropriate, although depending on the situation a coordinated model may suffice (indicated in the bottom-left corner of Table 2).

In situations where the geographical impact has cross-border implications but is not EU-wide, the collaborative or coordinated models will likely be most appropriate. In this case, the policy reach (i.e. whether policies are firm-specific, entity-specific or system-wide) can assist in making the choice between the collaborative or coordinated models (see Table 2). When policies are firm-specific, a collaborative model has been used with some success in supervision, through supervisory colleges.[196] Principles have been established to underpin operation in that context. During times of crises, however, the model has not always performed well.[197] Reflecting this, a mediation model assigned to ESAs could be considered in the event of disagreement, especially within larger colleges. When policies are entity-specific or system-wide a loose form of cooperation may no longer suffice, and a coordinated model may be more appropriate. For example, ESMA played an important role in ensuring alignment between the policies proposed by Ireland and Luxembourg for sterling LDI funds (see Box 2). In a coordination model, some misalignment can be resolved by providing ESAs with powers to recommend specific actions to NCAs. An example of such powers is Article 25(7) AIFMD, which provides powers to ESMA. The ESAs could also be empowered to coordinate (or even require) reciprocation of measures between authorities they deem appropriate.

This preliminary methodology can be adapted to a wide range of situations and adjusted to encompass blended models. The methodology for selecting between cooperation models is set out in Table 2. While it cannot cover all situations, if offers a guide which can be adapted to specific situations. For instance, where the line between different categories – for example between cross-border and EU-wide – is blurred, there is a need to exercise judgement as to which cooperation

[196] See, for example, Basel Committee on Banking Supervision (2014).

[197] See, for example, International Organization of Securities Commissions (2022).

model is most suitable. In some cases, a blend may be preferrable to a single cooperation model. For example, in situations where a coordinated or collaborative model is called for but inaction bias is a concern, “top-up powers” that would allow the ESAs to impose stricter measures under certain circumstances might be appropriate. Such powers provide a centralised backstop when other cooperative mechanisms are seen to fail. Some situations might also require several policy responses of differing geographical and/or policy reach. In that case, parallel models may apply, with different powers assigned at different levels; when there are EU-wide and system-wide implications, there will also likely be a need for coordination via the Joint Committee of the ESAs.

Implementing a methodology

The ESRB has identified a need for the Commission to translate the system-wide approach to regulation into a methodology on cooperative policy arrangements. Given that appropriate cooperative arrangements are necessary to prevent and mitigate systemic risks, and would also support and strengthen the CMU, it is vital that they be fit for purpose. A clear methodology, such as the preliminary one outlined above, will ensure that cooperative arrangements are tailored to the policies they support, rather than ad hoc. A methodology for selecting cooperative arrangements could be implemented in one of several ways; translated into a binding macroprudential framework, for example, utilised as a general rule in preparing legislative proposals, or implemented as a non-binding policy guideline.

Having developed a methodology, the Commission should consider applying it as necessary when developing policy responses.

- **Review existing arrangements for policy cooperation across the EU.** It is important that the European Commission reviews existing arrangements for policy cooperation on NBFI entities to ensure they remain fit for purpose and promote the CMU. To do this in a consistent manner, the Commission should apply the methodology it has developed to guide its approach. Consistent with the illustrative methodology presented here, the ESRB believes that in general, the wider the geographical impact and reach of policies, and the more systemic the risks at European level, the stronger the case for more cooperation at European level and for giving enhanced powers (which may include direct supervisory powers) to the ESAs.

- **Assess and work on the conditions for enabling the ESAs to supervise the most systemic relevant cross-border actors in financial markets.** It is important that the European Commission follows up on the conclusions of the European Council of 17 and 18 April, which invite it to assess and work on the conditions for enabling the ESAs to effectively supervise the most systemic relevant cross-border capital and financial market actors. The ESRB believes the methodology it has sketched out might be helpful for the Commission, and further analysis should be done to outline the systemic importance of different categories of NBFI entities.

Box 2

Cooperation on measures taken under Article 25 AIFMD

Experience gained with the use of Article 25 AIFMD suggests a need for a reciprocation framework to facilitate consistency and coordination within the EU. The article enables competent authorities to impose leverage limits or other restrictions on the management of AIFs where necessary to ensure the stability and integrity of the financial system. Although the tool has been part of the AIFMD since it came into force in 2011, it was not implemented by any authority before ESMA issued its Guidelines on Article 25 in December 2020.[198] Since then, Article 25 has been activated twice to implement macroprudential measures. The first time was in November 2022, when the Central Bank of Ireland (CBI) announced leverage limits on Irish real estate funds.[199] The second time was in April 2024, when the CBI and the Commission de Surveillance du Secteur Financier (CSSF) announced aligned macroprudential measures for sterling-denominated LDI funds authorised in Ireland and Luxembourg.[200] These recent experiences with implementing leverage limits under Article 25 AIFMD have highlighted the importance of EU engagement and coordination to ensure the effectiveness of such measures. Given the cross-border nature of the investment fund sector, a reciprocation framework is needed to facilitate international consistency and ensure the effectiveness of macroprudential measures. It is important to ensure that the reciprocation framework is set up in a streamlined and effective manner and takes the specificities of the investment fund sector into account.

Policy cooperation under Article 25 takes the form of a coordinated model in which ESMA plays the role of coordinator, with a mandate to try to ensure a consistent approach by NCAs. To achieve this goal, ESMA has been granted certain powers under the AIFMD. Specifically, NCAs are required to notify ESMA of any measures they intend to impose under Article 25. ESMA is then required to issue advice to the NCA on those measures.[201] The content of this advice is not legally prescribed, but could include, for example, ESMA's views on their design, adequacy, and appropriateness. In addition, if ESMA takes the view that Members States should impose a measure under Article 25 (whether related to measures taken in other Member States or not), ESMA also has the power to issue advice to that effect. ESMA's coordination role therefore helps ensure harmonisation across the application of Article 25 by different NCAs.

The AIFMD does not prescribe a framework for reciprocation of national measures, which can lead to regulatory divergence or leakage in some instances. While ESMA can issue advice, it cannot prescribe the implementation of measures under Article 25 by Member States.[202] Further, there is no other legal or practical framework in place that ensures measures being implemented by one Member State, are also implemented in others. Without such a framework, any authority implementing Article 25 relies on the voluntary cooperation of other NCAs to implement measures that need to extend beyond a single jurisdiction. This occurred in the case of

198 ESMA issued these guidelines following a recommendation by the ESRB. See Recommendation E in **Recommendation ESRB/2017/6**.

199 See Central Bank of Ireland (2022).

200 See **CSSF** and **CBI** communications.

201 See European Securities and Markets Authority (2024b) and European Securities and Markets Authority (2024c).

202 If Member States do not follow the advice of ESMA, they are required to inform ESMA of their reasons. ESMA can decide whether to publish these or not.

the CBI and the CSSF, which introduced aligned measures for sterling-denominated LDI funds in parallel. Notwithstanding the progress made in implementing Article 25 on a cross-border basis in the EU for the first time, the measures in Ireland and Luxembourg would still be reliant on voluntary cooperation by other Member States were sterling-denominated LDI funds in Ireland and Luxembourg to seek to relocate to other EU jurisdictions not covered by these aligned measures. This experience suggests that, in the short term, the lack of a reciprocation framework in the EU has the potential to create opportunities for leakage of policy measures, given the cross-border nature of the investment fund sector in the EU.

The coordinated model of policy cooperation is appropriate for Article 25, but should be augmented with a reciprocation framework. Investment funds operate on a cross-border basis. However, financial stability risks can be specific to an individual jurisdiction, or more pronounced in one than another. The current approach, with ESMA coordinating measures, appears to appropriately reflect the geographical impact of the activities that investment funds are undertaking. Nevertheless, the exact powers and procedures available under the AIFMD to support this cooperation appear to be insufficient. In particular, the absence of a reciprocation framework creates the potential for leakage. For example, the measures imposed by the CBI in 2022 on Irish real estate funds do not apply to real estate funds where the fund and the fund manager are domiciled outside Ireland, even if those funds are primarily investing in Irish real estate. While the ultimate decision on domicile depends on many factors, this limitation on the coverage of the measures creates an incentive for such funds to relocate to other Member States. Relocation could result in regulatory leakage over time. Reflecting this, the ESRB believes some form of reciprocation framework – set up in a streamlined and effective manner – will be essential to continued successful implementation of Article 25, particularly as the sector continues to grow in size and complexity, and as cross-border activity increases.

A reciprocation framework similar to that used for some measures under the CRD/CRR for the banking sector would likely reduce regulatory divergence and leakage. In banking, the alignment of measures across jurisdictions is managed through a coordinated reciprocation framework. When a country introduces a national macroprudential policy measure under CRD/CRR, it can submit a formal request for reciprocation to the ESRB, which assesses it and issues a recommendation. For some instruments – such as the countercyclical capital buffer – reciprocity is mandatory. For those measures where EU legislation does not foresee mandatory reciprocation, the ESRB's voluntary reciprocation framework applies.[203]

A reciprocation framework for Article 25 would need to be tailored to the funds sector and the financial stability issues they pose. Funds operate more on a cross-border basis than banks and can more easily relocate to a different jurisdiction. As a result, investors in a fund, the fund itself, the manager and the investments can all be located in different places, and these can change quickly. The framework will therefore need to be sufficiently flexible to take into account the number of different jurisdictions potentially involved, and ESMA will need to have adequate powers to

[203] See **Recommendation of the European Systemic Risk Board of 15 December 2015 on the assessment of cross-border effects of and voluntary reciprocity for macroprudential policy measures (ESRB/2015/2)** (OJ C 97, 12.3.2016, p. 9), Article 5 of **Decision of the European Systemic Risk Board of 16 December 2015 on a coordination framework for the notification of national macroprudential policy measures by relevant authorities, the issuing of opinions and recommendations by the ESRB, and repealing Decision ESRB 2014/2 (ESRB/2015/4)** (OJ C 97, 12.3.2016, p. 28) and Chapter 11 entitled "Cross-border effects of macroprudential policy and reciprocity" of **the ESRB Handbook on operationalising macroprudential policy in the banking sector**.

coordinate when financial stability risks arise in one or more of them. It will also be essential for the relevant authorities to have access to the data they need to determine the impact a fund can have through its exposure relative to the size of the underlying market and thus whether reciprocation of any new measures may be required. In some cases, if financial stability risks reach EU-wide levels, it may be desirable to consider a larger role for ESMA to prevent inaction and ensure harmonisation. One option that could be considered, for example, is giving ESMA the power to prescribe action where required to preserve EU-wide financial stability, and where agreement between the Member States on the appropriate measures to be implemented cannot be reached.

The Commission should therefore consider how Article 25 reciprocation could best be implemented. This should take into consideration the specific complexities of the fund industry compared with the banking sector, but also draw lessons from the latter where relevant. This could be initiated by consulting on potential improvements to the coordination model for Article 25 (with a specific focus on reciprocity). Data will be a key enabler to determine exposures of institutions domiciled outside the jurisdiction implementing the measure to domestic assets. This reciprocation framework could also serve as a model for future macroprudential tools related to investment funds outside of Article 25, such as the proposed tool for implementing measures based on investment fund liquidity (see for example Policy Digest 2).

Section 4 – Looking ahead, applying a system-wide approach to three activities

This section applies the conceptual approach set out in Section 1 to three activities that the ESRB considers important for financial stability – asset management, lending and clearing. The ESRB selected these activities because of their actual or potential cross-border dimension and therefore believes their resilience will be pivotal to a successful CMU. Moreover, global developments are rapidly affecting how these activities are conducted.

Chapter 3 – A system-wide approach to asset management

Summary

Asset management is central to the functioning of the CMU, as it helps to mobilise and allocate capital and supports cross-border investment. Asset management involves the professional management of investments on behalf of third parties, based on agreed terms that reflect their objectives and risk tolerance. Asset management encompasses collective and individual approaches, including investment funds, pension funds, unit-linked insurance, family offices, discretionary mandates and sovereign wealth funds. Asset management is vital for mobilising capital, supporting cross-border investment and providing alternative funding sources, thereby enhancing financial stability and resilience. It plays a crucial role in funding long-term investments and supporting EU goals such as green and digital transitions, while also improving market efficiency and integration.

Although several entities perform asset management activities in various forms, policy discussions have to date focused on investment funds. The focus on investment funds is well-founded, because in collective investment schemes, structural vulnerabilities such as liquidity mismatch and leverage can create the risk of investor runs and asset fire sales that can create or exacerbate systemic risk. However, recent stress events involving a US family office (Archegos Capital Management) and UK pension funds pursuing liability-driven investment (LDI) strategies, have demonstrated that other asset management activities can also contribute to broader financial system stress. This shows that certain vulnerabilities and associated risks such as excessive leverage, liquidity mismatch, exposure concentrations and misaligned incentives[204] can all be present to some degree in several forms of asset management. In addition, asset management is often multi-layered and intertwined. Such complex intermediation chains might lead to regulatory and supervisory blind spots. A lack of data concerning several forms of asset management complicates risk assessment and oversight. Nevertheless, asset management – with regard to investment funds and beyond – needs more attention from a macroprudential perspective.

[204] See **Recommendation ESRB/2013/1**.

Liquidity mismatch is particularly relevant in open-ended investment funds, but risks resulting from other vulnerabilities can materialise across several forms of asset management. Liquidity mismatch in open-ended investment funds occurs when the liquidity of underlying assets does not align with the redemption opportunities. The design of open-ended investment funds as collective investment schemes can incentivise investors to redeem ahead of others, thereby exacerbating redemption pressures and liquidity strains. In contrast, investors in individual asset management, such as discretionary mandates, bear the full liquidation costs, which mitigates such pressures. Liquidity mismatch in open-ended investment funds can be alleviated with liquidity management tools (LMT). Similarly, it is reduced in pension funds and unit-linked insurance through structural features or contractual costs and penalties. While pension funds and unit-linked insurance may allow strategy switches, which could mimic fund redemptions, such transfers are typically regulated with specific conditions to mitigate risks. The use of leverage can generate externalities across several forms of asset management, including heightened liquidity risk from margin and collateral calls. Likewise, various forms of asset management can have a large market footprint. If this leads to substantial concentration, it can impact market dynamics such as volatility, pricing and liquidity. Similarly, misaligned incentives in asset management can promote short-termism and excessive risk-taking, which may contribute to systemic imbalances.

Financial stability can be strengthened by complementing existing regulation with a greater emphasis on the asset management activity. As various entities typically perform any given activity in combination with other activities, addressing risks and vulnerabilities typically requires entity-based regulation (EBR) tailored to reflect the diversity in business models. The focus on entities has led to important regulatory improvements in the AIFMD and the UCITS Directive[205], which increases the resilience of investment funds. Nonetheless, asset management may also generate risks and vulnerabilities that are independent of the types of entities involved in it. The EU's macroprudential framework would therefore benefit from complementing EBR with activity-based regulation (ABR). To this end, the European Commission should consider expanding the regulatory perimeter and introducing reporting requirements for more opaque forms of asset management. Further, the Commission should consider establishing common minimum standards for disclosure, risk management and governance across various forms of asset management. It should also think about adapting AIFMD Article 25 to empower authorities to limit leverage and liquidity risk beyond AIFs. Given the global nature of the asset management activity, the European Commission should also promote further development of its macroprudential framework at the FSB. This includes the need to enhance transparency and address the risks associated with asset management beyond investment funds.

This chapter sets out the ESRB's perspective on a system-wide approach to asset management. It explores various forms of asset management and their associated vulnerabilities. This chapter does not concentrate on investment funds nor does it address the additional efforts required to strengthen their regulatory and supervisory framework. These aspects have already been the subject of other ongoing ESRB initiatives (see Policy Digest 1 and Policy Digest 2). Since the policy discussion has to date focused on investment funds, the chapter instead considers whether the structural vulnerabilities commonly present in investment funds apply to asset management more broadly. It also explores to what extent these vulnerabilities and related

[205] **Directive (EU) 2024/927**.

externalities can be addressed in a consistent manner, offering initial insights rather than an exhaustive policy analysis. The chapter is structured into three parts: the first part provides an overview of asset management activities, the second part discusses the associated vulnerabilities and the third part explores policy options to address them.

Overview of the asset management activity

Asset management refers to the professional management of investments on behalf of a third party. For the purposes of this document, the term applies to the economic activity of selecting, buying and selling assets by agents acting as fiduciaries on behalf of clients. The activity is based on contractually agreed terms that determine the investment mandate of the managers and align with the investment objectives, risk tolerance and other characteristics of the clients, who ultimately own the managed assets and bear the investment risk. Reflecting this, asset managers typically are not liable for investment losses and offer no guarantee to their clients as to how any investment made on behalf of the clients will perform. They generally have no authority over the strategic allocation of their clients' assets but do have full discretion over the tactical allocation and specific investment decisions within the contractual terms agreed upon with their clients.[206] In this context, asset management is an activity that extends beyond the management of collective investments referred to in the UCITS Directive, managing AIFs defined in AIFMD and portfolio management defined in MiFID.[207]

Asset management can be performed on a collective or individual basis. In collective asset management, the assets of multiple clients are pooled together, comingled and managed as a single portfolio. By pooling their assets, even clients with modest funds are able to invest and obtain exposure to a broader range of investments than would have been feasible on an individual basis. This allows them to diversify their portfolios and share the costs and benefits of the management process. In contrast, individual asset management involves the personalised management of assets for a single client, tailored to meet their specific needs or preferences. Examples of collective asset management include investment funds (UCITS and AIFs), private pension funds and unit-linked insurance. Individual asset management includes discretionary mandates, family offices, sovereign wealth funds and public pension funds (see Table 3). In practice, this general distinction between collective and individual asset management is more nuanced. For instance, AIFs can be used by single clients, e.g. in master-feeder structures, fund of funds structures or other structures where a single client acts as a nominee for multiple investors.[208] Another example refers to instances where discretionary mandates serve as "virtual

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206 This does not preclude the same entities from also offering investment advice alongside asset management, thereby influencing clients' decisions regarding strategic asset allocation as well. In addition, asset management activity encompasses a variety of investment strategies, including active and passive asset management. Passive asset management is based on investment products that aim to track the performance of a benchmark such as a stock index. Conversely, active asset management seeks to outperform the market. The level of discretion asset managers have in the tactical allocation of assets can vary depending on the specific investment strategy and is typically lower in passive management.

207 However, several publications refer to asset management only to describe a subset of entities performing the activity, e.g. the management of investment funds (see European Commission, 2024d) or the management of investment funds and discretionary mandates (see European Fund and Asset Management Association, 2023b).

208 See European Securities and Markets Authority (2013).

pooling" vehicles for multiple clients, managed together without forming a legal entity.[209] Similarly, multi-family offices can pool the assets of multiple families to achieve economies of scale in investments. This reflects the concept of collective investment to a certain extent.

Table 3

Forms of asset management

Form of asset management	Description
Investment funds	Investment funds gather money from a number of investors and invest that money collectively on behalf of those investors. Investment funds invest using a common investment strategy through a portfolio comprising a wide variety of assets. They can be categorised as open- or closed-ended, UCITS or AIFs. **Applicable EU law:** UCITS, AIFMD, MMFR, ELTIF, EuVECA, EuSEF.
Private pension funds	Private pension funds are schemes to provide supplementary income in retirement. They consist of voluntary or quasi-mandatory occupational (Pillar II) and voluntary personal (Pillar III) schemes. Occupational pensions are linked to an employment relationship, with contributions made by employers and/or employees. Contributions to personal pensions are made on an individual basis. Both forms may be tax incentivised. Private pension funds are categorised according to their nature into defined contribution (DC) schemes and defined benefit (DB) schemes. In DC schemes, benefits paid are dependent on the performance of the fund assets. In DB schemes, benefits promised to participants are determined by a formula agreed in advance. The risk of a DB scheme to provide an adequate income in retirement is borne by the employer or a unit acting on its behalf. **Applicable EU law:** IORP II applies only to certain occupational pension funds.
Unit-linked insurance	Unit-linked insurance offers a blend of a life insurance product and an investment product, where the maturity or surrender value is entirely or partially exposed to market fluctuations, both directly or indirectly. The investment risk is borne by the policyholder, not the insurer. **Applicable EU law:** Solvency II.
Discretionary mandates	In discretionary mandates (segregated mandates, separately managed accounts), clients delegate the management of their portfolio to an asset manager. Typically, asset managers reach investment decisions at their sole discretion, in accordance with a mandate given by the client. Asset managers typically offer: (i) standard strategies, where the clients choose from predefined investment strategies, and (ii) bespoke strategies, where the investment strategy is tailored to individual needs of the client. Assets managed via discretionary mandates are typically attributed to the clients, who record them on their own balance sheet. **Applicable EU law:** MiFiD II.
Family offices	Family offices are typically formed by high-net worth individuals to invest their private wealth. There can be single-family offices serving one family or multi-family offices serving multiple families. Family offices provide a wide range of services, including investment management, tax services, philanthropy and succession planning. Family offices fall outside the scope of the AIFMD, as recitals of the AIFMD specifically mention them as examples of vehicles that invest private wealth without raising external capital and therefore should not be considered as AIFs. Additionally, the services offered by family offices may not be classified as portfolio management and thus also fall outside the scope of MiFID II, e.g. in Germany.[210] **Applicable EU law:** No dedicated EU regulation.

209 See **Investment Management Association (2005)**.

210 According to **BaFin's guidance on licensing requirements for family offices,** single-family offices providing activities only to the closest family circle might not be subject to MiFID portfolio management rules. However, multi-family offices and single-family offices pursuing other activities such as third-party asset management are subject to these rules. A case-by-case assessment is always necessary as the term "family office" is not legally defined.

Form of asset management	Description
Sovereign wealth funds	Sovereign wealth funds are state-owned funds that are typically created from excess reserves generated by commodity exports or from budget surpluses. Their objectives include reducing a country's reliance on commodity revenues, stabilising the economy by acting as buffer mechanisms, contributing to economic development, and attracting foreign capital. Sovereign wealth funds are regulated by laws specific to each state and can adhere to international guidelines.[211] **Applicable EU law:** No dedicated EU regulation.
Public pension funds	Public pension funds (Pillar I) are statutory social insurance schemes to provide income in retirement. [212] Most public pensions systems in the EU are financed on a pay-as-you-go basis (PAYG), where the revenue from current contributions is used to pay the current pension benefits. PAYG systems can be complemented by funded schemes, where contributions are kept in a dedicated fund, invested and then used to pay pension benefits in the future. **Applicable EU law:** No dedicated EU regulation.

Source: ESRB.
*Note: ELTIF refers to **Regulation (EU) 2015/760 of the European Parliament and of the Council of 29 April 2015 on European long-term investment funds** (OJ L 123, 19.5.2015, p. 98). EuVECA refers to **Regulation (EU) No 345/2013 of the European Parliament and of the Council of 17 April 2013 on European venture capital funds** (OJ L 115, 25.4.2013, p. 1). EuSEF refers to **Regulation (EU) No 346/2013 of the European Parliament and of the Council of 17 April 2013 on European social entrepreneurship funds** (OJ L 115, 25.4.2013, p. 18).*

Asset management is central to the functioning of the CMU, as it helps mobilise and allocate capital and supports cross-border investment. Asset management facilitates the funding of the real economy, by channelling clients' capital to issuers. By opening up a wider range of financing sources, it makes the economy less vulnerable to banking contractions.[213] In addition to providing an alternative when banks are under pressure, asset management complements bank funding during times of normal market conditions. It thereby contributes to risk sharing, efficiency and the overall resilience of the financial system. In particular, asset management helps to raise capital for long-term investments in the real economy, aligning the needs of entrepreneurs for a stable source of funding with those of clients with long-term investment horizons. This process supports key EU objective such as the green and digital transitions. Furthermore, asset management facilitates broader participation in financial markets and cross-border investment, thus enhancing market efficiency, liquidity and integration.[214]

The regulatory and supervisory framework for asset management has evolved from being focused primarily on investor protection to encompassing financial stability more prominently. Asset management is inherently subject to a principal-agent problem, the severity of which varies depending on the specific form of activity. Reflecting this, the regulation of asset management has typically prioritised investor protection and business conduct as its primary objectives. It has also imposed higher standards on services used by retail clients, particularly collective investment vehicles, to ensure effective protection is in place for those clients who need it

211 See IWG (2008).

212 Since the EU has no authority to legislate on the design of pension systems, pensions fall under the national competence of member states. See **Charter of Fundamental Rights of the European Union** (Article 34) and **Treaty on the Functioning of the European Union** (Article 153).

213 See European Commission (2015), page 3.

214 See Letta (2024).

the most. This perspective on asset management regulation has been complemented by a financial stability perspective, based on experiences from the global financial crisis as well as recent stress episodes. The financial stability perspective is incorporated into the regulatory and supervisory frameworks for different forms of asset management to varying degrees. Compared to the banking sector, financial stability and systemic risk considerations in asset management policy are still less developed and need to be strengthened further.

Asset management is primarily guided by EBR, but ABR also plays a role. EU-wide EBR includes the UCITS Directive and AIFMD, which pertain to investment funds; Solvency II applies to unit-linked insurance, while the IORP Directive applies to occupational pension funds.[215] ABR includes MiFID II to the extent that it governs portfolio management[216] performed by various entities, such as investment firms, banks, UCITS management companies and AIF managers. Consequently, MiFID II rules apply to discretionary mandates. Other ABR impacting asset management also encompasses the Market Abuse Regulation (MAR), EMIR, SFTR and the Sustainable Finance Disclosure Regulation (SFTDR). There is no dedicated regulatory framework at the EU level for family offices, although some may fall under MiFID II portfolio management rules. There is little regulation of family offices also at the national level.

Asset management can be multi-layered and intertwined, resulting in long intermediation chains. This results from the fact that various forms of asset management – such as investment funds, pension funds, unit-linked insurance and discretionary mandates – often do not invest in assets directly. Instead, they do so through other asset managers, thereby creating additional layers of intermediation (see Figure 3). This is reflected for instance in the investor base of euro area investment funds, where insurance corporations, pension funds and other investment funds are among the largest holders (see Chart 1, panel a). Investment fund shares constitute a considerable portion of assets of unit-linked insurance and pension funds (see Chart 1, panel b). Long intermediation chains within the asset management sector can increase complexity within the financial system. Such interlinkages can transmit losses, reinforce fire-sale dynamic, increase portfolio overlap and impact investment funds in times of stress when faced with large investor redemptions.[217]

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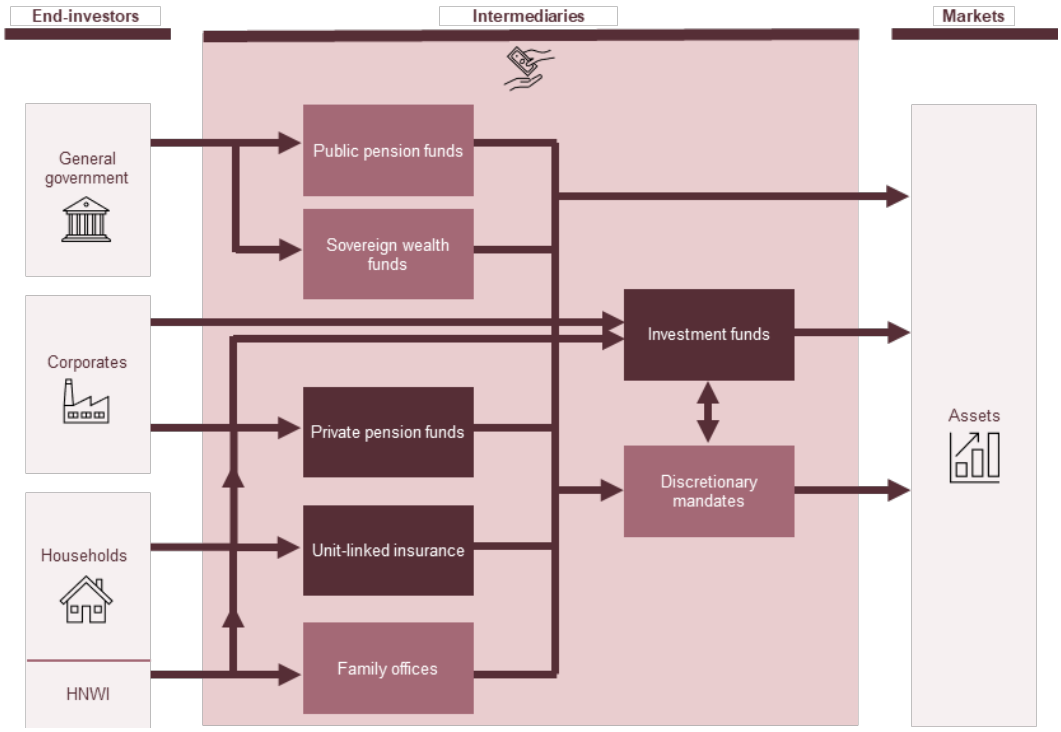
215 "Institution for occupational retirement provision", or "IORP", means an institution, irrespective of its legal form, operating on a funded basis, established separately from any sponsoring undertaking or trade for the purpose of providing retirement benefits in the context of an occupational activity on the basis of an agreement or a contract agreed. See Article 6 of **Directive (EU) 2016/2341 of the European Parliament and of the Council of 14 December 2016 on the activities and supervision of institutions for occupational retirement provision (IORPs)** (OJ L 354, 23.12.2016, p. 37).

216 Article 4(1)(8) MiFID II defines portfolio management as managing portfolios in accordance with mandates given by clients on a discretionary client-by-client basis where such portfolios include one or more financial instruments.

217 See Allaire, Breckenfelder and Hoerova (2023), Fricke and Wilke (2023) and Fricke, Jank and Wilke (2022).

Figure 3

Conceptual overview of asset management activity



Source: ESRB.

Notes: The figure is stylised and not to scale. Boxes in light red denote sectors where EU-wide regulatory and/or supervisory data are not available. Investment funds include MMFs. Specific forms of asset management are described in Table 3.

Interlinkages within the asset management sector may lead to regulatory and supervisory blind spots. Each layer of intermediation may be subject to different regulatory and supervisory frameworks, covering micro- and macroprudential perspectives to varying extents. A thorough examination of the forms of asset management involved in the intermediation chain might be needed to ensure comprehensive and consistent oversight. For instance, as highlighted above, there is an important link between investment funds and unit-linked insurance. This link can impact the overall risk profile of unit-linked insurance as well as the liquidity risk management of investment funds, including the selection of LMTs.[218] It is challenging for insurance supervisors to identify specific funds that insurers are exposed to and similarly difficult for investment fund supervisors to identify which insurers hold particular funds. By addressing this gap, risk monitoring would become more effective.

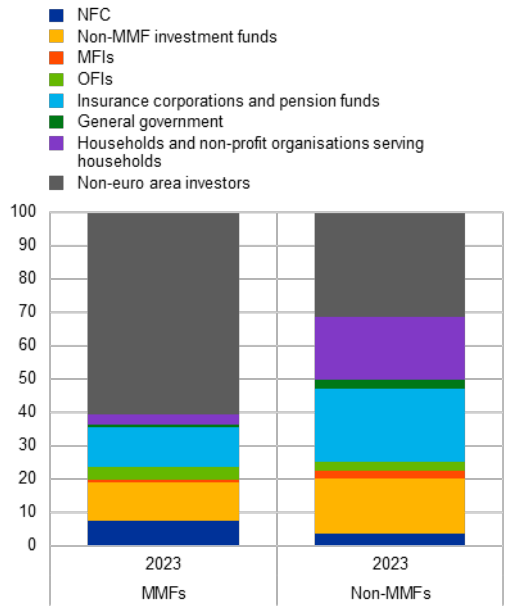
[218] See Darpeix and Mosson (2021).

Chart 1

Insurance corporations, pension funds and other investment funds are key holders of investment fund shares

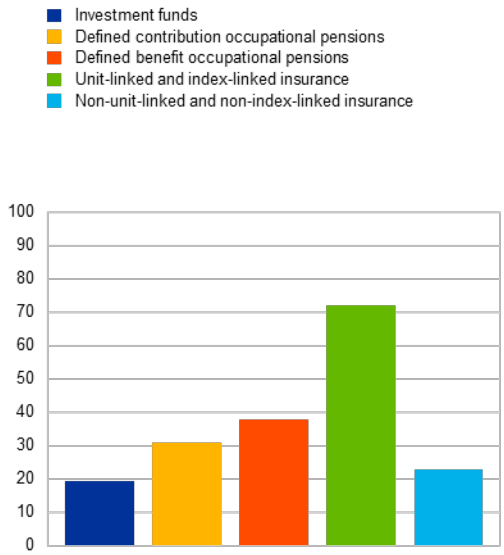
a) Investors in euro area investment funds

(percentages)



b) Holdings of investment fund shares/units in the EU by investor type

(percentage of total assets)



Sources: Eurostat and ECB (QSA), ECB (IVF), EIOPA and ESRB calculations.
Notes: Data as at end-2023. Panel b) data are approximated to EU level: (i) investment fund statistics lack data on DK, BG, SE; (ii) occupational pension fund statistics include EEA countries.

Asset management activity and its potential impact on financial stability is growing; however, determining the accurate volume as well as risk assessment are hampered by data gaps. As the activity increases, its vulnerabilities become a more important feature of systemic risk overall. Assessing the exact volume of asset management activity remains challenging because of data deficiencies (see also Section 3). EU-level data are available only for certain forms of asset management. For these – specifically investment funds, occupational pension funds, unit-linked insurance and discretionary mandates managed by UCITS management companies and AIF managers[219] – the total assets amounted to €29 trillion at the end of 2023, reflecting a twofold increase since 2010 (see Chart 2). Investment funds assets accounted for almost 60% of this amount. However, for certain forms of asset management – such as family offices, sovereign wealth funds, pension funds other than occupational, discretionary mandates managed by entities other than UCITS management companies and AIF managers – EU-wide data do not exist or are

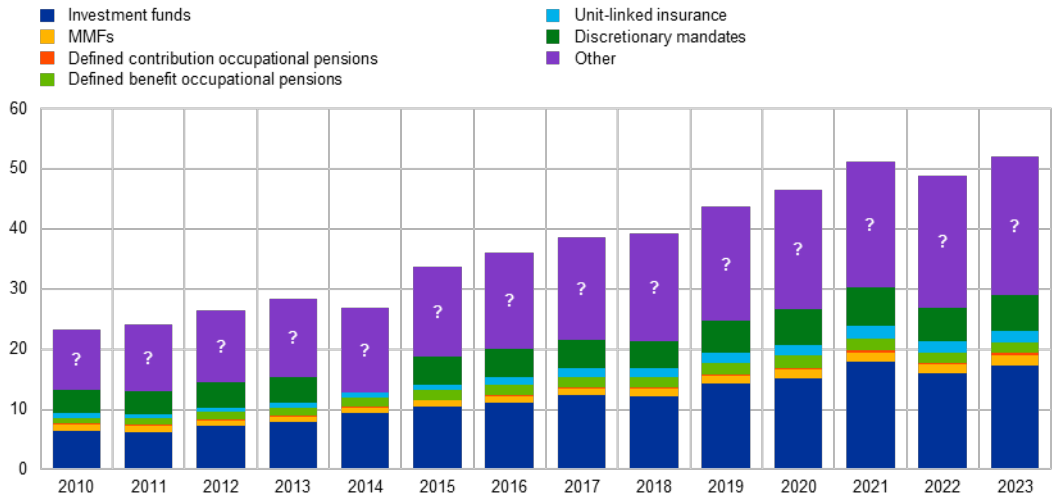
[219] Entities such as investment funds, private pension funds and insurance corporations offering unit-linked insurance typically operate as separate legal entities with their own balance sheets and are considered distinct institutional sectors under the statistical classification by the European System of Accounts 2010 (ESA2010). They are subject to EU-wide reporting requirements, although the specifics of this reporting vary.

fragmented.[220] This lack of comprehensive information makes it particularly challenging to estimate their contribution to systemic risk. Assessing the volume and risk assessment is further complicated by different classifications under ESA2010[221] as well as the multi-layered intermediation described above. Intermediation chains lead to double-counting, as the same assets may be recorded multiple times in various forms of asset management.

Chart 2

Growing importance of asset management activities

(EUR trillions)



Sources: ECB (IVF, BSI), EIOPA, EFAMA, CSSF and ESRB calculations.
Notes: Data refer to total assets. The scope is approximated to EU level. Investment fund statistics lack data on DK, BG and SE. MMF statistics cover only the euro area. Occupational pension fund statistics coverage between 2010 and 2019 lack data on CY, CZ, EE, FR, HU and LT. DC/DB split over this time frame is approximated and assumed to be stable and equal to the split observed at the end of 2019 – this assumption might not fully reflect the rising share of DC pensions in the past. From 2020, occupational pension fund statistics include EEA countries. Unit-linked insurance between 2010 and 2015 is approximated as "Investments for the benefit of life-assurance policyholders who bear the investment risk (based on Directive 91/674/EEC, Article 6, Assets D)". Pre-Solvency II data are not marked-to-market. Missing data points on discretionary mandates in 2014 and on unit-linked insurance in 2016 were linearly interpolated, and the missing data point on discretionary mandates in 2023 is set to equal to the value in 2022. Coverage of discretionary mandates depends on survey responses of EFAMA members and is approximated to EU level. Data on discretionary mandates in Luxembourg were provided by the CSSF. "Other" includes family offices, sovereign wealth funds, pension funds other than occupational, discretionary mandates managed by entities other than UCITS management companies and AIF managers, for which data on the assets under management is not available. This is indicated by a '?'.

[220] Data on sovereign wealth funds and public pension funds are available at national levels. Data on discretionary mandates and family offices are available only in certain Member States. For instance, assets of the Norwegian Government Pension Fund Global – the largest sovereign wealth fund in the EEA – amounted to NOK 15.7 trillion, equivalent to €1.4 trillion at the end of 2023; see Norges Bank Investment Management (2024). According to commercial data sources based on a survey, the assets of European single family offices were estimated to total €195 billion at the end of 2023; see Deloitte (2024).

[221] Size and risk assessment is further complicated by varying classifications under ESA2010: sovereign wealth funds can be classified as part of the government sector or captive financial institutions (OFIs), public pension funds can be classified as part of the government sector or pension funds, and family offices can be classified as part of investment funds or captive financial institutions (OFIs).

Vulnerabilities associated with asset management

Although several entities perform asset management activity in various forms, policy discussion has focused on investment funds. Many (global) initiatives have been carried out in recent years to obtain a better understanding of the systemic relevance of investment funds and to develop policy responses.[222] The focus of policymakers on investment funds is well-founded for several reasons. First, they have grown rapidly and are important for financial intermediation. Second, by combining structural vulnerabilities such as liquidity mismatch and leverage with their nature of collective investment schemes, investment funds are subject to first-mover advantage and run risks that can amplify stresses in the broader financial system. However, recent stress events have demonstrated that other asset management activities can also contribute to broader financial system stress (see Box 1). For example, the collapse of family office Archegos Capital Management in March 2021 led to significant losses for the banking sector, including Credit Suisse, a global systemically important bank.[223] Another instance is the unravelling of LDI strategies used by defined benefit pension funds after the UK government announced an expansionary fiscal policy in September 2022, which amplified turmoil in the gilt market.[224] Although liquidity strains were particularly severe for pooled LDI funds struggling to raise new capital from investors, some discretionary mandates also contributed to the selling pressure, thereby jeopardising financial stability and ultimately prompting central bank intervention.[225]

Despite the differences in business models and regulatory set ups, certain vulnerabilities and associated risks are related to the asset management activity itself and observable in all its forms. Asset management activity is diverse. Its specific forms are exposed to certain risks that are unique to them, requiring careful consideration and tailored analysis. Due to this diversity, the systemic risk profiles of various forms of asset management exhibit nuanced differences. However, they also share common vulnerabilities and give rise to common financial stability concerns. Excessive leverage, liquidity mismatch, exposure concentrations and misaligned incentives[226] can all be present to some degree in several forms of asset management (see Table 4). Nevertheless, asset management beyond investment funds has to date received relatively less attention from a macroprudential perspective. This is particularly the case with discretionary mandates, family offices, sovereign wealth funds and public pension funds.

Liquidity mismatch is mostly relevant in the part of asset management that involves collective investment. Liquidity mismatch occurs when the liquidity of an entity's assets does not align with the liquidity of its liabilities. It is a key structural vulnerability of open-ended investment funds which offer frequent redemption opportunities to their investors, even though the liquidity of the underlying assets may not permit an orderly liquidation (i.e. without a material increase in transaction costs and decline in prevailing market prices). Financial stability concerns arise when asset managers engage in forced asset sales in order to satisfy redemption requests. This can

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222 See, for instance, Annex II of **Recommendation ESRB/2017/6**, Financial Stability Board (2023c) and International Organization of Securities Commissions (2023).

223 See also **NBFI Monitor 2022**.

224 See also **NBFI Monitor 2023**.

225 Discretionary mandates accounted for 85-90% of the GBP LDI market – see Breeden (2022). Compared with single LDIs, pooled LDIs sold roughly 13 percentage points more of their gilt holdings in the weeks following the mini-budget; see Pinter, Siriwardane and Walker (2024).

226 See **Recommendation ESRB/2013/1**.

contribute to fire-sale dynamics, which can adversely affect prices and liquidity in the underlying markets and, in turn, other market participants. Liquidity mismatch gives rise to strategic complementarities across investors, resulting in a first-mover advantage.[227] Such a first-mover advantage can amplify redemptions as investors are incentivised to redeem ahead of others to avoid internalising the redemption costs. Conversely, investors in individualised asset management bear the full costs of asset liquidation themselves. As a result, liquidity mismatch is not a pertinent concern here.

Table 4

Potential vulnerabilities in asset management

Form of asset management	Liquidity mismatch	Use of leverage	Exposure concentration	Misaligned incentives
Investment funds	✓	✓	✓	✓
Private pension funds		✓	✓	✓
Unit-linked insurance		✓	✓	✓
Discretionary mandates		(✓)	(✓)	(✓)
Family offices		(✓)	(✓)	(✓)
Sovereign wealth funds		(✓)	(✓)	(✓)
Public pension funds		(✓)	(✓)	(✓)

Source: ESRB.
*Notes: The table provides a general and provisional overview of potential vulnerabilities drawn from **Recommendation ESRB/2013/1**. A thorough assessment across all forms of asset management will require a systematic, evidence-based approach. Vulnerabilities for which a robust assessment is currently unfeasible due to a lack of data are indicated in parentheses.*

Several mitigants to liquidity mismatch in collective asset management are in place. Liquidity mismatch is particularly relevant in open-ended investment funds that allow their investors to redeem frequently. Related risks can be reduced either by structural features (i.e. closer alignment between redemption terms offered to investors with the liquidity of underlying assets) or the use of LMTs.[228] Further, AIFMD and the UCITS Directive give powers to authorities to suspend investment fund redemptions to mitigate liquidity risk and safeguard financial stability.

[227] The FSB's definition of first mover advantage is as follows: first-mover advantage occurs when, under certain circumstances, investors who redeem their shares first do so on more favourable terms than investors in the same fund who redeem late. It can occur if, for example, the transaction costs for assets sold to meet redemptions are not properly allocated to redeeming investors. Another example of the first-mover advantage occurs if in a scenario of declining values of a fund's assets, investors can redeem before the fund's net asset value adjusts to fully reflect those declines in value. An investor who redeems solely in anticipation of further market deterioration is not considered as benefiting from a first-mover advantage. First mover advantage may lead to pre-emptive runs. See Financial Stability Board (2021).

[228] See European Systemic Risk Board (2024c).

Contrary to open-ended investment funds, private pension funds and unit-linked insurance typically do not offer frequent or easy withdrawals. For example, private pension funds restrict withdrawals to specific circumstances, such as retirement, disability or death. Early surrenders in unit-linked insurance are disincentivised by contractual costs and penalties. Additionally, the recently revised Solvency II framework introduces powers similar to those in the AIFMD and the UCITS Directive. This will enable supervisors to remedy liquidity vulnerabilities in exceptional circumstances.

The absence of liquidity mismatch makes unit-linked insurance and private pension funds less concerning, but strategy switches might introduce dynamics similar to investor redemptions. Liquidity mismatch in open-ended investment funds can interact with other structural vulnerabilities, exacerbating related risks. This interplay makes investment funds particularly important for financial stability. However, both unit-linked insurance and private pension funds typically allow their investors to switch between different investment strategies. If such transfers require the selling and subsequent purchase of assets, they could in principle lead to dynamics similar to investor redemptions in funds. The possibility and specific conditions of such transfers vary across Member States. These transfers may be allowed only during prescribed periods, depend on specific contractual arrangements, and incur additional fees and charges. Such features reduce the potential first-mover advantage and associated risks to some degree.

Risks arising from the use of leverage might materialise across all forms of asset management. Leverage amplifies several risks, including market risk (as a result of higher exposure to market volatility), counterparty risk (owing to increased counterparty exposure), operational risk (as operations become more complex) and liquidity risk (due to the potential liquidity demand arising from additional collateral requests and margin calls). Financial stability risk could materialise if asset managers engage in forced asset sales to deleverage, rebalance portfolios or raise liquidity to meet additional collateral requests or margin calls.[229] This additional selling pressure could reinforce initial market movements, triggering negative feedback loops that contribute to market distortions. Financial stability concerns can also be related to spillovers, when severe losses lead to defaults on obligations towards (systemically relevant) creditors and/or counterparties. The stress events discussed above, involving Archegos Capital Management and pension funds using LDI strategies, serve as clear examples of how leverage-related risks can materialise in asset management beyond investment funds.

Synthetic leverage is generally limited by mandatory collateralisation of derivatives trading; this applies to all forms of asset management, with additional safeguards in place for investment funds. The maximum level of leverage that can be obtained through derivatives is in principle constrained by margin requirements, both in centrally and bilaterally cleared transactions. These margin requirements are calibrated to correspond to the volatility of specific underlying assets and generally apply to all entities engaged in derivatives trading. However, this constraint on margin requirements requires that, in practice, the funds to meet margin requirements cannot be easily borrowed and/or such borrowing is costly. Regulation specific to investment funds envisages additional leverage restrictions. These restrictions encompass direct leverage limits for UCITS using the commitment approach and powers for authorities to impose leverage limits or other

[229] See De Nederlandsche Bank (2022), De Nederlandsche Bank and the Dutch Authority for the Financial Markets (2024) and Jansen et al. (2023).

restrictions under AIFMD Article 25 (see Box 2). Similar safeguards are absent for other forms of asset management.

Risks arising from exposure concentration may be similar across different forms of asset management, but are only explicitly addressed for certain forms. Risks related to exposure concentration arise from large exposures to a specific asset type or counterparty. Such concentration leaves asset managers exposed to heightened idiosyncratic risks, which can result in material losses. Exposure concentration can also manifest itself as investor concentration in collective asset management, potentially heightening the risk of large-scale redemptions and fire sales. Exposure concentration rules exist under the UCITS Directive. They are designed to ensure diversification across issuers, thereby protecting investors from excessive exposure to any single entity. These rules treat sovereign issuers with greater flexibility than others, reflecting their overall lower risk profile. The prudent person principle under Solvency II, which applies broadly to all types of insurance portfolios, including unit-linked ones, requires proper diversification to avoid excessive reliance on any particular asset, issuer or geographical area, and to prevent excessive risk from accumulating in the portfolio.

Concentrated market positions related to asset management are more pertinent from a systemic perspective than exposure concentration. Several forms of asset management can have a large market footprint in the assets they manage. If this results in substantial concentration in these markets, they can influence market dynamics, such as volatility, pricing and liquidity, through large investment or divestment moves. For instance, a single large entity, e.g. a sovereign wealth fund, can have a material market footprint. Concentration can also be of a collective nature, when multiple forms of asset management contribute to the large market footprint. This can lead to systemic concerns if those multiple forms of asset management share certain similarities or face a common stress that can cause herding behaviour and crowded trades.[230] For instance, several funds or discretionary mandates managed by the same manager, who holds a specific market outlook, may engage in coordinated transactions across all the funds and discretionary mandates under its management.[231] Where funds and/or discretionary mandates have different managers, having a similar client base may also lead to herding behaviour and crowded trades. A similar client base may result in similar asset allocation and lead these managers to engage in similar trades that are suitable for these clients under given market conditions. While individual asset managers would be acting in the best interest of their clients in such a scenario, their collective impact could trigger or amplify existing market stress, e.g. through fire sales and liquidity spirals. Such concentrations and market dynamics were observed during the LDI crisis in September 2022.

Misaligned incentives, while primarily a microprudential concern, might occur across all forms of asset management and have broader implications for the financial system. Asset management is inherently subject to a principal-agent problem. While asset managers are required to act in the best interest of their clients, the goals of manager and client may not always be perfectly aligned. When this occurs, it is primarily a microprudential concern but can also contribute to systemic imbalances. The interdependencies between investor flows and performance, alongside compensation models prevalent in asset management, can contribute to short-termism.

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230 See Bikker, Broeders and de Dreu (2010).

231 Discretionary mandates can largely be composed of assets identical to those held in investment funds managed by the same managers. See Chen et al. (2017).

Asset managers typically receive compensation that is based on the assets under management and/or performance, which can incentivise them to prioritise strategies that deliver quick returns. This can lead to search-for-yield behaviour, including the use of excessive leverage and/or crowded positions in risky assets.[232] Misaligned incentives can also be reflected in inaction bias and a reluctance to use LMTs available for open-ended investment funds. Employing LMTs can help alleviate redemption pressures and mitigate fire-sale dynamics and its potential systemic consequences. Asset managers may, however, hesitate to use them because of reputational concerns. Another example of misaligned incentives might be related to excessive risk-taking and little motivation to self-insure in expectation of gaining public support.[233]

Structural vulnerabilities manifest in varying intensities, influenced not only by the form of asset management but also by the underlying investment strategy, including active and passive investing. Investment strategies vary across several dimensions, including the asset class and the geographic focus, the degree of quantitative and qualitative research methodologies, or active and passive management. This heterogeneity can result in varying degrees of the intensity of structural vulnerabilities. For instance, liquidity mismatch may be less prevalent in some forms of passive asset management, e.g. due to ETF redemptions being limited to in-kind transfers for authorised participants.[234] In addition, misaligned incentives are primarily a concern for active managers, whose compensation is often tied to performance. Conversely, other structural vulnerabilities might be exacerbated by passive management. The shift to passive investing might contribute to increased concentration in the asset management industry, higher volatility, herding[235], procyclicality and co-movement in underlying markets.[236] Such features could cause selling pressure, lead to falling asset prices and self-perpetuating fire sales, thereby exacerbating market downturns.

Policy options to address vulnerabilities in asset management

The EU's macroprudential framework would benefit from taking a broader perspective on the asset management activity. As various entities typically perform any given activity in combination with other activities, addressing risks and vulnerabilities typically requires entity-based regulation (EBR) tailored to reflect diversity in business models. The focus on entities led to important regulatory developments that enhanced the AIFMD and the UCITS Directive.[237] This is

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232 See Huang, Clemens and Hanjiang (2011), European Systemic Risk Board (2016b) and European Systemic Risk Board (2021b).

233 See Central Bank of Ireland (2023). Central banks intervened to restore the functioning of financial markets, benefiting a broad range of market participants including various forms of asset management, during the COVID-19 shock in 2020 and the gilt market turmoil in the United Kingdom in 2022.

234 See, for instance, Anadu et al. (2018).

235 For instance, pension funds may be subject to herding behaviour as a result of pressure to cut management costs and because of homogeneous mandates. As shown in Broeders et al. (2016), Dutch pension funds exhibit herding behaviour, which can be categorised into three types, with semi-strong and strong variants contributing to financial instability. Semi-strong herding behaviour arises because pension funds react uniformly to external shocks, such as regulatory changes and monetary policy shifts. Strong herding behaviour involves pension funds intentionally copying the investment decisions of their peers. Additionally, herding behaviour is also exhibited by increasing delegation of mandates to large asset managers. Since there are more pension funds than asset managers, these managers often oversee multiple mandates, increasing the risk of similar asset allocations across various clients.

236 See, for instance, Höfler, Schlag and Schmeling (2024), Pagano, Sánchez Serrano and Zechner (2019), Deutsche Bundesbank (2018), Sushkok and Turner (2018) and Leippold, Su and Ziegler (2016).

237 **Directive (EU) 2024/927**.

aimed at increasing the resilience of investment funds. However, asset management activity may also create risks and vulnerabilities that are independent of the types of entities involved in it. Addressing such risk and vulnerabilities may require complementing EBR with activity-based regulation (ABR). This means there is a need to build on the important regulatory work that has been done to further improve the resilience of investment funds. This should be done along two avenues. First, by addressing vulnerabilities in EU money market funds (MMFs) (Policy Digest 1) and by progressing the work to address vulnerabilities in investment funds (Policy Digest 2). Second, by recognising that several vulnerabilities in asset management and associated risks are related to the activity itself rather than being entity specific, and that taking a holistic view in the rule-making could benefit financial stability.

This holistic view requires increased transparency and a comprehensive understanding of asset management activity and its contribution to systemic risk. The diversity of business models and nuanced differences in the systemic risk profiles underscore the need for a granular understanding of various forms of asset management activity from a financial stability perspective. One of the key challenges in assessing their systemic footprint is the lack of appropriate and consistent information (see also Section 3). While important progress has been made in this regard, even within these areas where regulatory data exist, insufficient granularity impedes a more comprehensive assessment and monitoring of risks. Furthermore, for several forms of asset management, including discretionary mandates or family offices, the necessary EU-wide data for analysing the potential impact on financial stability are missing. The European Commission should address these barriers to effectively identify, monitor and address systemic risk, by expanding the regulatory perimeter and introducing reporting requirements beyond the current framework. Those requirements should facilitate, in particular, getting a better understanding of interlinkages within the asset managed sector and the banking sector, considering common exposures and financing links.

To support financial stability further, ABR for asset management should be considered. Policy tools that apply only to specific forms of asset management might be circumvented by creating different entities that are either unregulated or regulated differently.[238] ABR could help to avoid such regulatory loopholes and enhance policy effectiveness by addressing the activity itself, regardless of the entity performing it. When considering ABR for asset management, several factors need to be taken into account. These include the diversity of business models and risk absorption capacities, potential costs and benefits of regulation, as well as existing national prudential frameworks. Such regulation should be introduced after a thorough risk assessment is conducted, grounded in clear evidence and following public consultations. For asset management activity, the ESRB believes there is a case for setting minimum standards that would apply to all entities that manage investments on behalf of a third party. These common standards could pertain to the key investment management functions, such as portfolio and risk management, as well as governance. Such standards should be designed with a financial stability perspective, ensuring that activity-specific vulnerabilities that contribute to systemic risks are adequately addressed. MiFID II portfolio management rules are an example of activity-based regulation setting certain minimum standards, notwithstanding that these rules focus on investor protection and the conduct of

[238] Following the enactment of the Dodd-Frank Act, several hedge funds were reclassified as family offices to avoid disclosure requirements. See Burton (2011).

business. The common minimum standards should also ensure an appropriate level of disclosure and transparency for comprehensive risk monitoring and assessment.

Financial stability would benefit from reviewing existing legislation for options to strengthen horizontal standards to address externalities arising from the asset management activity. To facilitate the design of common minimum standards, the European Commission should review current EU regulation to identify gaps and inconsistencies in policy tools envisaged to address systemic risk across different forms of asset management. The goal should be to ensure that, where asset management activities can cause similar externalities that could endanger financial stability, there are consistent tools in place to address such externalities. Previous use cases of AIFMD Article 25, albeit well-designed and effective in addressing the intended vulnerabilities, provide useful lessons in this regard. The yield buffer introduced under AIFMD Article 25 by the Central Bank of Ireland and CSSF applies to AIFs pursuing LDI strategies. The measure captures pooled LDI funds, which experienced the most pronounced frictions in September 2022, as they struggled to refinance. At the same time, the recommendation on a minimum resilience level issued by the UK Financial Policy Committee in March 2023 applies to both LDI funds as well as LDI mandates.[239] AIFMD Article 25 does not extend to entities other than AIFs and therefore cannot be used to address leverage-related risks in those other entities. However, broader policy action may be warranted at times. The powers available to authorities under AIFMD Article 25 should be usefully adapted to address risks in asset management beyond AIFs. Additionally, to address leverage-related risks in asset management, the Commission should consider applying tools at the lender level rather than the borrower level, as they may sometimes be more effective (see also Chapter 5).

ABR of asset management must recognise the wide diversity of the activity. Entities performing asset management activities are heterogeneous, often operating based on highly individualised contractual terms (e.g. in discretionary mandates or family offices). For this reason, a single resilience standard is not warranted. A one-size-fits-all approach and regulatory copy-pasting is unlikely to properly address risks and could result in regulatory overburdening, inefficiencies, and stifling of competition and innovation. It is important to distinguish common minimum standards from standardisation. While standardisation aims for uniformity across the board, common minimum standards establish a baseline, allowing for variability and higher standards above that baseline. In this context, the diversity in asset management necessitates that the common minimum standards developed under ABR be complemented by an EBR to address different risk characteristics and ensure more stringent requirements for entities that make a more material contribution to systemic risk.

The global nature of asset management activity requires international coordination. Asset management is an inherently global activity, with investment flows crossing borders and impacting financial markets worldwide. Inconsistencies in regulatory and supervisory approaches at the global level can result in regulatory arbitrage and macroprudential leakage.[240] International cooperation (see also Chapter 2) and ongoing engagement with global standard-setting bodies are therefore

[239] See Financial Policy Committee (2023).

[240] In 2016 after MMF regulatory reforms entered into force in the United States and institutional prime MMFs were forced to move from a stable to a floating NAV, EU USD MMFs offering a stable NAV recorded large inflows from investors outside the euro area, driven by the ability to offer a stable NAV to investors. See Fricke, Greppmair and Paludkiewicz (2024). See also Section 2.3 in the **NBFI Monitor 2024**.

essential. Reflecting this, the European Commission should promote further development at the FSB of the macroprudential framework for asset management, including the need to enhance transparency and address risks associated with asset management activity beyond investment funds. By stimulating a policy discussion at the global level, actionable goals to enhance a minimum standard of regulation could be achieved. This is particularly relevant for asset managers that are domiciled outside the EU, but are large enough to have a material impact on EU financial markets and economies, such as sovereign wealth funds.

Chapter 4 – A system-wide approach to clearing of government bond cash and repo transactions

Summary

Clearing of financial assets is an economic activity that is essential for the smooth functioning of financial markets. Clearing can be defined as the process of transmitting, reconciling and, in some cases, confirming transactions prior to settlement, potentially including the netting of transactions and the establishment of final positions for settlement. For the clearing of futures and options, this term also refers to the daily balancing of profits and losses, and the daily calculation of collateral requirements.[241] Clearing may take place bilaterally (i.e. directly between counterparties) or centrally through a central counterparty (CCP). A CCP interposes itself between counterparties to contracts traded in one or more financial markets, becoming the buyer to every seller and the seller to every buyer, and thereby ensuring the performance of open contracts.[242]

The regulatory framework for over-the-counter (OTC) derivatives is designed to incentivise central clearing over bilateral clearing. Central clearing of standardised OTC derivatives was a key element of the G20 leaders' commitment to reduce the systemic risk associated with the OTC derivatives market in response to the global financial crisis. The regulatory treatment of OTC derivatives transactions is calibrated in a way that incentivises market participants to clear through CCPs.[243] This is achieved by applying key elements of the risk management framework of central clearing – notably the exchange of initial and variation margins – in bilaterally cleared transactions. In the EU, these requirements are laid down in the European Markets Infrastructure Regulation (EMIR), which includes elements of activity-based and of entity-based regulation. Elements of activity-based regulation are reflected in a clearing mandate for certain classes of OTC derivatives that apply to most financial firms active in derivatives markets, even though there are several exceptions reflecting proportionality.[244] They are also reflected in rules that govern the activity of bilateral clearing for OTC derivatives, including margin requirements. Elements of entity-based regulation are reflected in risk management requirements for CCPs.

No comparable regulatory framework in favour of central clearing exists for government bond cash and repo transactions. Compared to other asset classes, such as equities and on-exchange derivatives, the markets for EU government bond cash and repo transactions are characterised by a heterogenous level of central clearing across segments and countries. With the exception of Italian instruments, there is nearly no central clearing of government bond cash transactions. The share of central clearing of repo transactions varies, where clearing rates are, for example, 70% for IT, 27% for SE and zero for 12 other EU jurisdictions. Central clearing is prevalent for dealer-to-dealer transactions but nearly non-existent for dealer-to-customer transactions that include NBFI entities. Whereas market participants that clear transactions at

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241 See Committee on Payments and Market Infrastructures (2016).

242 CCPs and key elements of their risk management framework and related concepts such as "initial margin", "variation margin" and "haircuts" are described in Policy Digest 3.

243 See Financial Stability Board et al. (2018).

244 These exceptions include intra-group transactions, which are exempted under certain conditions, and non-financial counterparties, which are exempted from bilateral margin requirements. See the **ESMA website** for more details.

CCPs must exchange initial and variation margins, market participants that clear such transactions bilaterally do not have to adhere to the same risk management standards of CCPs. Almost 70% of outstanding amounts in bilaterally cleared government bond repos in the EU report a haircut of zero, suggesting that bilateral repos have the potential to be a source of significant leverage in the financial system. These inconsistencies result in a lack of incentives for central clearing as bilateral clearing is more cost effective.

In recent years, several episodes of dysfunction took place in the government bond cash and repo markets in the European Union, United Kingdom, and United States. These episodes were triggered by different events but were all characterised by significant asset price/yield fluctuations, widening bid-ask spreads, shrinking trade sizes as well as a sudden worsening of liquidity conditions. These market dysfunctions showed that government bond cash and repo markets are not sufficiently resilient to shocks, weakening the role of government bonds as safe assets and benchmarks for other financial markets, public debt issuance, and monetary policy transmission. They also threaten the stability of the broader financial system. Reflecting this, central banks intervened as buyers in reaction to the low liquidity to counter serious risks to the monetary policy transmission mechanism and to maintain supportive financing conditions.[245]

Broader central clearing in the government bond cash and repo markets may contribute to make these markets more resilient and contribute to EU financial stability. There is evidence that the high activity of NBFI entities combined with insufficient risk mitigation techniques in bilateral clearing and inadequate preparedness for margin calls have amplified the episodes of dysfunction. NBFI entities played a prominent role as shock amplifier in these episodes, e.g. during the outbreak of the COVID-19 pandemic and the resulting dash-for-cash in March 2020. Whereas banks have traditionally been the market makers for the EU government bond markets, their role has been declining. Changes in risk appetite and regulatory measures may have contributed to reduced profitability and attractiveness of intermediating in this market. At the same time, NBFI entities such as hedge funds and principal trading firms (PTFs) are playing an increasingly important role in the EU. This increases vulnerabilities in crisis situations, as they deleverage quickly during crisis events and exit the market. Because most of the dealer-to-customer transactions are not centrally cleared, the intermediation capacity of banks' balance sheets can be exhausted quickly during periods of stress. The ESRB believes that the broader use of central clearing, e.g. incentivised by introducing margin requirements in bilaterally cleared transactions, would increase the intermediation capacity of banks through widespread multilateral netting and thereby enhance the resilience of these markets.

The ESRB suggests that risk management practices in bilateral and central clearing of government bond cash and repos should be consistent. The ESRB finds that the underlying structural trends of the US government bond market, i.e. extending supply through new issues, constrained dealer's balance sheet to intermediate and an increasing role of leveraged NBFI entities including hedge funds, are also perceptible in the EU. However, while US authorities have opted for a clearing obligation, the ESRB does not propose this for the EU markets at this stage. In part, this reflects differences of EU government bond cash and repo markets relative to the United States, as well as heterogeneity across EU markets. It also reflects a need to further analyse whether a clearing obligation might have unintended consequences. The experience from the

[245] See, for example, European Central Bank (2024d) and Narodowy Bank Polski (2020b).

United States will be helpful in this regard. The ESRB instead proposes an incentives package designed to broaden central clearing in these markets. As part of this, the European Commission should consider measures to increase the resilience of these core markets, based on an analysis of the costs and benefits, including the introduction of margin requirements in bilaterally cleared transactions.[246] It should also look for ways to remove impediments for NBFI entities to centrally clear, e.g. clarify the low uptake of current access models to CCPs.

This chapter sets out the ESRB's view on how broader central clearing in the government bond cash and repo markets could be incentivised. The remainder of the chapter starts with highlighting the importance of government bond cash and repo markets for financial stability, before describing the structure of the EU government bond cash and repo markets. It then analyses several episodes of dysfunction and the role played by NBFI entities in triggering or amplifying stress episodes as well as the increased vulnerabilities through a shift in market participants. Finally, it sets out policy options to address the vulnerabilities, with a focus on incentivising a move to central clearing, without suggesting a clearing mandate at this stage.

Structure of the EU government bond cash and repo markets

The government bond cash markets are systemically important given their relevance to central banks, public authorities, banks and NBFI entities. Bonds issued by sovereigns are an important source of public expenditure financing. Issuance usually takes place in the primary market, where a consortium of banks participates in an auction process for each new issue. These dealer banks subsequently pass on parts of or all their acquirements via trading in the secondary market to smaller banks as well as NBFI entities such as insurers, pension funds, hedge funds and other long-term investors (dealer-to-customer market). A well-functioning government bond market is essential for smooth public debt issuance and monetary policy implementation. Moreover, government bonds are high-quality liquid assets, an essential component in investor portfolios. Their yields also serve as a benchmark for the pricing of many other financial assets.[247]

Government bonds are the main collateral used in securities financing transactions (SFTs). The typical SFT is a collateralised loan in which the lender provides short-term funding in the form of cash against assets posted by the borrower as guarantee. The main types of SFTs are repurchase agreements (repos), securities lending, sell-buy back transactions and margin lending.[248] For simplicity, this report just uses the expression "repo". However, any regulation should treat transactions that share the same economic characteristics equally in order to reduce the potential scope for regulatory arbitrage. The government bond repo market plays a key role in facilitating the flow of cash and securities in the financial system, by allowing market participants to access low cost secured financing, supporting dealers' market-making activities, enabling institutional investors with large cash balances to invest cash on a low-risk basis (safe haven for investments), and contributing to price discovery and efficient capital allocation.[249] Government

[246] In principle, collateral haircuts on repos serve a similar function to initial margin requirements, protecting lenders against losses after the default of a borrower. The introduction of initial margin requirements would apply to both parties, the collateral giver and the collateral taker. See European Systemic Risk Board (2020a).

[247] See Maria Ferrara et al. (2024).

[248] See European Systemic Risk Board (2020a).

[249] See Financial Stability Board (2022).

bonds are an important form of collateral for many financial market transactions, including central bank loans and CCP margin requirements.

The EU government bond cash and repo markets are heterogeneous. The EU sovereign bond markets consist of 27 EU issuers as well as the European Commission and several international institutions such as the European Investment Bank. In Q1 2024, the four largest issuers (IT, DE, FR and ES) represent around 86% of the volume in the cash market and 84% of outstanding amounts in the repo market (see Table 5). While around 63% of repo trading is facilitated on-exchange, only 41% of cash trading happens on-exchange. Central clearing of cash transactions is predominant in IT (comparable to the clearing rates in Japan and the United States), while limited or non-existent in most other EU government bond markets and the UK government bond market.[250]

Table 5

Market size and market structure for EU-issued government bonds

EU-issued government bonds	Cash market	Repo market
Concentration	4 largest issuers ~86% of volumes (IT, DE, FR, ES)	4 largest issuers ~84% of outstanding amounts (IT, DE, FR, ES)
Size in volume traded	€25 trillion in 2022	€7.3 trillion in Q3 2023
Market structure	• 59% off-exchange: OTC (13%), SIs (46%) • 41% on-exchange: MTFs (23%), RMs (9%), OTFs (9%) (particularly small trades)	• 37% off-exchange (OTC) • 63% on-exchange (55% in EU, 8% in non-EU venues)
Central clearing	Only in IT: • Interdealer segment: clearing predominant in IT while limited or non-existent in Germany, France and the United Kingdom • Dealer-to-customer trades generally not centrally cleared DE: • Bund futures alternative for Bund cash trading	62% of outstanding amounts cleared • Differences at country level: from 60-70% (IT, followed by NL, DE, BE, PT, FR) to below 30% (SE, SI, LU, PL, DK). None in others. • Interbank segment: mostly centrally cleared • Repos carried out OTC with non-banks not centrally cleared

Sources: ICMA and ESMA.

Repo clearing rates differ a lot across EU countries. In aggregate terms, central clearing of repo transactions in EU government bonds amounts to 62% of outstanding amounts. This corresponds to the volume of on-exchange trading, with huge variations across EU countries. Three groups of issuer countries can be identified. The first group has high clearing rates for repo ranging from 55% for ES to 70% for IT (with AT, BE, DE, FI, FR, IE, NL and PT in between) in Q1 2024. The second

250 ibid.

group comprises DK with 3%, PL with 7%, LU with 15%, SI with 26% and SE with 27%. The third group covers 12 government bond repo markets with no central clearing. Although their market share in the EU repo market is relatively small, these repo markets may be very important for their domestic financial system, especially in non-euro area countries.

Central clearing of EU government bond cash and repo transactions is concentrated at EU CCPs. Many EU CCPs offer cash and repo transaction clearing. For the larger issuers, there is competition among several CCPs for the clearing of repo transactions. In the case of the smaller issuers, only domestic CCPs offer central clearing or there is no offering (see Table 6). In March 2019 and in the context of Brexit, the euro-denominated repo clearing service from LCH Ltd in the United Kingdom, which mainly covered euro-denominated German, Belgian, Austrian and Dutch government bonds, was migrated to the French CCP LCH SA.[251]

[251] See Banque de France (2020).

Table 6

CCPs offering clearing of EU and UK government bond repos

Country of issuer	BME Clearing	Eurex Clearing	Euronext Clearing	KDPW_CCP	LCH SA	LCH Ltd	Nasdaq Clearing	SKDD-CCP
Austria	✓	✓			✓			
Belgium		✓			✓			
Croatia								(✓)*
Denmark							✓	
Finland		✓			✓			
France	✓	✓			✓			
Germany	✓	✓			✓			
Ireland					✓			
Italy	✓	✓	✓		✓			
Netherlands	✓	✓			✓			
Poland				✓				
Portugal	✓	✓			✓			
Slovakia					✓			
Slovenia					✓			
Spain	✓	✓			✓			
Sweden							✓	
United Kingdom						✓		
All other EU Member States								

Sources: ESRB and CCP websites.
*Note: * SKDD-CCP is in the process of developing a clearing service for repos.*

The EU government bond cash and repo markets have a different structure compared with that of the US market. Structural differences might explain why the impact of the COVID-19 outbreak was less pronounced in EU government bond markets than in the United States, in particular in repo markets. First, market sizes are of a different scale: the US Treasuries market size is around USD 27 trillion, compared to the EU government bonds with €11 trillion (United Kingdom: €2.6 trillion). Due to this size difference and the ongoing high issuance of new US debt, the balance sheets of primary dealers in the United States are probably more constrained than those of their European counterparts. Second, NBFI entities such as hedge funds and PTFs are less active in the EU, although their role is increasing. Third, repo market functioning in the euro area was partly impaired due to scarcity of high-quality collateral, amid a record central banks' market footprint in EU government bond markets among other factors. With the recent decline of this footprint, the share of bonds available for repo transactions increased, helping to alleviate asset scarcity in repo markets. Fourth, the use of CCPs in the repo market in the EU is higher than in the United States. The US authorities stress the fact that there are significant data gaps on the overall clearing volumes. Building on estimations, between 13% and 20% of the overall dollar value of US government bond cash transactions are centrally cleared. For US government bond repo transactions, estimates on central clearing ratios range from 20% for repos and 30% for reverse repos of primary dealers to 40% of all repo transactions in US government bonds. Bilaterally cleared transactions remain the largest segment of the market.[252]

Dysfunctions in government bond cash and repo markets are a threat to financial stability

In recent years there have been several episodes of turmoil in some government bond cash as well as repo markets. These episodes were characterised by heightened volatility due to significant asset price/yield fluctuations, widening bid-ask spreads, reduced market depth with shrinking trade sizes and lower volumes, as well as sudden illiquidity. These episodes, some of which are briefly described below, mainly manifested themselves in the US government bond cash and repo market, but also negatively impacted EU markets.

- **In May 2015, the German government bond market experienced the "Bund tantrum".** After a period of low volatility and without the release of any particular information, long-term German government bonds (Bunds) suddenly surged by 21 basis points intraday only to end the trading day unchanged again. A deterioration of liquidity in the cash market segment was cited as explanation for this weakness in market functioning.[253]

- **In May 2018, the Italian government bond market experienced a dysfunction.** The difficulties in forming a new government after the elections, coupled with investors' uncertainty about the resulting economic policy stance, led to significant fluctuations in the prices of Italian government bonds. This volatility spilled over into other European bond markets, raising concerns about the broader European financial system. Liquidity conditions deteriorated in the Italian market's interdealer segment. On some days, the order book was significantly lower,

[252] See U.S. Securities and Exchange Commission (2023b).

[253] See Riordan and Schrimpf (2015).

with pricing interruptions for many Italian government bonds, making it challenging for investors to manage their portfolios. The situation gradually improved over the summer following the formation of the new government executive.[254]

- **In September 2019, interest rates in US repo markets spiked by more than 300 basis points on a single day.** The cause of the spike was a shortage of cash in the financial system as corporate taxes were due to be paid and new US Treasury bonds were issued, leading to a reduction in the level of reserves in the US financial system. The repo market volatility negatively affected trading conditions in segments of the Treasury cash and futures markets because dealers depend on repo markets to finance holdings of off-the-run securities that they cannot sell quickly.[255] Volatile repo interest rates reportedly caused some hedge funds to unwind leveraged positions in cash-futures basis trades.[256]

- **In March 2020, the outbreak of the COVID-19 pandemic caused dysfunction in government bond markets globally.** With the outlook on a global health and economic crisis, asset prices fell sharply in late February 2020. After an initial flight to safety, a run on cash led to a rapid increase in the demand for repo borrowing and a broad-based selling in mid-March 2020. There was a significant increase in demand to sell government bonds while the ability of the market makers to accommodate that demand was insufficient, leading to dysfunction in many government bond markets globally (see Chart 3). The economic and financial consequences were immediate and severe as financial conditions tightened sharply as even the safest and most liquid assets such as government bonds experienced large price declines.[257]

- **EU government bond cash and repo markets also experienced volatility shocks and worsened market liquidity during March 2020.**[258] During the COVID-19 outbreak, the EU experienced an increase in demand for scarce safe assets, especially for German Bunds. This produced a sell-off of peripheral sovereign bonds that drove the repo rates of core and peripheral euro area countries out-of-sync.[259] The impact was less severe than the yield changes over the year-end of 2019 and less pronounced as well as less long-lasting compared to the United States. Where the United States saw a dash-for-cash, some EU markets experienced more a dash-for-collateral (see Chart 4).

- **In September 2022, the UK government bond market experienced dysfunction.** Due to a sharp increase in gilt yields, LDI funds, including those domiciled in the EU and denominated in GBP, came under stress as they were forced to raise liquidity and sell gilts to fulfil margin calls. This caused dysfunction in long-dated gilt markets in the form of illiquidity, which, if left unchecked, would have represented a material risk to UK financial stability (see Box 1).

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254 See Banca d'Italia (2018) and Cronin and Dunne (2018).

255 See Kahn et al. (2023) and Anbil, Anderson and Senyuz (2020).

256 See U.S. Department of the Treasury et al. (2021). Basis trades are arbitrage strategies which improve market functioning but are subject to specific risks, especially when highly leveraged. See Bassi et al. (2024b).

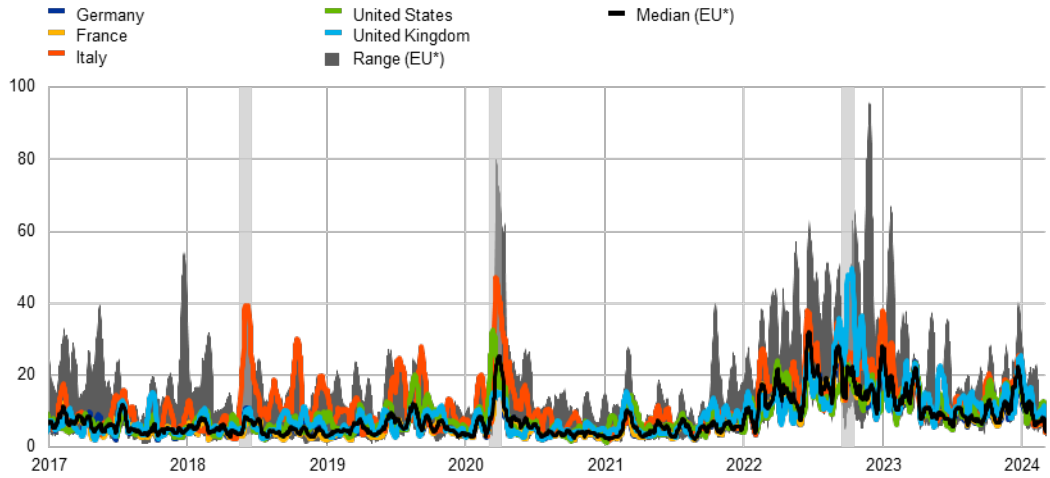
257 See Bank for International Settlements (2023a).

258 See Pelizzon and Schneider (2021).

259 See Billio et al. (2020).

Chart 2

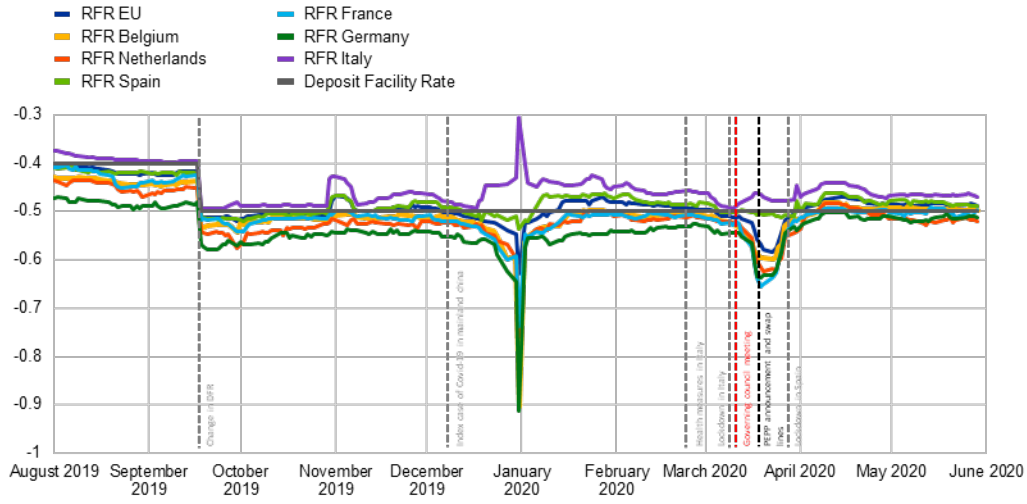
Yield volatility of government bonds as indicator for market dysfunction



Sources: Bloomberg and ESRB calculations.
Note: Volatility calculated as a rolling 30-day standard deviation of the 10y generic government bond yields. Shaded areas are May-June 2018 (Italian government bond markets), March 2020 (COVID-19) and September 2022 (LDI crisis).
** Sample of EU countries with data on 10y government bond yields.*

Chart 3

Repo funds rates (RFRs) in 2019 and 2020



Source: Bloomberg.

The dysfunction in these key markets was often severe enough for central banks to act. In response to the September 2019 spike in US repo interest rates, the Federal Reserve Bank of New York injected USD 75 billion daily into the repo markets. Similarly, in March 2020 during the COVID-19 pandemic, central banks in the EU initiated programmes to supply additional liquidity to counter serious risks to the monetary policy transmission mechanism and to maintain supportive

financing conditions.[260] For example, the Eurosystem initiated its pandemic emergency purchase programme (PEPP) covering private and public sector securities in a total amount of €1,850 billion.[261] Another example is Sveriges Riksbank, which increased its buying of government bonds for monetary policy purposes, citing "large fluctuations on the financial markets" and "signs of liquidity problems on the financial markets" as a background to this decision, among other things.[262] Ensuring liquidity in the secondary market for its treasury bonds was also one of the goals of Narodowy Bank Polski in purchasing these securities. Other goals were changing the long-term liquidity structure in the banking sector and enhancing the impact of the interest rate cuts on the economy.[263] To combat the LDI crisis, the Bank of England started buying long-dated gilts on whatever scale required to restore orderly market conditions (see Box 1).[264]

The episodes described above may not be isolated incidents. Market participants expect more event-triggered episodes of heightened volatility and illiquidity in the future.[265] Therefore, it is necessary to understand the fundamental vulnerabilities in the current market structure to consider ways of strengthening the resilience of these key markets to prevent episodes of dysfunction from becoming a threat to financial stability.

Increased vulnerabilities through shift in market participants

Banks have traditionally been the market makers in EU government bond markets, but their role has been declining. Reforms after the global financial crisis have contributed to major changes in financial institutions' balance sheets and market structures. Most notably, the Basel Committee on Banking Supervision (BCBS) has developed the regulatory minimum leverage ratio (LR) to address the build-up of excessive leverage, the net stable funding ratio (NSFR), which introduces a stable funding requirement for short-dated securities financing transactions, and a liquidity coverage ratio (LCR) to ensure banks can withstand short-term liquidity dry-ups.[266] As a result, several large banks have reduced their trading and market-making activities in the government bond markets, as changes in regulation and risk appetite have reduced the attractiveness of these low-profit operations.[267] Market analysts and industry associations have argued that regulatory reforms may have reduced the willingness of banks to provide repo services, and have contributed to volatility and market dislocations around the balance sheet reporting

260 See Financial Stability Board (2020c).

261 See European Central Bank (2024d).

262 See Sveriges Riksbank (2024).

263 See Narodowy Bank Polski (2020a). Still, foreign investors reduced their holdings of Polish government bonds and the average daily value of outright transactions fell significantly by 30% in 2020 compared with the 2019 values; see Narodowy Bank Polski (2021).

264 See Pinter (2023) and Chen and Kemp (2023).

265 For example, a survey by the International Capital Market Association among government bond dealers highlighted that "the general view of interviewees is that we have entered a new era for sovereign bond markets. […] The unwind of central bank asset purchases, while ultimately healthy for liquidity more broadly, will likely add to volatility and market sensitivity in the near term. This will also increase overall supply, while dealer balance sheets are set to become even more constrained with the roll-out of Basel 3.5, which may also see a retreat of some traditional liquidity providers. All of this makes central bank interventions to stabilise markets increasingly inevitable and less extraordinary". See International Capital Market Association (2024a).

266 See Grill et al. (2017).

267 See Financial Stability Board (2020c).

dates.[268] The BCBS and the EU have taken various regulatory and supervisory measures to mitigate window-dressing behaviour around reporting dates.[269] Furthermore, BCBS standards provide regulatory incentives for netting to reduce the balance sheet cost of both capital and liquidity requirements, which is reflected in relatively widespread use of central clearing in the interbank repo segment.

A key driver of the dysfunction in US government bond markets might have been constraints of dealers' balance sheets. A significant loss in US Treasury market functionality is evident when intensive use of dealer balance sheets is needed to intermediate supply and demand in stress episodes. Although yield volatility explains most of the variation in US Treasury market liquidity over time, when dealer balance sheet utilisation reaches sufficiently high levels, liquidity is much worse than predicted by yield volatility alone. This is consistent with the existence of occasionally binding constraints on the intermediation capacity of bond markets.[270]

NBFI entities are becoming more important participants in EU government bond markets and support market functioning in business-as-usual times. In recent years, NBFI entities such as PTFs and hedge funds are playing an increasingly important role on EU government bond cash and repo markets. They not only account for a substantial share of trading but are also increasingly providing liquidity at a rate comparable to market makers.[271] Reportedly, hedge funds accounted for 56% of trading volume in European government bond cash transactions on the electronic trading platform Tradeweb in 2023 (compared to 36% in 2020; see Chart 5). For Italian government bond cash transactions, the share of hedge funds even reached 67% in 2023.[272] According to a survey, hedge funds represent over 50% of the total requests received by dealer banks ahead of public debt auctions in France, Germany, Italy and Spain. Hedge funds thereby contribute to the success of government bond auctions both by placing orders directly with dealer banks and by facilitating the offloading of dealers' allocations after the auction.[273]

NBFI entities increasing market presence may create vulnerabilities during periods of stress. These investors are generally more reactive to changing financial conditions and market stress. The government bonds are used by NBFI entities to build up leverage via repo transactions, sometimes in an excessive manner. Combined with inadequate liquidity preparedness to meet margin calls, NBFI entities may amplify market dynamics through forced asset sales and procyclical selling behaviour. This is especially the case when they rapidly alter their positioning in response to shifts in market sentiment and in episodes of market stress, which can exacerbate the risk of dysfunction in financial markets by putting pressure on banks' intermediation capacity and create trading bottlenecks. This risk is particularly great for investment funds (such as hedge funds) operating with high leverage and/or limited cash buffers.[274]

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268 See International Capital Market Association (2017).

269 See Bassi et al. (2024a).

270 See Federal Reserve Bank of New York (2023).

271 See Financial Stability Board (2022).

272 Tradeweb is one of three major trading platforms in the EU. In electronic cash and repo trading, the major participants for EU banks on the customer side currently seem to be hedge funds. See the documents of the ECB Bond Market Contact Group meeting from 26 June 2024 on the **ECB's website** and International Capital Market Association (2024b).

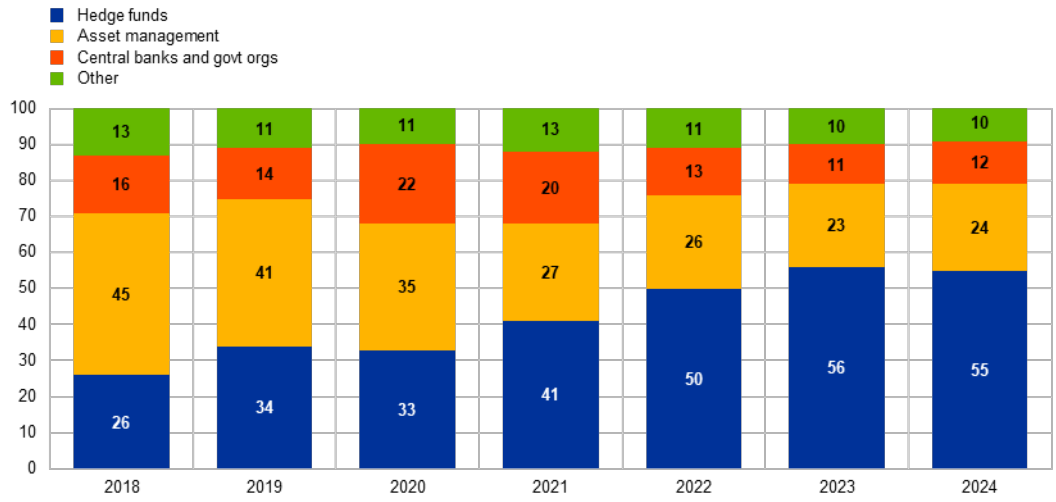
273 See Maria Ferrara et al. (2024).

274 See Mosk et al. (2023).

Chart 4

Electronic trading volumes on Tradeweb, by investor sector

(percentages of total)



Sources: Reuters and Tradeweb.

The growing activity of NBFI entities has already increased vulnerabilities in crisis situations. Traditional market makers react to higher volatility by widening the spreads offered for buying and selling government bonds, but continue to stay active in the market. In contrast, NBFI entities often stop their activities completely in crisis situations or operate only on the selling side to raise cash, e.g. to meet margin calls. During the March 2020 dash-for-cash episode, hedge funds were among the largest sellers of US government bonds, materially contributing to the market dysfunction. Some hedge funds faced large margin calls as expected price relationships broke down and highly leveraged positions magnified losses.[275] In the EU, spikes in the demand for liquidity and/or deleveraging pushed some NBFI entities towards disorderly asset sales or large cash withdrawals, from money market funds for instance, with spillovers to other financial institutions or markets.[276] Hedge funds were unable to contribute to a tightening of French government bonds bid-ask spreads in March 2020 through spread arbitration, because many had reached their risk limits. After the initial shock, the widening of bid-ask-spreads lasted longer, in particular due to a large number of hedge funds that benefit from volatile market conditions and higher bid-ask spreads.[277] The increased market vulnerability caused by other NBFI entities, such as pension funds that were inadequately prepared to meet margin calls, was highlighted again in the LDI crisis (see Box 1).

Vulnerabilities in stress episodes are more pronounced for NBFI entities as they typically do not clear through CCPs. In business-as-usual market conditions, the decision of market participants to centrally or bilaterally clear government bond transactions is mainly linked to costs

[275] See U.S. Securities and Exchange Commission (2024).

[276] See Mosk et al. (2023).

[277] See Banque de France (2023).

and individual perceptions of a counterparty's creditworthiness. In stress episodes, dealers prefer to intermediate repo volumes through CCPs due to the netting benefits.[278] However, customer such as NBFI entities are normally not connected to CCPs and lack this opportunity to switch quickly to central clearing. The ability of dealers to transact with NBFI entities in stress episodes is therefore limited by their risk appetite and balance sheet capacity.

Finally, a disorderly default of a large participant could have severe contagion effects. The EU government bond markets have so far not experienced a default of a large market participant with centrally and bilaterally cleared government bond cash and repo transactions. However, it cannot be ruled out that a case comparable to the Archegos collapse (see Box 1) could also happen with a highly leveraged NBFI in the government bond markets, including the futures segment. It can be assumed that the unwinding of open transactions and positions in cash, repo and future markets will have cascading effects on multiple other market participants including CCPs. No counterparty will have a complete understanding of the substantial market footprint of the defaulter. Counterparties with a short position will take actions in parallel to cover their exposure, including an uncoordinated liquidation of collateral. The haircuts applied to the collateral very likely underestimate the aggregate liquidity risk of such a simultaneous unwinding of several counterparties. The SEC cites such contagion risks as a reason for their structural reforms in the United States, because CCPs with open positions from the defaulter are not aware of the bilateral transactions and the aggregate liquidity risk of all open positions.[279]

Policy options to address vulnerabilities in EU government bond cash and repo markets

Addressing market failures is critical to ensure the government bond cash and repo markets continue to play their critical role and avoid any negative spillovers to the financial system. The market dysfunctions suggest that EU government bond cash and repo markets may not be sufficiently resilient to shocks, weakening the role of government bonds as safe assets and benchmarks for other financial markets, public debt issuance, and monetary policy transmission. They also threaten the stability of the broader financial system. Against a backdrop of the shift in market participants, and predictions that the global stock of outstanding sovereign securities is set to increase quicker than the global GDP until 2030,[280] market participants expect that episodes of market dysfunction are likely to continue to occur, possibly with increasing frequency.[281] As a consequence, it is important to consider ways of strengthening the resilience of these key markets to prevent episodes of dysfunction from becoming a threat to financial stability. Such action would also help prevent investors from losing confidence in the safety and liquidity of EU sovereign debt, which would both undermine financial stability and add materially to the debt-servicing burden on

[278] See Hüser, Lepore and Veraart (2021).

[279] See U.S. Securities and Exchange Commission (2023b).

[280] The IMF mentions Brazil, France, Italy, South Africa, the United Kingdom and the United States as countries where debt levels are projected to increase further. See International Monetary Fund (2024c).

[281] See International Capital Market Association (2024a).

future generations of taxpayers.[282] Various policy options have been proposed by public and private sources to alleviate the market dysfunction.

So far, there is limited international guidance on the central clearing of government bonds. In 2013, the FSB issued the following recommendation on repo markets: Authorities should evaluate, with a view to mitigating systemic risks, the costs and benefits of proposals to introduce CCPs in their interdealer repo markets where CCPs do not exist. Where CCPs exist, authorities should consider the pros and cons of broadening participation, in particular of important funding providers in the repo market.[283] In its 2022 report on the liquidity in core government bond markets, the FSB stated that "Given that CCPs are already present in most relevant jurisdictions for both cash and repo markets, it is unlikely that a substantial increase in the amounts of transactions cleared can be achieved without changes to sponsored programs or significant regulatory efforts, potentially including a clearing mandate".[284] In 2024, the FSB started to conduct new work on the functioning and resilience of repo markets with a focus on the role of NBFI entities.

It is a long-standing view of the ESRB that central clearing is a cornerstone of the post-crisis reforms set out in the 2009 G20 Pittsburgh agreement to make the financial system safer. The ESRB has repeatedly advocated a wider application of the clearing obligation for derivatives to encompass entities and asset classes that are currently not in scope or had been exempted.[285] However, a clearing obligation for cash transactions, repos or other SFT transactions has not yet been discussed by the ESRB and requires a thorough cost-benefit analysis.

Central clearing has a range of benefits as outlined in Table 7. Central clearing through CCPs allows for the multilateral netting of offsetting transactions between all market participants. The outcome is a lowering the liquidity risk, as the net amounts of cash and securities that need to be settled at maturity are just a fraction of the gross amounts. Other benefits of wider central clearing include greater transparency of counterparty risks and reduction of counterparty credit risks through the application of margin requirements and other risk mitigants of a CCPs' risk management. For the government bond markets, possible benefits include the creation of additional market-making capacity at all dealers, as a result of improved balance sheet capacities, the enhancement of the competitive position of smaller bank-affiliated and independent dealers, and the facilitation of all-to-all trading, which can improve the quality of trade execution in normal market conditions, and broaden and stabilise the supply of market liquidity under stress.[286]

[282] See Group of Thirty (2021).

[283] See Financial Stability Board (2013b).

[284] See Financial Stability Board (2022).

[285] See European Systemic Risk Board (2022a).

[286] See Group of Thirty (2021).

Table 7

Main benefits and costs of clearing through a CCP

Main benefits	Main costs
Improved dealer balance sheet capacity • Reduced settlement obligations via multilateral netting (dealer-to-dealer and dealer-to-customer) • Capital and liquidity regulatory requirements positively impacted for banks	**Costs for market participants** • Access (including as agents/sponsors) • Due diligence • Collateral (margin, default fund) • Liquidity risk • Procyclicality of margins
Less counterparty credit risk • Increased market liquidity, e.g. longer maturities	**Concentration risk increased within markets** (CCPs single point of failure)
Mitigation of systemic risks in NBFI • Reduction of procyclicality • Reduction of contagion effects	**Clearing members fees for sponsored access** for non-banks (concentration risk)
Transparency • May facilitate all-to-all trading	**Increased credit risk for CCPs**

Source: ESRB.

Broader central clearing might have alleviated the dysfunction of government bond markets. There is evidence that if comprehensive central clearing had been introduced to the UK government bond cash and repo markets ahead of the March 2020 dash-for-cash, netting would have reduced the Gilt repo exposures on UK dealers' balance sheets by 40%, thereby enhancing dealers' ability to intermediate financial markets.[287] However, for US banks it remains unclear how much scope for further reducing the balance sheet costs associated with the leverage ratio through central clearing, and netting of cash and repo transactions, can be achieved with a clearing mandate. This is because a substantial amount of activity is already nettable outside of central clearing, as US accounting rules allow balance sheet netting for offsetting transactions with different counterparties, involving different Treasury securities, or involving a mix of Treasury securities and other securities. A further sizeable amount would only be nettable if trading activity can be restructured, e.g. by moving more trades to overnight rather than term repo activity so that trades with different counterparties can be more readily netted.[288]

Broader central clearing also entails challenges. Currently, there is no regulatory framework covering the bilateral clearing of government bond cash and repo transactions. As a consequence, margin requirements, i.e. the exchange of initial and variation margins, are typically low or non-

[287] See Baranova et al. (2023).

[288] See Bowman, Huh and Infante (2024).

existent, and applied haircuts are often zero. The cost of centrally clearing these transactions is comparably higher due to CCPs' margin model. This model requires the provision of collateral, even for cash transactions until settlement, applied haircuts on collateral, funding costs, access and operational (including fees) as well as legal expenditure.[289] In addition, the requirement for a wider set of entities, such as NBFI entities, to access the CCP would require changes to a number of risk management and operational procedures. For example, the need to pay margins to the CCP on a daily (or even intraday) basis would require new members to incur costs to set up the relevant infrastructure to pay these margins, and cope with the increase liquidity risk and opportunity cost. This might raise the barrier for smaller participants to enter the repo market and/or drive out traders with low profitability. Some participants fear that liquidity in normal times could be impacted negatively and that bid-ask spreads would widen. Finally, it is unclear if and how the costs of issuing government bonds for sovereigns might be impacted by broader central clearing.

The United States recently mandated central clearing in the government bond cash and repo markets as a policy reaction to market dysfunctions. In December 2023, the SEC adapted a clearing obligation for US government bond cash transactions from December 2025 onwards (with an exemption for hedge funds) as well as for US government bond repos from June 2026 onwards (including for hedge funds). The SEC restricted the central clearing mandate for hedge funds to the repo market, given that these actively participate in the US repo market to fund leveraged bets. The SEC is convinced that the measures will lower systemic risk in the US government bond market by increasing the volume of transactions that are subject to central clearing and ensuring that those additional transactions are subject to standardised risk management as well as increase multilateral netting. This would have the effect of reducing operational risk, liquidity risk and reduce the overall amount of counterparty credit risk. Further, the SEC expects that the clearing obligation improves market safety by lowering exposure to settlement fails and that increased central clearing provides greater transparency into the market and could potentially facilitate all-to-all trading.[290]

The ESRB, at this stage, does not advocate for mandatory central clearing. More analytical work is needed to conduct a cost-benefit analysis, taking into account that the EU markets seem to be less affected by episodes of dysfunction compared to the US market so far. A clearing obligation would induce significant adaptation costs for EU market participants. Furthermore, the EU government bond market is a heterogeneous market where different markets may need different solutions in contrast to the US market with just one single issuer. It seems also to be necessary to differentiate between the cash segment and the repo segment going forward. At the same time, the introduction of the clearing obligation in the United States might have spillovers to EU government bond markets as some EU institutions active in the US government bond market will fall within the scope of the US mandate. Similarly, US NBFI entities could become more active in the EU, thereby leading to increased vulnerabilities. As a consequence, and given the clear benefits of central clearing, an incentives package to support a voluntary move towards central clearing seems warranted.

Broader central clearing might be achieved by working on creating incentives and reducing impediments that currently prevent market participants from voluntarily using CCPs more often. Incentives could be developed in a comparable fashion as it was done for the central

[289] See Financial Stability Board (2022).

[290] See U.S. Securities and Exchange Commission (2023b).

clearing of OTC derivatives, including with a phased approach of implementation on various groups of market participants and with exemptions to reflect proportionality. The incentives in the OTC derivatives markets are achieved by applying comparable risk management requirements as already applicable to CCPs – with the exchange of initial and variation margins – for all bilaterally cleared transactions. Incentives and impediments may be demand driven, i.e. there are not enough economic incentives for market participants to switch to central clearing, as well as supply driven, e.g. CCPs currently do not offer to clear all products or do not have adequate access models. A package is proposed to incentivise central clearing, consisting of:

1. Applying a consistent set of risk management requirements for government bonds and SFTs including repos that are bilaterally and centrally cleared;

2. Addressing disincentives in prudential requirements for NBFI entities;

3. Broadening access models of CCPs to promote access by NBFI entities including clarifying the prudential treatment of the liability of an agent;

4. Enhancing CCPs' service offering where feasible.

Risk management practices differ between bilateral and central clearing of government bonds cash and repos in the EU. Currently, bilaterally cleared cash and repo transactions with government bonds are not regulated in the same risk-based manner as centrally cleared transactions. A cash transaction cleared via a CCP would require both counterparties to post initial margin to the CCP to cover for potential future exposure resulting from price fluctuations on the bond markets. If this transaction is cleared bilaterally, typically no initial margin is exchanged, thus exposing each counterparty to market price risk, in the event the other counterparty defaults. In the repo market, central clearing mainly occurs for dealer-to-dealer but not for dealer-to-customer transactions.[291] This stands in contrast to other financial markets such as the market for equity securities, where nearly all transactions are centrally cleared. In bilaterally cleared repo markets with government bonds as underlying, market participants often use zero margin requirements and almost 70% of outstanding amounts in the EU have a zero haircut, based on data from the single securities financing transactions data store for the first quarter of 2024.[292]

The ESRB is of the view that the European Commission should consider introducing risk management requirements for bilaterally cleared government bond cash and SFT transactions. Current practices reflect bilateral clearing arrangements, including netting, between two counterparties. They may not necessarily reflect the prevalent market and counterparty risks, and are not consistently regulated in comparison to centrally cleared transactions, even though the activity is the same. Therefore, risk mitigation techniques should be considered to be introduced that appropriately reflect the risks, notably through the application of initial and variation margin requirements. Consistent regulation may strengthen the resilience of the markets and incentivise a move to central clearing, thus bringing the benefits of central clearing to government bond cash and SFT markets (including repos), and enhancing the resilience of these markets. As is standard with

[291] See di Luigi, Perrella and Ruggieri (2024).

[292] For special, scarce government bonds such as the German Bunds, a negative haircut is often applied. These reflect collateral-driven behaviour, meaning the trades are conducted not for liquidity sourcing.

the introduction of new legislative requirements, such risk management requirements would need to be preceded by a cost-benefit analysis conducted by the European Commission.

The post-crisis regulation for derivatives markets may serve as a good example as it is designed to incentivise central clearing via CCPs. The reforms introduced on the OTC derivatives markets after the global financial crisis of 2007-09 follow an activity-based approach as the rules apply to all users of OTC derivatives, i.e. most financial counterparties including NBFI entities as well as non-financial counterparties with some exemptions (e.g. for intragroup transactions) and thresholds to reflect proportionality. Most OTC interest rate and credit derivatives now fall under a clearing obligation. For the remaining OTC derivatives that are bilaterally cleared, strict requirements on the risk management apply, mimicking the central clearing risk management with the regular exchange of initial and variation margins. Instead of being posted to a CCP, the initial margin for bilaterally cleared OTC derivatives must be posted to a third party like a custodian, meaning it is held segregated from the counterparties' assets. Both sets of rules, i.e. clearing obligation and bilateral margin requirements, were implemented in a phased approach, extended to asset classes and groups of entities in sequence. To close a potential loophole on the clearing obligation, the legislator also introduced a clearing obligation for all on-exchange traded derivatives. Article 29 of the Markets in Financial Instruments Regulation (MiFIR) sets out that 'The operator of a regulated market shall ensure that all transactions in derivatives that are concluded on that regulated market are cleared by a CCP'.

The FSB has developed a minimum haircut framework for a subset of securities financing transactions aimed at constraining the build-up of procyclical leverage outside the banking system. It would be important to swiftly implement this framework as part of a holistic response to address risks from NBFI leverage. However, government bonds are explicitly excluded from this framework as a minimum haircut might come with potential side effects.[293] In principle, collateral haircuts serve a similar function to initial margin requirements, protecting lenders against losses after the default of a borrower. But a haircut only protects the collateral receiving counterparty in a repo transaction while the other counterparty is exposed to even higher counterparty credit risk. In the view of the ESRB, a preferred policy option would be to develop mandatory margin requirements for bilaterally cleared transactions, so that both counterparties are protected.

The ESRB already proposed to consider extending the risk mitigation techniques used and mandated by EMIR in non-centrally cleared derivatives markets to non-centrally cleared SFTs. In its January 2020 report on mitigating the procyclicality of margins and haircuts in derivatives markets and SFTs, the ESRB presented six policy options to address the systemic risks from procyclicality associated with margin and haircut practices.[294] While the considerations at the time were focused on reducing the systemic risks of procyclicality, these policy options may also support a consistent approach across bilateral and central clearing, and as such incentivise central clearing. For non-centrally cleared SFT markets, the ESRB has identified mandatory use of initial and variation margins as risk mitigation techniques superior to the currently used haircuts. The use of haircuts in SFT markets creates two types of risk. First, haircuts in non-centrally cleared SFT markets typically include counterparty-specific add-ons to mitigate counterparty credit risk. This can be a major source of cyclicality, as a deterioration in the perceived creditworthiness of the

[293] See Financial Stability Board (2020b).

[294] See European Systemic Risk Board (2020a).

counterparty could trigger a generalised tendency to self-protect by raising haircuts. Second, while protecting the cash lender, haircuts expose the asset lender (cash borrower) to counterparty credit risk. Therefore, it is impossible to satisfy the need to reduce credit risk exposure for both counterparties at the same time by using haircuts. The mandatory use of initial and variation margin as counterparty credit risk mitigation techniques in non-centrally cleared SFT markets would better mitigate these risks and significantly compress the overall size of the counterparty credit risk outstanding in the system at any time. Potential side effects of this option could stem from increased costs to market participants. These side effects could, for instance, translate into less market liquidity on EU repo markets, as well as a fragmentation of the global SFT market. As such, this policy option requires interaction with and discussion in standard-setting fora beyond the EU.

A second incentive area might be the existing prudential requirements for NBFI entities. Prudential regulation for NBFI entities does not always recognise the lower risk nature of CCPs and therefore does not incentivise NBFI entities to centrally clear cash and repos accordingly. For instance, counterparty risk limits to funds' investments are the same for centrally cleared and bilaterally cleared repos, meaning they would also account for exposures towards CCPs. As CCPs become the legal counterparty in each repo transaction, it should be clarified that these transactions are excluded from the issuer concentration limit calculation for UCITS[295], as it was already done for centrally cleared OTC derivatives. Under the Solvency II framework, exposures of insurance and reinsurance corporations wishing to become direct CCP members can be subject to higher capital requirements than for those companies that act as indirect clearing participants. These higher capital requirements can be a disincentive to use the newly developed access models of CCPs. The European Commission is already aware of the latter and requested technical advice from EIOPA on this issue.[296] On this basis, it should consider exempting CCP exposures from counterparty risk limits of investments funds.

A third incentive area could focus on access of NBFI entities to CCPs for repo clearing. Client clearing for repos means that customers access a CCP indirectly through a clearing member of the CCP, which is typically a bank, thereby becoming a client of the clearing member (which can be different from the counterparty of the trade). Client clearing is balance sheet and capital intensive for clearing members and costly for clients. A client repo has the same impact on the dealer's balance sheet in the centrally cleared and the bilaterally cleared segment. Indeed, the clearing member must settle a trade directly against the CCP and then onwards to the client through a back-to-back transaction, and will not be able to net the two trades as they are with two different counterparties. In addition, there are regulatory capital charges for holding client trades, as clearing members assume the financial risk of the trade towards the CCP and are liable for the settlement. Moreover, repos do not benefit from the same treatment of the leverage ratio capital requirement for derivatives that banks centrally clear on behalf of their clients under the Basel III framework. Therefore, client clearing of repos currently barely exists.[297]

Access models of CCPs for NBFI entities are important as they determine the attractiveness of central clearing for NBFI entities. In 2022, CPMI-IOSCO published a discussion paper on access models for and portability of clients, with the objective of enhancing access to CCPs for

[295] See European Securities and Markets Authority (2010).

[296] See European Commission (2024b).

[297] See di Luigi, Perrella and Ruggieri (2024).

clients to promote clients' use of central clearing. They define two categories of access models: (i) direct access models, and (ii) sponsored access models.[298] In both designs, clients such as NBFI entities are responsible for their collateral management and post (receive) margins directly to (from) the CCP. In the first arrangement, clients become directly connected to CCPs but are exempted from participating in the default management process and from contributions to the CCP default fund. Within the sponsored framework, clients need support of a third-party entity, often called sponsor or agent, which generally is a clearing member. This sponsor fulfils certain obligations, e.g. the default fund contribution. The specific rights and obligations of clients and sponsors depend on the CCP.

Sponsored access models would allow balance sheet savings, in particular for sell-side entities, and bring benefits for buy-side entities. In sponsored clearing, the agent does not guarantee the sponsored member nor its positions. Therefore, these positions will not be held on the agent's balance sheet nor be counted in its leverage ratio exposure. In client clearing, the process of porting positions to another clearing member in case of default of the clearing member is often (too) slow and cumbersome. Yet, in case of the sponsored model, only a new sponsoring agent has to be found, which in theory should be easier as no positions have to be relocated and the agent has limited balance sheet impact compared to client clearing porting.

The uptake of sponsored access models developed by EU CCPs is therefore important to facilitate central clearing. However, it faces significant obstacles. First, building sponsored access to CCPs is costly for NBFI entities. A sponsored connection to CCPs implies important operational costs (IT, legal), and a "mature" finance department able to handle the financial obligations that come with central clearing. In addition, the on-boarding process for the sponsored clients is similar to the on-boarding of clearing members, e.g. in respect of capital requirements, and hence complex and costly. Therefore, sponsored access is only a possibility for large, sophisticated NBFI entities. Finally, it is uncertain whether clearing members would reflect their balance sheet and capital requirements savings, by offering improved pricing to buy-side market participants or access to a broader number of small clients. On this matter, the CPMI-IOSCO report raised the high concentration of clearing members in their role as sponsors/agents as a cost factor for clients.

Costs for agents in the sponsored access models might be lowered by acknowledgement of this role in the prudential requirements. There are currently only a few agents at EU CCPs. The EU-sponsored access models are more conservative than the US model, where the agent offers some guarantees to the CCP. EU CCPs impose eligibility criteria that restrict access to sponsored models to a narrower population of buy-side entities. In addition, they require agents and sponsored members to pay additional prefunded resources compared to clearing members and clients. Finally, the prudential treatment of the liability that the agent has towards the sponsored member is not clearly defined under the Basel III framework. In the absence of legal certainty on this matter, agents tend to apply the highest risk weight to their liabilities. Therefore, the European Commission should consider clarifying the prudential treatment of banks acting as clearing agents,

[298] See committee on Payments and Market Infrastructures and Board of the International Organization of Securities Commissions (2022).

reflecting the low riskiness of offering agent services in the central clearing ecosystem adequately in the risk weights.

As a fourth incentive area, more work is needed to better understand whether there are any impediments to central clearing in relation to the service offering of CCPs. It is remarkable that for cash transactions only the Italian government bond market is centrally cleared, while all other EU markets have low or zero clearing rates. Further analysis is needed to better understand why participants in French or German government bond cash markets are not clearing through CCPs, while participants in the Italian market participants are using CCPs. With regard to the product offerings, the websites of EU CCPs do not show any restrictions on long repo maturities. However, existing data sources suggest that CCPs hardly clear certain repo maturities, transaction sizes and types of products. It remains unclear why there are very low volumes, e.g. in the long repo maturities. It could be that investors in these products have directional portfolios that do not allow for netting benefits or that the margin requirements of CCPs are too prohibitive, leading to a preference for bilateral clearing where no margin requirements apply. The collateral requirements of CCPs could also be an impediment if CCPs do not accept all EU government bonds as collateral. In 2021, the European Commission held stakeholder outreach meetings with CCPs, market participants and authorities to improve its understanding of impediments to clear euro-denominated interest rate derivatives at EU CCPs.[299] Similarly, the European Commission may wish to consider whether such workshops would also be useful to better understand whether there are any impediments for market participants from centrally clearing cash transactions and long-term repos. The workshops could also discuss impediments in the current access models of CCPs as well as possible collateral restrictions from CCPs.

As part of the fourth incentive area, variation margin practices of CCPs could be streamlined. An industry group recommended promoting non-cash collateral as an acceptable alternative to cash collateral in the case of variation margin (VM), both for centrally cleared and bilaterally cleared trades, to alleviate the need to sell bonds to raise cash in order to fulfil margin calls in crisis situations.[300] As outlined in Policy Digest 3, VM depends on market movements and typically needs to be provided in cash, creating a significant source of liquidity risk. Some CCPs accept non-cash collateral in the case of intraday VM, but this may be in conflict with other effective practices of CCPs such as passing through intraday VM, as advocated for by the ESRB.[301] A broader use of non-cash collateral for VM could increase the risk profile of CCPs, as they might need to rely on collateral transformation services and high-quality liquid collateral might only be available with a delay compared to cash. Work is already ongoing in this area as demonstrated by a recent discussion paper that sets out eight effective practices as examples of how VM calls and collection processes from CCPs might be improved.[302] International guidance is also available for streamlining variation margin processes in bilaterally cleared transactions.[303]

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299 See **Proposal for a Regulation of the European Parliament and of the Council amending Regulations (EU) No 648/2012, (EU) No 575/2013 and (EU) 2017/1131 as regards measures to mitigate excessive exposures to third-country central counterparties and improve the efficiency of Union clearing markets**.

300 See the recommendations in International Capital Market Association (2024a).

301 See European Systemic Risk Board (2020a).

302 See Committee on Payments and Market Infrastructures and Board of the International Organization of Securities Commissions (2014).

303 See Basel Committee on Banking Supervision and Board of the International Organization of Securities Commissions (2024).

Policy actions might also be needed to lower the liquidity needs of market participants. The market dysfunctions described above often might be fuelled by a large selling pressure due to deleveraging and inadequate preparedness for margin calls (e.g. in the LDI crisis). Leverage restrictions for highly leveraged NBFI entities could reduce the size of their margin calls and the need for deleveraging. However, leverage restrictions would entail a much deeper interference in the business models of some NBFI entities compared to margin requirements for bilaterally cleared transactions. These are therefore not discussed here as a policy option to make the government bond markets more robust. Further, enhanced liquidity risk management is more promising to mitigate the need for forced asset sales, as entities would be better able to withstand market-wide shocks, thereby lowering the risk of spillovers to broader market liquidity (see Policy Digest 3).[304]

The ESRB is cognisant of other policy options to alleviate market dysfunction that are not related to central clearing and which it did not consider in this report. The ESRB came across several other policy options proposed by public and private sources to alleviate market dysfunctions. These options include more frequent central bank interventions[305] and the establishment of central bank facilities for NBFI entities.[306] They also cover standardisation of repo maturity dates, such that they occur on the same day of the week (apart from overnight repo) to increase netting opportunities[307], changing the cut-off date for the G-SIB calculation and the leverage ratio calculation, i.e. moving from quarter-end to average over the quarter, especially to improve the repo market functioning at quarter-ends.[308] Another option would be changing the regulation for UCITS and money market funds to afford greater access to the repo market as a tool to manage liquidity risk[309], presumable to avoid an outright selling of assets.

304 See Mosk et al. (2023).

305 See Bank for International Settlements (2022).

306 See International Monetary Fund (2023).

307 See Baranova et al. (2023).

308 See the recommendations in International Capital Market Association (2024a).

309 ibid.

Chapter 5 – A system-wide approach to lending

Summary

Lending, be it through loans or bond financing, is an activity that is central to the proper functioning of the economy. Firms may need to borrow funds to finance investments that might not be profitable right away, while households may need to borrow to buy a house or to smooth their consumption over time, and governments and public institutions may need to borrow to invest in infrastructure or enact countercyclical measures in times of crisis.

While lending[310] is traditionally provided through bank loans, NBFI entities are playing an increasingly prominent role as lenders and this trend is expected to continue. A more diversified financial system, which is what the CMU is aiming for, can support financial stability and bring economic benefits. Besides diversifying the sources of lending, NBFI lending can help to make finance available to more economic agents, and provide more flexible options for economic actors, as the approval process is often lighter and faster. This can foster innovation, intensify competition in the financial sector, and bring down financing costs for non-financial corporations. In parallel, NBFI lending can also increase systemic risk in the financial markets, because it is more procyclical and sensitive to financial shocks than bank loans. This procyclical behaviour might also make NBFI lenders more exposed to adverse economic shocks, such as substantial asset price corrections or the sudden deterioration of borrower fundamentals in response to specific economic circumstances.

However, lending regulations have so far focused largely on banks. While certain changes have been ushered in to include other entities, such as through the Mortgage Credit Directive, the Consumer Credit Directive, and the Alternative Investment Fund Managers Directive (AIFMD), consistent regulation is needed. As lending can be provided in a similar way by many different entities, financial stability risks associated with lending should be analysed by focusing not only on the entities involved but also on the activities carried out.[311]

The proposal on whether activity-based or entity-based regulation is more appropriate should be guided by an analysis of whether the main risks related to lending apply to all lenders.[312] For instance, the focus on entity-based regulation in the NBFI sector has now resulted in less developed policy than is needed from a macroprudential and financial stability perspective.[313] These lenders have different business models, which ultimately affects the risk profile of their lending activities. Lending activities come with risks for both borrowers and lenders, with uncollateralised loans being associated with higher risks on the lender's side. From a financial stability perspective, the main risks related to lending are excessive credit growth, counterparty risk, concentration risk, excessive leverage, excessive liquidity mismatch and excessive maturity

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310 Loans and bonds are addressed jointly (as lending) in this note as they can be considered as partial substitutes, and can be said to carry similar risks.

311 The Consumer Credit Directive and the Mortgage Credit Directive are activity-based, but apply only to consumer credit and mortgage credit.

312 See Borio, Claessens and Tarashev (2022).

313 See Borio, Farag and Tarashev (2020).

transformation.[314] The level of interconnectedness inherent to lending activities will determine the extent to which these risks could be propagated/amplified into other parts of the financial system following an adverse shock. Interconnectedness can amplify or simply transmit the effects of a shock to other parts of the financial system, or to the real economy. These risks have been analysed in this chapter in terms of whether they apply to all lenders, so as to guide the decision on whether activity-based or entity-based regulation would be the best solution.

Overall, most risks seem to be adequately addressed by entity-based regulation. Capital buffers, minimum capital requirements, leverage limits, concentration limits/large exposure limits/capital requirements, measures addressing excessive liquidity mismatch and maturity transformation, retention requirements and transparency requirements are all measures that address the same activity, but with the risks differing across entities. Meanwhile, activity-based regulation seems best suited for BBMs and for exposure concentration limits to highly indebted firms.

The ESRB believes that the European Commission should introduce activity-based regulation into EU law, enabling national authorities to set borrower-based measures (BBMs) and apply them to all types of lenders. This should take place in various phases. First, a legal framework should be created for BBMs for residential real estate (RRE) loans to households. Second, and following an analysis of the practical feasibility of BBMs for loans to NFCs, the legal framework should be expanded to include commercial real estate (CRE) loans to NFCs and eventually other NFC loans. Lastly, the feasibility of also capturing market-based finance by BBMs should be studied to avoid circumvention of any measure applied to loans through bond issuance. The measures should be calibrated and activated by the national authorities.

BBMs help to reduce the risk of excessive credit growth and counterparty risk. Currently, they are applied primarily to credit institutions (entity-based regulation) when lending to households for house purchase. To reduce the risk of excessive credit growth beyond households and the RRE sector, BBMs for NFCs could also be introduced, particularly for the CRE sector. Further analysis might be required on the practical details of this proposal. This could include amortisation requirements and measures related to the ability to honour interest payments, such as a debt-service coverage ratio, an interest coverage ratio or a debt yield ratio. LTV limits could also be imposed in the specific case of loans to real estate companies where properties are often used as collateral. BBMs should be activated for macroprudential purposes only, and the activation and calibration should remain at national level. The risks associated with excessive credit growth also apply to market-based finance since issuing a bond is, from the borrower's perspective, the same activity as taking out a loan and it should therefore be regulated consistently.

The ESRB also believes that the European Commission should introduce into EU law activity-based regulation enabling national authorities to set exposure concentration limits to highly indebted firms. Similar to BBMs, such limits would address excessive credit growth and counterparty risk by reducing the exposures of individual entities to highly indebted NFCs (measured at the consolidated level in the case of corporate groups), akin to the possibilities currently provided for under Article 458 CRR for the banking sector.

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[314] See also **Recommendation ESRB 2013/1**. In the context of retail lending, operational risks (e.g. fraud or regulatory risks) and consumer protection risks may also be relevant.

Monitoring and analytical tools are needed to identify risks and vulnerabilities associated with lending activity. To be able to consistently regulate lending, and for that regulation to be commensurate with an entity's actual or potential contribution to systemic risk, data availability and quality needs to be improved (see also Chapter 1). This is needed so that the lending market for example, including all entities and interconnections, can be monitored, whilst also keeping track of reactions to shocks and substitution effects among entities. In addition, the introduction of regular system-wide stress tests that include interactions between different entities and countries would help to identify specific risks and ensure the existence of appropriate macroprudential measures.

This chapter sets out the ESRB's views on the implications of the growing importance of lending by NBFI entities and thus the need for regulation. It is organised in three parts. Part 1 defines lending, describing the mechanisms at play and the broad products in scope. This lays the foundations for the analysis of risks and the formulation of policy options in later parts. Part 2 focuses on the systemic vulnerabilities inherent in lending activities. It analyses the sources of risks and the potential for shock transmissions to the wider financial system. Part 3 proposes ways to regulate this activity in the EU. It analyses the risks discussed in Part 2 in terms of whether they apply to all entities – in which case an activity-based regulation would be warranted – or not.

Overview of lending as an activity

Lending is an activity that is central to the proper functioning of the economy. Firms may need to borrow funds to finance investments that will not be profitable right away, households may need to borrow to buy a house or to smooth their consumption over time, and governments and public institutions may need to borrow to invest in infrastructure or enact countercyclical measures in times of crisis.

Lending refers to the concept of providing money to a counterparty who pledges to return it later. In its most basic setting, this transaction involves two parties: a lender and a borrower. The lender may be a household, a non-financial corporation (NFC) or a financial institution that makes money available to an individual, a company or a country. Upon lending, the lender expects the money to be returned at a future date, usually including the payment of interest and/or fees. The payment of interest reflects the time value of money: the lender charges interest over a certain period to compensate for the fact that they can no longer use the money, while the borrower brings their future buying power forward to the present.

Lending can take place in the form of loans and bonds, which can be considered as partial substitutes and which expose the lender to similar risks, notably the risk of default of the borrower. Loans are contractual agreements between a single lender and a single borrower that specify the maturity, the interest rate, a schedule of interest payments and principal repayments, and other conditions.[315] Loans can be delivered through a range of agreements and can be collateralised (such as a mortgage, which gives the loan provider recourse to the property if the borrower defaults) or uncollateralised (where the lender has no recourse to collateral in the event

[315] Loans can be provided by a single lender, or by a consortium of lenders. Such syndicated loans are typically structured, arranged and administered by one or more of the lenders involved. Loans can also be made to several borrowers (e.g. a joint mortgage).

that the borrower defaults). Loans include mortgages, private loans[316] and unsecured loans, which can be securitised into asset-backed securities or collateralised loan obligations. In the crypto ecosystem, crypto-assets can be lent and borrowed (see also Policy digest 4 of this note). Securitisation enables banks to transfer risk from their balance sheets to other entities, thus allowing them to lend more. While this can be useful in moving the risk to a place where it can be better managed and/or better absorbed in case it materialises, it can also be a channel of contagion.

Another form of borrowing is to raise money by issuing bonds. Such securities sold in financial markets also promise the return of the principal at maturity and the borrower typically pays interest in the form of a regular "coupon". Through bond issuance, a company can borrow from many different lenders, making it easier to raise large sums because if the borrower defaults, each lender is exposed to only a small part of the total amount borrowed. Bonds are typically issued by large companies, since bond issuance is associated with high fixed costs and fees. Bond terms, such as maturity and other covenants, also tend to be more attractive for large firms. Bonds can be issued with or without being backed by collateral, referred to respectively as secured and unsecured bonds. Covered bonds are an example of secured bonds that can only be issued by credit institutions and where a portfolio of mortgages is typically used as collateral.[317]

Loans are provided mainly by banks, although loans from NBFI entities also account for a substantial share. Bank loans make up the largest part of total lending (Chart 6).[318] The stock of loans provided by euro area loan providers to the euro area economy in Q4 2023 amounted to €19 trillion, of which around €4.8 trillion was provided by NBFI entities (panel a), which corresponds to about 25% of total loans (panel b). More and more loans are being provided by insurance corporations and pension funds[319] (ICPFs) and other financial institutions (OFIs). OFIs include other financial intermediaries (e.g. securities and derivatives dealers and financial vehicle corporations engaged in securitisation transactions, which could include fintech companies providing credit[320]), financial auxiliaries (e.g. stock exchanges, managers of pension funds and mutual funds, and insurance brokers) and captive financial institutions and money lenders (mainly holding companies and intragroup entities, such as financing conduits (if they are resident in a country other than that of their parent) or special-purpose entities that raise funds in open markets to be used by their parent). Therefore, they also include intragroup financial flows of (non-financial) corporate groups across countries. At the consolidated level, the assets and liabilities on the balance sheet of these OFIs and related risks cancel each other out and thus fall outside the

316 Private finance can be broadly understood as the provision of debt and/or equity finance by non-banks, as opposed to banks or public markets. See European Systemic Risk Board (2024b) and International Monetary Fund (2024b).

317 See **Directive 2019/2162/EU of the European Parliament and of the Council of 27 November 2019 on the issue of covered bonds and covered bond public supervision and amending Directives 2009/65/EC and 2014/59/EU** (OJ L 328, 18.12.2019, p. 29).

318 According to the ECB definition, banks are classified as monetary financial institutions, as well as central banks, and other resident financial institutions whose business it is to take deposits from entities other than MFIs and, for their own account, to grant credits and/or invest in securities.

319 Institutions for occupational retirement provision (IORPs) are generally subject to strict regulatory limits on providing loans in order to ensure sound risk management and comply with the prudent investment principle. While the IORP II Directive does not explicitly prohibit IORPs from providing loans or mortgages, national regulations across Europe typically impose stricter rules to limit such activities. Loans and mortgages provided by insurers are subject to Solvency II regulation and capital requirements.

320 Credit fintechs run a heavily digitalised business model and include all credit activity conducted via an electronic platform and not operated by a commercial bank.

intended scope of this section. The role of NBFI loans remains unclear due to reporting gaps in the context of retail lending. This may be because some NBFI entities are not required to report, or because the activity does not require a licence in some Member States. Bond financing amounted to €14.3 trillion in Q4 2023, of which 46% was held by NBFI entities (18% by non-MMF investment funds, and 20% by ICPFs).321 The share of lending through the purchase of debt securities has increased slightly since 2013, from about 41% to around 43% of total lending.

There are large differences between countries when it comes to the size of NBFI lending. In the euro area, banks provided about 90% of total loans to households in Q4 2023, thus showing that NBFI entities issued a relatively small proportion of total loans (Chart 7, panel b). In a few countries such as the Netherlands, Cyprus[322] and Ireland, however, the share of NBFI loans is above 20% (Chart 7, panel c). For lending to NFCs (loans + debt securities), NBFI entities tend to play a somewhat larger role, with a share of around 35% in Q4 2023 (Chart 8, panel b).[323] However, there is significant cross-country heterogeneity. For example, in Ireland and Luxembourg the shares of NBFI lending are above 50% of total lending. As debt securities are issued mostly through an intermediary, the data shows little direct lending through debt securities to NFCs; this lending would instead show up in data on lending to the intermediary (such as a bank). Euro area lending to NBFI entities came to roughly €6 trillion in Q4 2023, with about 60% in the form of loans and 40% as debt securities (Chart 9, panels a and b). The relatively large share of bank lending to NBFI entities (43%) points to strong interlinkages in the financial system. Loans to NBFI entities have roughly tripled since 1999. Meanwhile, OFIs account for around 35% of total lending to NBFI entities, possibly related also to intragroup lending.

321 Debt securities to euro area counterparties amount to only €14 trillion, with €6.4 trillion in the hands of NBFIs (45%). Note that lending exposures contribute 3.4% of the total investments of the insurance sector (see box in the June 2024 EIOPA Financial Stability Report). Still, if these exposures are not regulated consistently with other entities, they might grow further over time.

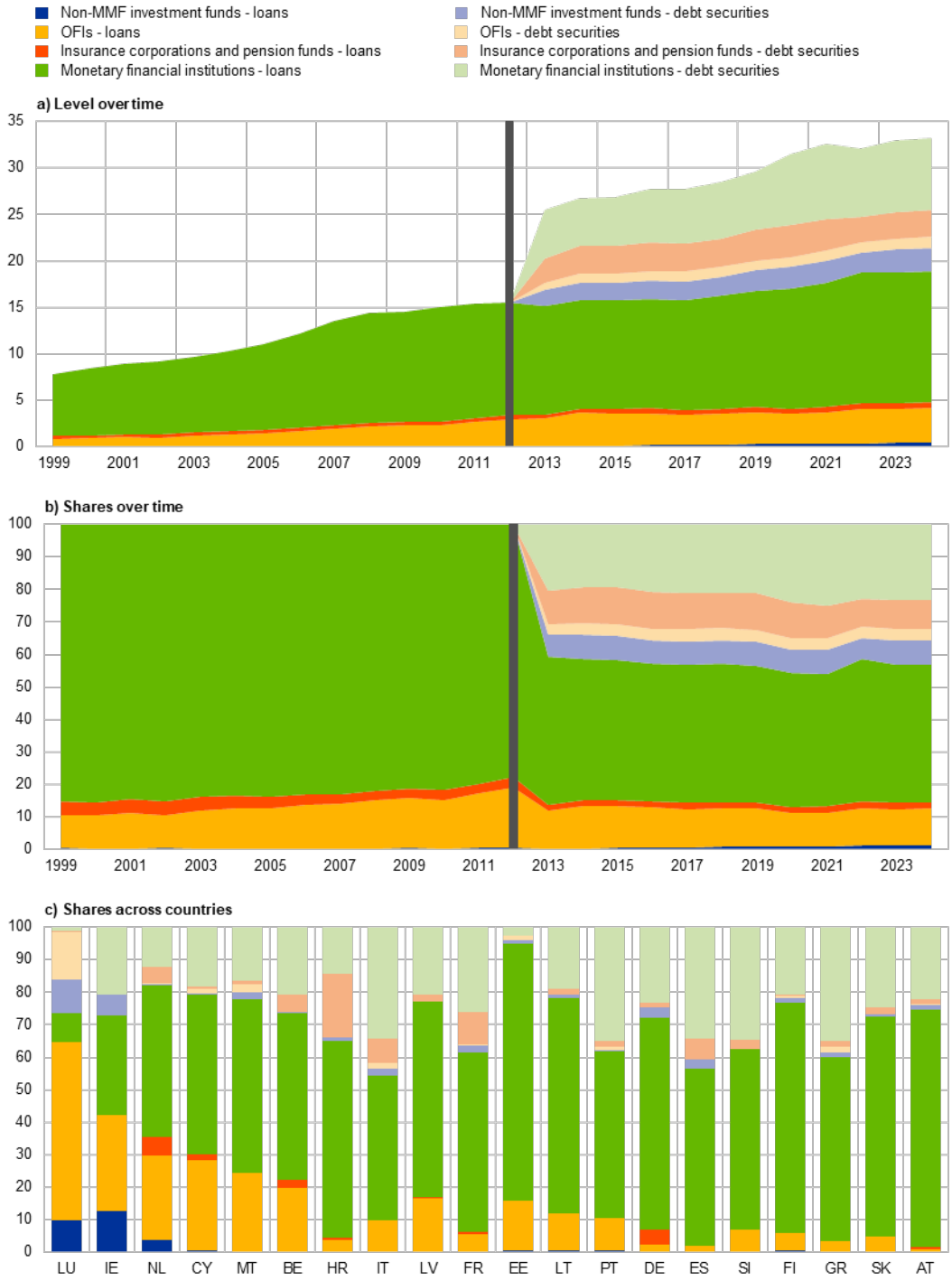
322 Note that for Cyprus, the majority of the loans from OFIs relate to non-performing loans acquired from credit acquiring companies.

323 Data on lending per counterparty are available for domestic lending only. Therefore, the counterparties here are euro area households and NFCs.

Chart 5

Euro area lending to the euro area economy

(panel a: EUR trillions; panels b and c: percentage shares of total lending to general economy)



Source: Eurostat and ECB (QSA).

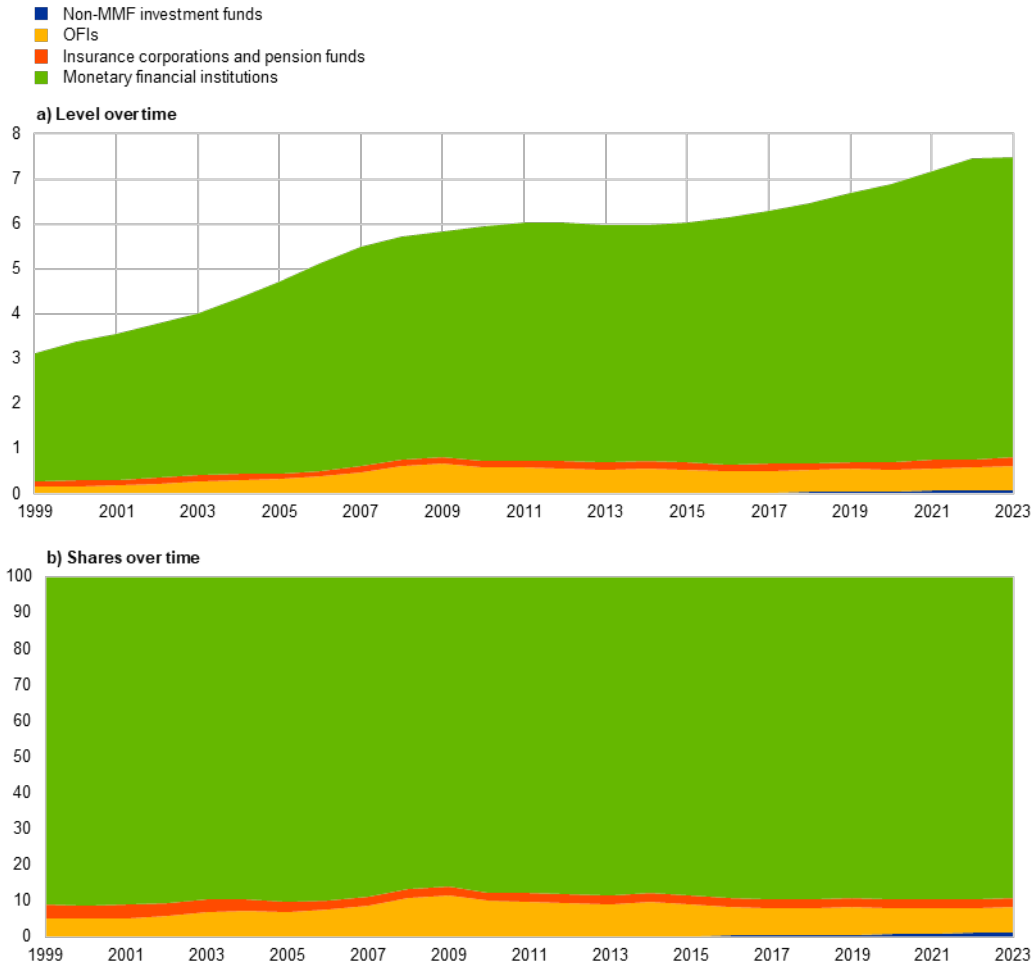
Notes: Lending includes loans and debt securities issued by counterparties. Monetary financial institutions (MFIs) include central bank lending, as the aggregate without central bank lending is only available as of 2015. Excluding central bank lending would have only a small effect. MFIs include money market funds (MMFs) as data for MMFs alone is not available. Other

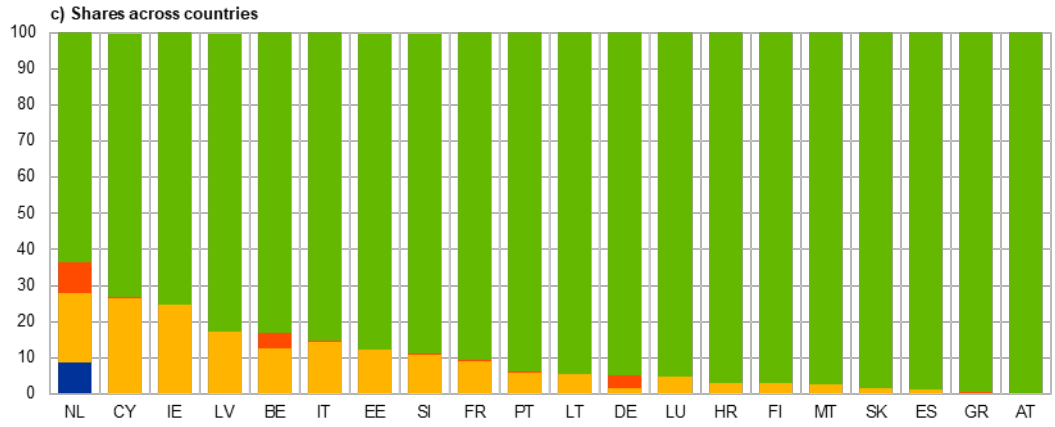
financial institutions (OFIs) may include intragroup lending, although it is hard to quantify to what extent. Data on debt securities issued by non-financial corporations is available only from 2013, as indicated by the vertical line. The counterparty sector in panels a), b) and c) is the general economy. The counterparty area in panels a) and b) is the euro area. The counterparty area in panel c) is the home jurisdiction. Jurisdictions in panel c) are ordered from left to right in terms of percentage share of lending to the domestic general economy from non-bank financial intermediaries. For each jurisdiction it shows lending from the financial sector in that jurisdiction to the general economy in that jurisdiction. In the context of retail lending, the overall role of NBFI loans remains unclear due to reporting gaps. These gaps arise because some NBFI entities are not required to report or the activity does not require a licence in some Member States. The latest observations for panels a) and b) are for Q4 2023; panel c) data are as at Q4 2023.

Chart 6

Euro area lending to households

(panel a: EUR trillions; panels b and c: percentage shares of total lending to households)



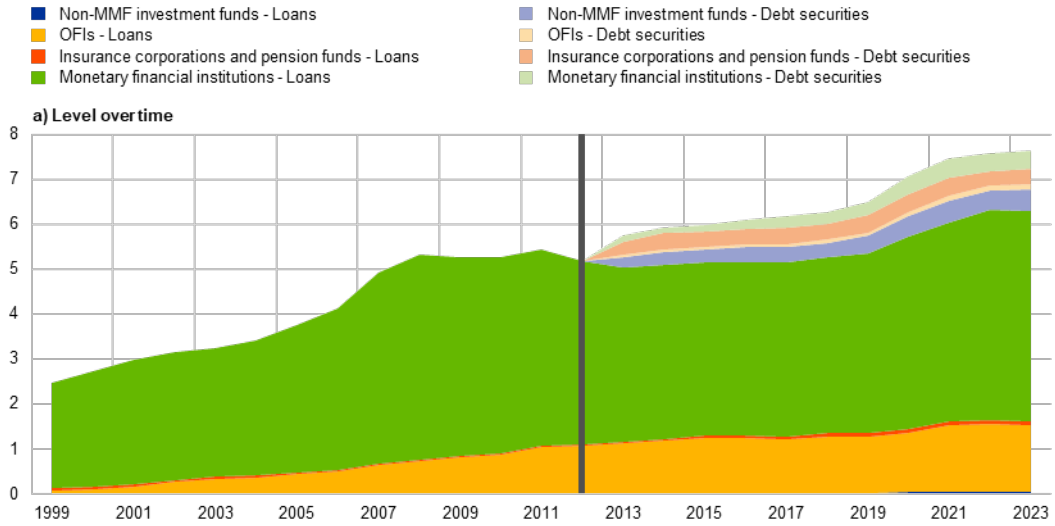


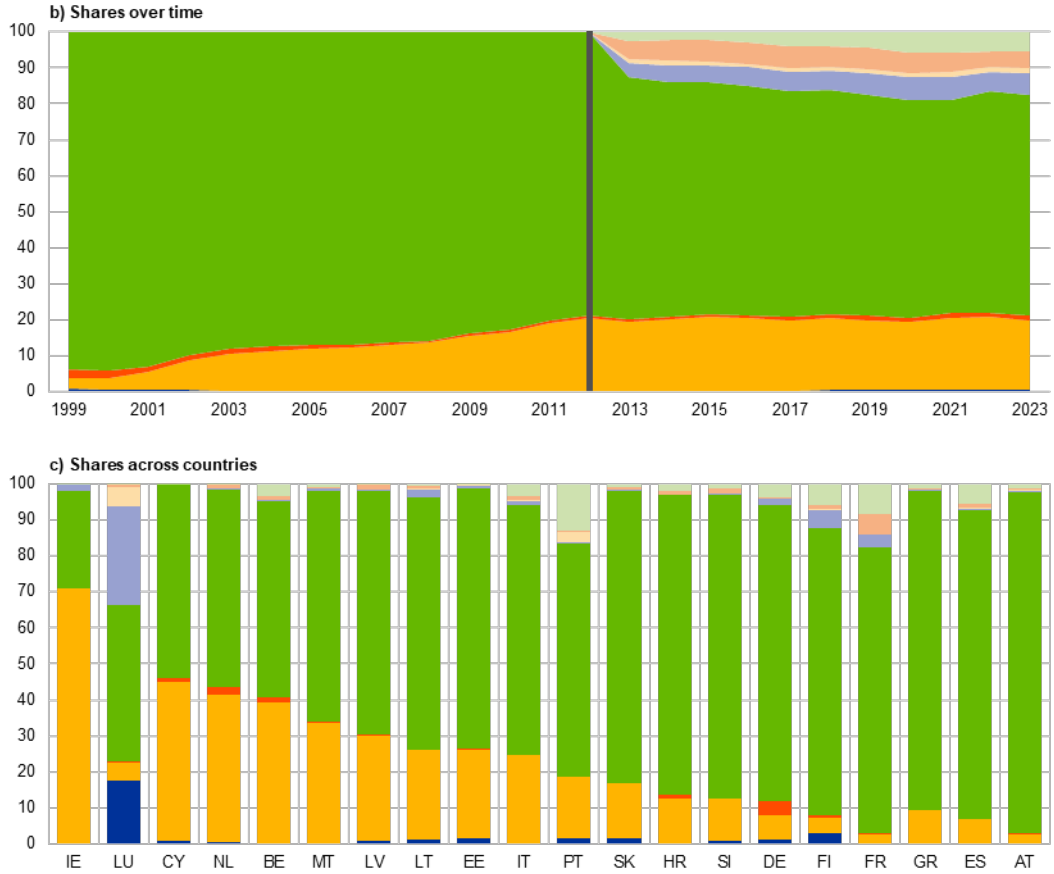
Source: Eurostat and ECB (QSA).
Notes: Loans do not include debt securities issued by counterparties. See notes to Chart 6. Counterparty sector in panels a), b) and c) is households and non-profit organisations serving households. Counterparty area in panels a), b) and c) is the same as in Chart 6. Jurisdictions in panel c) are ordered from left to right in terms of percentage share of loans to domestic households from non-bank financial intermediaries. For each jurisdiction it shows loans from the financial sector in that jurisdiction to households in that jurisdiction. For CY, most of the loans from OFIs relate to non-performing loans (NPLs) acquired from credit acquiring companies. The latest observations for panels a) and b) are for Q4 2023; panel c) data are as at Q4 2023.

Chart 7

Euro area lending to non-financial corporations

(panel a: EUR trillions; panels b and c: percentage shares of total lending to non-financial corporations)



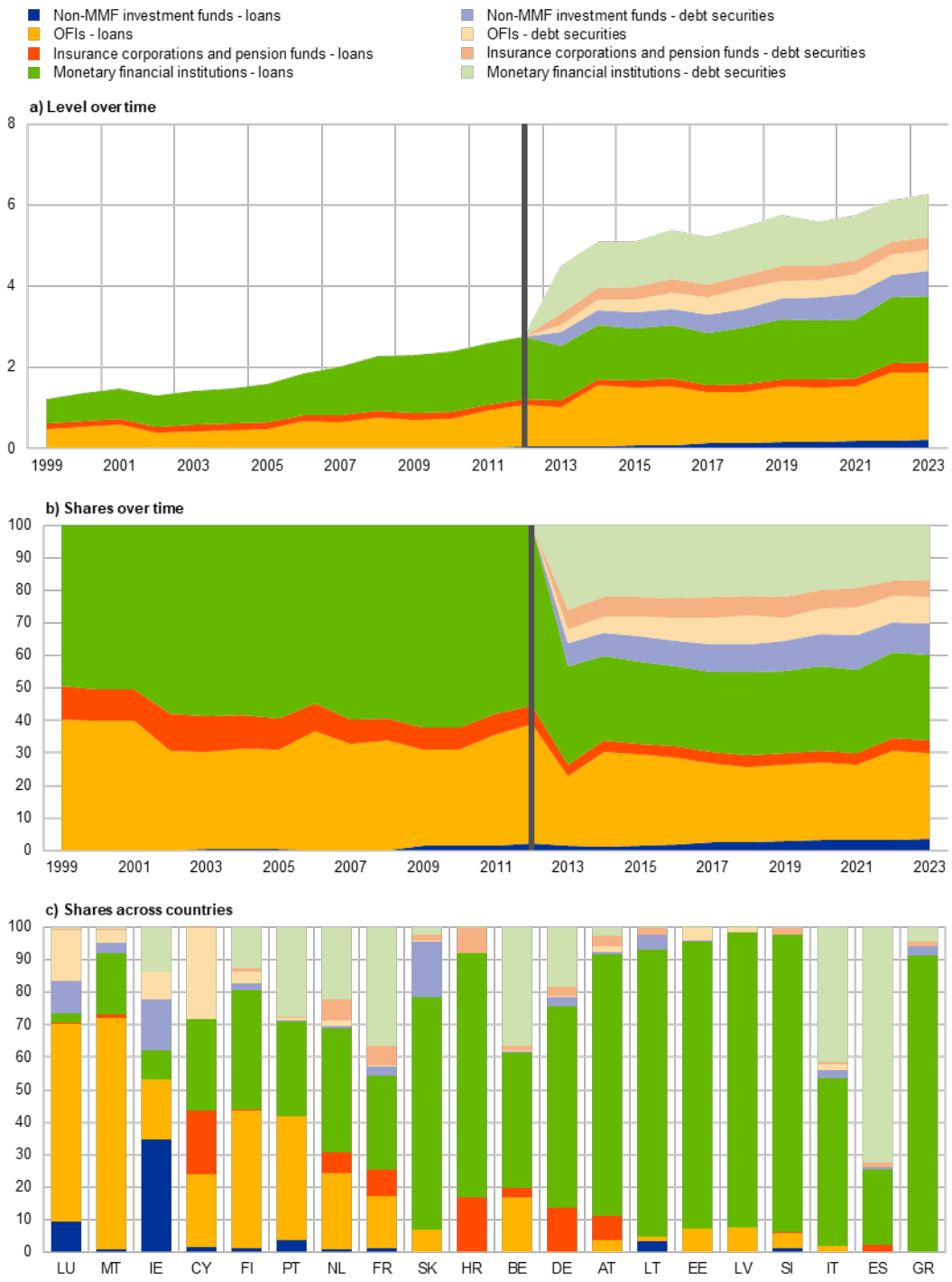


Source: Eurostat and ECB (QSA).
Notes: See notes to Chart 6. Data on debt securities issued by non-financial corporations is available only from 2013, as indicated by the vertical line. Counterparty sector in panels a), b) and c) is non-financial corporations. Counterparty area in panels a), b) and c) is the same as in Chart 6. Jurisdictions in panel c) are ordered from left to right in terms of percentage share of lending to domestic non-financial corporations from non-bank financial intermediaries. For each jurisdiction it shows lending from the financial sector in that jurisdiction to non-financial corporations in that jurisdiction. For CY, most of loans from OFIs relate to non-performing loans (NPLs) acquired from credit acquiring companies. The latest observations for panels a) and b) are for Q4 2023; panel c) data are as at Q4 2023.

Chart 8

Euro area lending to non-bank financial intermediaries

(panel a: EUR trillions; panels b) and c: percentages shares of total lending to non-financial corporations)



Source: Eurostat and ECB (QSA).

Notes: See notes to Chart 6. Debt securities issued by non-bank financial intermediaries are available only from 2013, as indicated by the vertical line. Non-bank financial intermediaries include non-MMF investment funds, other financial intermediaries, insurance corporations and pension funds. Counterparty sector in panels a), b) and c) is non-bank financial

intermediaries. Counterparty area in panels a), b) and c) is the same as in Chart 6 Jurisdictions in panel c) are ordered from left to right in terms of percentage share of lending to domestic non-bank financial intermediaries by non-bank financial intermediaries. For each jurisdiction it shows lending from the financial sector in that jurisdiction to non-bank financial intermediaries in that jurisdiction. The latest observations for panels a) and b) are for Q4 2023; panel c) data are as at Q4 2023.

The share of NBFI lending increased only slightly from 2013 to 2023. Even so, faced with competition from other forms of loans, such as corporate bonds, commercial paper, and money market mutual funds, banks encountered lower profitability from traditional lending activities and started to expand their operations into the NBFI sector to explore new avenues for income generation.[324] With the advent of CMU, the sector is expected to play an increasingly important role in providing a more diversified financial system that can support financial stability and bring economic benefits.

Private debt is a rapidly growing asset class to which NBFI entities are exposed.[325] According to the data provider Preqin, the private debt sector's assets under management in Europe grew by around 20% per year on average from 2012 to 2022. However, according to the same source the volume of private debt was relatively small in 2022, at just below €0.5 trillion. For this form of lending, NBFI entities such as alternative asset managers commonly raise capital from institutional investors, which is then leveraged using bank loans; and subsequently NBFI entities lend to small and medium-sized firms. These loans tend to be too large or risky for banks to take on themselves. While private credit seems to fill a gap for firms that have a harder time borrowing from banks, it is also a form of lending that comes with a high degree of confidentiality, thus making it more opaque and harder to assess in terms of the risks involved and their probability of occurrence and what knock-on effects there may be for entities such as NBFI entities and banks.

Lenders are exposed to different risks, depending on their choice of business model. When a bank issues a loan, it creates money which then becomes an asset on its balance sheet, while on the liability side it has deposits and financial instruments such as covered bonds. Whilst bank loans typically have long maturities, bank liabilities often have short maturities (for instance, deposits can be withdrawn at any time). In contrast to banks, other entities that provide direct loans, such as insurance corporations and pension funds, have long-term liabilities. Having a better match between assets and liabilities implies less exposure to the risks associated with transforming short-term liabilities into long-term assets. Banks, insurance corporations and pension funds can also purchase bonds and thus engage in indirect lending. When these entities lend, whether directly or indirectly, they become exposed to the credit risk associated with the borrower, unless they securitise the loan and sell it to a third party. Investment funds can also provide loans, but since they operate an agent model and thus only act as an intermediary between the borrower and those that have invested in the fund, the fund itself is not exposed to the credit risk.

[324] For a discussion, see, for example, Resti et al. (2021), Financial Stability Board (2011), Abad et al. (2017) and European Banking Authority (2022).

[325] See International Monetary Fund (2024b).

Vulnerabilities associated with lending

By also lending to the economy, NBFI entities can help the financial system better fulfil its functions. Besides diversifying the sources of lending, NBFI entities can provide more flexible options for economic agents, as the underwriting process for loans from NBFI entities is often lighter and faster compared to loans from banks. This can be useful in fostering innovation, building a more competitive financial sector, and bringing down financing costs for the borrower. Some NBFI entities, notably private debt funds, provide loans to NFCs that fall outside the risk appetite of traditional banks, including emerging companies that cannot yet demonstrate a consistent track record of profits, such as many tech startups.[326] Distressed companies facing the threat of bankruptcy or default may also seek lending in the form of private debt as a possible path to recovery. In 2022, 15% of private debt lending was directed towards the acquisition of distressed companies and 16% towards the acquisition of distressed debt on the secondary market.[327] Private debt lenders can also provide the financing needed to undertake acquisitions, as debt can typically comprise between 60-90% of total acquisition financing.

In parallel, NBFI lending can carry financial stability risks as it might be more sensitive to financial shocks than bank lending. Data from the United States show that loans from NBFI entities are correlated with bank lending conditions. In particular, data from the US Business Development Company (BDC) markets show that new private credit loans shrink when banks tighten their lending standards (International Monetary Fund, 2024)[328]. Furthermore, Aldasoro, Doerr and Zhou (2023)[329] use global syndicated loan data to show that NBFI entities are two times more restrictive than banks in granting loans to NFCs during a financial shock. Along similar lines, Fleckenstein et al. (2020)[330] show that in the United States syndicated loans from NBFI entities are almost three times more procyclical (in terms of the reduction in loans and sensitivity of loan spreads) than bank loans. This procyclical behaviour might also make NBFI lenders more exposed to adverse economic shocks: as they lend relatively more than banks during credit booms (when safeguards such as loan covenants might be weaker), they would have a higher percentage of riskier loans on their loan books than those entities which lend more evenly throughout the cycle.

The choice of business model among financial institutions that engage in lending activities affects the degree to which they are exposed to the vulnerabilities associated with lending. For instance, structured finance vehicles typically have higher financial leverage than insurance corporations or pension funds. Heavy market stress can lead highly leveraged firms to deleverage, thus curtailing their lending activities. An adverse shock can lead to unexpected losses for vulnerable lenders that are exposed to it and can also cause instability within the financial system. Figure 4 provides an overview of this process and the remainder of this section describes the underlying mechanism.

326 See Peplow (2024).

327 See Preqin (2023).

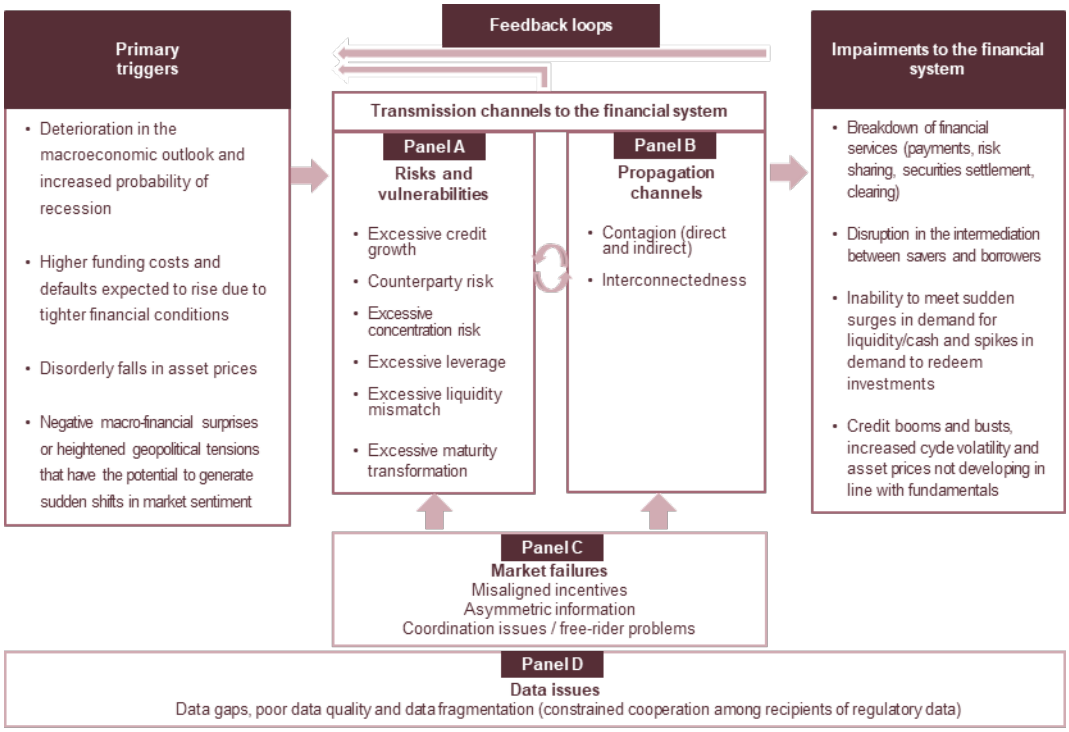
328 See International Monetary Fund (2024a).

329 See Aldasoro, Doerr and Zhou (2023).

330 See Fleckenstein et al. (2020).

Figure 4

Vulnerabilities from lending activities



Source: ESRB.

Panel A: Risks and vulnerabilities

Excessive credit growth is one of the main sources of systemic risk arising from lending activity. Risks stemming from credit growth tend to be similar across lenders and counterparties. Excessive credit growth (that is, when credit grows unsustainably and not in line with the expected change in the value of the assets underlying the credit) may lead to cyclical exuberance in credit supply from the lender's perspective and to unsustainable levels of debt from the borrower's perspective (potentially affecting the lender). Combined, this could increase procyclicality by causing the supply of credit and asset prices to spiral upward. This upward spiral could arise when there is a surge in confidence among market participants or when there are incentives for excessive risk-taking. Such behaviour is usually associated with the boom phase of the financial cycle. If there is a sudden loss of confidence or an unexpected loss on the market that makes market participants excessively risk averse, the positive sentiment may quickly reverse. These episodes are often characterised by falling asset prices and credit flows, and are commonly referred to as the bust phase of the financial cycle.

Counterparty risk can also arise from lending activities. If the counterparty (the borrower) defaults, the lender incurs financial losses. While collateralising lending helps to reduce these losses, the price of the collateral can fluctuate wildly during volatile periods.

Concentration risk occurs when lending activities become highly concentrated in cyclical economic sectors and when borrowers experience a downturn in their financial situation.[331] Concentration risk can arise when a lender is exposed to a small number of borrowers or counterparties, or when it becomes predominantly exposed to a specific economic sector. These risks could be exacerbated if the borrowers also happen to be vulnerable or if the lenders depend on other financial entities for short-term funding. Interestingly, some degree of concentration can be beneficial for both borrowers and lenders. For instance, large lenders can access cheaper funding whilst borrowers stand to benefit if the lenders build up know-how in relation to a certain economic sector. For example, in 2022, the crypto lending market experienced a significant collapse following a series of events, including the insolvencies of LUNA/UST, Three Arrows Capital and FTX. This led to the failure of several key lenders, notably BlockFi, Celsius, Voyager and Genesis, who had previously accounted for a substantial share of the market's total crypto lending.

Excessive liquidity mismatch and maturity transformation can make financial cycles more volatile, cause asset prices to fall out-of-sync with their fundamentals, and lead to asset fire sales. For instance, following an increase in funding costs, entities that display excessive liquidity or maturity mismatch will either need to find replacement funding or deleverage, if they want to avoid financing the asset side of their balance sheet at a loss. As a result, lending is likely to be restricted. This could occur, for instance, in relation to securities financing transactions (SFTs), since they typically have short maturities and liquidity tends to drop at the end of a quarter, thus exposing market participants to funding issues. Furthermore, lending by non-bank financial entities whose funding is heavily dependent on wholesale funding markets or on short-term funding such as committed credit lines from banks, commercial paper or repos, may be vulnerable to "runs". Such run risk can be exacerbated if the entity also happens to be leveraged or involved in complex financial transactions and generates contagion risk, thus amplifying the systemic risk.

Lenders and borrowers can end up being excessively leveraged as a result of their lending activities, which can become particularly troublesome if the financial system is highly interconnected. Financial leverage used by NBFI entities to finance lending activity comes in many forms. The IMF[332] cites the use of repurchase agreements, margin borrowing in prime brokerage accounts and synthetic leverage associated with the use of various financial derivatives (like futures and swaps). Lenders can amass debt and excessive leverage in several ways, such as by using derivatives, repos and SFTs. On the borrower side, excessive leverage can arise if they borrow too much. This situation can occur if the borrower fails to disclose sufficient information to the lender.

Panel B: Propagation channels

The level of interconnectedness inherent to the lending activities will determine the extent to which the risks will be propagated/amplified into other parts of the financial system following an adverse shock. Most banks rely on NBFI entities for funding (repos, derivatives,

[331] The degree of concentration of a portfolio can be measured using various indices, including the Gini coefficient, the Herfindahl-Hirschman index, the Hannah-Kay index, the Hall-Tideman index or the Theil entropy index. Concentration can also be measured using stress tests.

[332] See International Monetary Fund (2023).

secured and unsecured borrowing, deposits, debt securities, etc.). Banks may also be exposed to NBFI entities if they both belong to the same corporate group and NBFI entities are also highly interconnected between themselves. As outlined in Section 1, interconnectedness can amplify or simply transmit the effects of a shock to other parts of the financial system, or to the real economy. This contagion can be direct or indirect. If it takes place directly, entities can transmit financial market shocks to the real economy through the credit or funding they supply, while if it takes place indirectly, the transmission can happen through asset fire sales and falling collateral prices, which can impair the functioning of the market.

Panel C: Market failures

Market failures tend to distort the market, leading to a higher level of risk across the financial system than what would be socially optimal. There are three main sources of market failure, which contribute to inefficient outcomes, both in normal and in stressed times. First, misaligned incentives between borrowers and lenders can lead to excessive risk-taking, based on the belief that any costs will be borne by the other agent or by a third party (moral hazard). This contributes to a higher risk profile among borrowers and increases the risk of default. Second, asymmetric information impedes price discovery and makes it harder to reliably assess liquidity conditions (adverse selection). It can also lead to a loss of confidence when price uncertainty exists. Furthermore, the lack of knowledge regarding the structure of loans in some debt funds may exacerbate illiquidity due to the asymmetric information available to market participants, forcing them to rely on dealers instead. Third, coordination issues can arise when the most optimal action in the eyes of individual agents does not correspond to the most socially optimal action. In this case, collective action among agents may generate financial instabilities such as booms, bank runs, asset fire sales and liquidity problems.

Panel D: Data issues

Data issues should also be taken into account. Data gaps still exist when it comes to certain lending activities. A full set of data is needed so that the lending market, for instance – and all entities and interconnections – can be properly monitored, including how entities react to shocks and substitution effects. Data fragmentation should also be considered, as it poses a challenge when it comes to cooperation among regulators (see Chapter 1).

Policy consideration for regulating lending activities

As outlined in the introduction (Section 1), a consistent approach to macroprudential policy would be to look at whether or not the lending activities undertaken by the different entities ultimately lead to the same risks. The risks identified in the previous chapter will now be analysed here in terms of whether or not they apply to all lenders.[333] These arguments should guide the decision as to whether existing entity-based regulation is sufficient, or whether activity-

[333] The proposals focus on lending to NFCs and households only and do not cover lending among banks and/or NBFIs.

based regulation would be more suitable.[334] Table 8 below outlines the risks identified and the measures proposed to mitigate each of them. The risks are the same as those proposed in Figure 4 in the previous section.

[334] See Tables 1 and 2 in Box 2 for existing entity-based regulation related to lending.

Table 8

Identified risks of lending and potential measures to mitigate them

Risk identified	Measure proposed	Type of regulation proposed	Comments
Excessive credit growth and counterparty risk	BBMs Phase 1: BBMs on RRE loans Phase 2: BBMs on CRE loans Phase 3: BBMs on other loans to NFCs Phase 4: analyse feasibility BBMs for market-based finance to avoid circumvention?	Activity-based	
	Exposure concentration limits to highly indebted companies	Activity-based	
	Capital buffers	Entity-based	Depends on business model (already existing regulation)
	Minimum capital requirements	Entity-based	Depends on business model (e.g. not for investment fund agent model; already existing regulation)
Excessive leverage	Leverage limits	Entity-based	Depends on business model (e.g. insurance corporations; already existing regulation)
Excessive exposure concentration	Concentration limits/large exposure limits/capital requirements in case of concentration risks	Entity-based	Depends on business model (already existing regulation)
Excessive liquidity mismatch and maturity transformation	Alignment between redemption terms and investment, extension of notice periods, LMTs, liquidity coverage ratios	Entity-based	Depends on business model (partly already existing regulation)
Misaligned incentives	Retention requirements	Entity-based	Product-specific, e.g. securitisation (already existing regulation)
	Transparency requirements	Activity-based	e.g. info on consolidated balance sheet of NFC borrowing
Interconnectedness	Capital buffers or minimum capital requirements	Entity-based	Depends on business model (already existing regulation)

Source: ESRB.

Overall, most risks are appropriately addressed by entity-based regulation that mostly already exists. Capital buffers, minimum capital requirements (addressing excessive credit growth and counterparty risk, and interconnectedness), leverage limits, measures addressing excessive liquidity mismatch and maturity transformation, retention requirements and transparency requirements (addressing misaligned incentives) are all measures that address the same activity, but where the risks differ across entities. Activity-based regulation seems to be more suitable for BBMs and for exposure concentration limits to highly indebted firms. The following paragraphs consider each risk listed in Table 8 and analyse whether macroprudential measures addressing these risks could or should be addressed through activity-based or entity-based regulation.

Borrower-based measures (BBMs) can be used to reduce the risk of excessive credit growth and counterparty risk. Credit-driven asset "boom/bust" cycles have detrimental effects on financial stability and the real economy and can lead to banking and financial crises, as evidenced, for example, by the global financial crisis. These cycles are typically characterised by patterns of reinforcement and procyclical patterns in price developments and risk-taking among lenders and borrowers. BBMs can help to ensure sound lending standards and make borrowers more resilient, and are therefore necessary complements to capital-based measures. All lenders are exposed to the risk of excessive credit growth and borrower overindebtedness. The aim of BBMs is to reduce the share of risky new loans and ensure sound lending standards, thus maintaining lender and borrower resilience and dampening the credit cycle. A further aim in the case of BBMs applied to loans with the purpose of buying assets or backed by assets is to dampen the increase in asset prices. In Europe, BBMs are applied following purely national legislation and there is no common EU legal framework governing the macroprudential side of BBMs. However, the ESRB has called for a common minimum set of BBMs to be included in EU legislation.[335]

At present, BBMs are mainly used in the case of bank loans granted to households to purchase a home (entity-based regulation in national legislation), although some countries have applied them also to loans from other lenders (activity-based regulation) and for purposes other than home purchases. Only five EEA countries do not have any BBMs in place for RRE loans. Current BBMs consist of loan-to-value (LTV) limits and income-based measures, such as debt-to-income (DTI) or debt service-to-income (DSTI) limits (or alternatively loan-to-income (LTI) or loan service-to-income (LSTI) limits). Amortisation and maturity requirements may also be imposed. While many countries apply BBMs to credit institutions only, they could also be applied to RRE loans from different loan providers, given that the risk of excessive credit growth applies to all RRE loans and not only bank loans. Along these lines, some Member States have implemented BBMs for loans from different types of lenders (see Box 3). Although BBMs can be designed similarly across different types of lenders, it is key to ensure that there is adequate data on loans provided by NBFI entities for the purposes of calibration and compliance assessment (see also Chapter 1 on data).

[335] See, for example, European Systemic Risk Board (2022b).

Box 3

Existing borrower-based measures applied to non-bank loans in the EEA

While in some Member States, borrower-based measures (BBMs) cover only bank loans, in others BBMs extend also to non-bank entities. Broadly speaking, differences exist between jurisdictions when it comes to the existing tools applied to banks and NBFI entities, as well as the supervision of compliance with those rules. While some legal frameworks do apply to a wide range of entities, BBMs are effective mainly for bank loans as banks are the predominant entity providing RRE loans. A legal framework that applies to all entities can still be effective in preventing regulatory arbitrage, thus avoiding leakages and an uneven playing field. This box describes some examples of national applications, without giving an exhaustive list of all activity-based measures.

National BBM requirements that broadly target lending activity have been implemented heterogeneously into national law. For instance, some countries (e.g. Iceland, Latvia, Lithuania, the Netherlands and Slovakia) introduced BBMs into their national laws by transposing the Mortgage Credit Directive (and in some cases the Consumer Credit Directive). In these cases, the aim is predominantly consumer protection, with the requirements applying to all lenders that provide the type of credit regulated under domestic legislation. In Latvia and Lithuania, these requirements are further complemented by more detailed and quantitative requirements in the form of central bank regulation. Meanwhile, Luxembourg and Norway have made BBMs part of their financial regulations and laws.336 In yet another group of countries (Greece, Hungary, Ireland, Malta and Romania), BBMs are regulated directly through legally binding regulations issued by the macroprudential authority, while in Belgium and Portugal, BBMs are applied through non-legally binding circulars or recommendations issued by the central bank, as the macroprudential authority. In Finland, BBMs are governed by two separate pieces of legislation; one regulating banks and the other non-banks.

All the countries mentioned in this box apply BBMs to RRE mortgages at least, although some also apply them to other (consumer) loans to households. In Belgium, Finland, Greece, Iceland, Ireland, Luxembourg, Malta and the Netherlands, BBMs are applied to residential real estate mortgages to households only, although the exact definition of the loans in scope might vary to some degree. In certain other countries (Hungary, Latvia, Lithuania, Portugal, Norway, Romania and Slovakia), BBMs also extend to other types of household lending, such as consumer loans subject to the Consumer Credit Directive.

The systemic importance of non-bank lenders in the type of loans that are targeted by BBMs also varies among countries. While the share of non-bank lenders is small or negligible in most countries with regard to residential real estate mortgages granted to households, NBFI entities play a significant role in Iceland (mainly pension funds) and in the Netherlands (investment funds, insurers, other financial institutions). NBFI lending also tends to be more significant in the case of household loans other than mortgages, with NBFI entities usually providing small-amount personal loans or car leases. In those countries in which BBMs apply also to non-mortgage household loans, this type of lending by NBFI entities is covered as well.

336 Germany implemented the legal framework for LTV and amortisation requirements for all commercial lenders, but does not have any BBMs in place.

Many countries have introduced loan-level reporting requirements for all types of lenders, so that compliance with BBMs among NBFI entities can also be monitored. Greece, Hungary, Iceland, Ireland, Lithuania, the Netherlands, Portugal, Romania and Slovakia all have a credit registry or loan-level data reporting requirements that apply to all types of lender active in the market, albeit usually subject to a materiality threshold applied either to the loan or to the loan provider. This is necessary in order to monitor mortgage standards and compliance with BBMs for the whole financial sector, while also considering proportionality. In Belgium, a compulsory compliance report must be issued on a yearly basis, depending on the size of the loan portfolio, while survey data are used to monitor compliance on a more regular basis. In most countries, non-bank lenders are also subject to regular supervisory activities, with both on-site and off-site inspections.

BBM requirements are usually identical for all types of lenders, with only a few exceptions. In Latvia, the different requirements are due to the narrower scope of mandate entrusted to the central bank (Latvijas Banka). More precisely, collateral-based BBMs (such as LTV for mortgages) are implemented via the Consumer Rights Protection Law and are hard requirements for all lenders in the interests of consumer protection, whereas income-based BBMs are covered only in principle in this law, by stipulating that the borrower must be creditworthy in order to receive a loan. However, further information on how to apply the DSTI requirements in practice is given separately, in the form of guidelines (i.e. soft law) that apply to all consumer lenders. In addition, binding quantitative requirements for DTI and DSTI are in place only for banks, including in a regulation of Latvijas Banka. In Slovakia, there are two exemptions to the general rules, which are mostly relevant for loans granted by NBFI entities: (1) for up to 5% of consumer credit with a maturity of up to five years, the DSTI ratio may be higher, at between 60% and 70%; (2) for leases to low-debt households (with a debt lower than one and a half year's income) with a down payment of 20%, the DSTI ratio may be up to 100%.

Overall, the examples given of BBMs applying also to loans granted by NBFI entities show that consistent regulation of lending activities is desirable. However, at present BBMs are applied under different national legislative approaches, and the compliance assessment for NBFI lending in particular is harder than it is for bank lending, as data on lending standards for NBFI lending are not available in all countries.

The design of a BBM framework is more complex for corporates than for households. For instance, NFC loans are not always related to a specific project or asset, and their income can be more volatile than household income tends to be. While market distortion leading to NFCs migrating outside of the EU should be avoided, some sectors can cause overheating and excessive credit growth, thus jeopardising the wider financial system. The commercial real estate (CRE) sector is one example, where it should also be relatively easier to put BBMs in place.[337] One could envisage at least some BBMs, such as amortisation requirements. Measures related to the ability to honour interest payments could also be introduced via a debt-service coverage ratio, an interest

[337] BBMs for CRE loans are in place in only very few countries. China, Cyprus, Denmark, Hong Kong, Indonesia and Poland all apply LTV limits in the case of CRE loans. China's "three red lines" approach (targeting leverage, gearing and liquidity) could be treated as one form of BBM. Singapore uses a total debt servicing ratio to limit risky CRE debt. In Denmark, maturity limits for CRE loans have been activated, but more as a feature of the broader mortgage covered bond framework, and several instruments (apart from LTV) have been activated for CRE companies as part of the microprudential rules/guidelines.

coverage ratio,[338] or a debt yield ratio,[339] which estimates the refinancing rate level that the company's cash flows can sustain.[340] In the specific case of loans to commercial real estate companies where properties are used as collateral for the loan, LTV limits could be imposed. Determining when lending is being extended based on unrealistic assumptions about future income or wealth is more difficult to answer for investments not related to real estate and where there is no underlying asset for which excessive price developments can be observed. While BBMs could help to avoid excessive risk-taking, they could also lead to more onerous financing conditions for borrowers. When it comes to NBFI entities, which tend to finance riskier and more innovative products or services, the relevant competent authorities will have to calibrate BBMs that bear both of these aspects in mind. For instance, BBMs could be calibrated differently by borrower type (such as CRE firms), but could still apply to all lenders.

The risks associated with excessive credit growth apply also to market-based finance. However, applying BBMs to bond issuance is more complex than it is for other lenders. For example, it is often hard to attribute bonds to a specific project. If we look at commercial real estate companies, there may be specific commercial real estate projects related to a bond and it could thus be possible to apply BBMs to those instruments. The CRE firms would first need to be identified, perhaps by stating that companies with a certain amount of loans where properties have been used as collateral qualify as CRE firms. As this could incentivise CRE companies to take on fewer bank loans (secured) and more market funding (unsecured), a medium-term solution would be to enhance the information provided by the bond issuers regarding the economic sector they belong to. In such cases, income-based measures such as a debt-service coverage ratio, an interest coverage ratio, a debt yield ratio, or a leverage ratio could be applied at group level.

The European Commission should introduce activity-based regulation in EU law, enabling national authorities to set BBMs and apply them to all types of lenders. This happens to be consistent with previous ESRB proposals.[341] When preparing such a proposal, the European Commission should consider whether or not top-up powers should be included. BBMs could be introduced in different phases. First, a legal framework should be created governing BBMs for RRE loans to households. This framework should ensure further homogeneity in terms of minimum standards for BBMs and facilitate reciprocation across countries. It should be carefully designed so as to minimise the changes required to existing national BBM frameworks. Second, and following an analysis of the practical feasibility of BBMs for loans to NFCs, the legal framework should be expanded to include CRE loans to NFCs and eventually other NFC loans. Lastly, the feasibility of also capturing market-based finance by BBMs should be studied to avoid circumvention of any measure applied to loans through bond issuance. For RRE loans, a minimum set could be defined

338 Defined as free cash flow available for debt service divided by the sum of (instalment and) interest payments.

339 Defined as net operating income divided by the debt incurred by the borrower.

340 Ideally, these measures should relate to the borrower's entire debt, as opposed to the specific loan.

341 For CRE loans, see **Recommendation of the European Systemic Risk Board of 1 December 2022 on vulnerabilities in the commercial real estate sector in the European Economic Area (ESRB 2022/9)** (OJ C 39, 1.2.2023, p. 1). In this document, the ESRB called on the European Commission to ensure that consistent rules for addressing risks related to CRE exposures are applied across all financial institutions when they perform the same activities, taking into account their specificities and specific risk profiles. The ESRB also stated that the European Commission should propose, if deemed necessary following an assessment, Union legislation that complements the existing entity-specific macroprudential tools with activity-based macroprudential tools to help address CRE vulnerabilities effectively and to avoid regulatory arbitrage and the shifting of risks between banking and non-banking sectors.

in the Mortgage Credit Directive,[342] while for other loans to households, BBMs could be included in the Consumer Credit Directive. For CRE and other NFC loans, it is less clear which existing legislation could be complemented, and there might be a need for new activity-based legislation. Further work will be needed to address the practicalities of such legislation governing loans to NFCs. The resulting EU legislation should define the key concepts for BBMs at EU level, although the national authorities alone would be responsible for calibrating and activating BBMs, given the national specificities prevalent in the real estate and loan markets in the Member States. However, as cross-border activity and interconnections are much stronger when it comes to lending to NFCs, it is important to ensure the consistent application of BBMs across countries to avoid leakages and regulatory arbitrage. Reaching a common understanding of BBMs at EU level should help to ensure that the measures are applied consistently, thus providing a more level playing field.

The ESRB also believes that the European Commission should introduce activity-based regulation into EU law that would enable the relevant competent authorities to set exposure concentration limits to highly indebted firms. Similar to BBMs, such limits would address excessive credit growth and counterparty risk by reducing the exposures of individual entities to highly indebted NFCs (measured at the consolidated level in the case of corporate groups). An example of activity-based regulation in the banking sector is the national flexibility measure provided for under Article 458 of the CRR, which was in place in France from 2018 to 2023. This measure took the form of a large exposure limit, which required French systemically important credit institutions to ensure that exposures to large and highly indebted NFCs[343] having their registered office in France were no greater than 5% of the bank's eligible capital. The introduction of such a measure for lending, including bonds, implemented consistently across different entities would help to reduce excessive credit growth, especially if BBMs prove difficult to introduce for market-based finance.

Individual entities can be affected differently in the downturn that follows a period of excessive credit growth. For example, while banks usually operate with high levels of debt, funds tend to rely on the capital provided by their investors (agent model), although some may also use leverage. Therefore, measures to make the lender more resilient should remain entity-specific. The macroprudential capital buffers currently applied in banking regulation should remain bank-specific, as they cater to the specific leverage-based business model of banks, which can leave banks with fragile loss-absorption capabilities in the event of a severe adverse shock. As underlined by Aldasoro, Doerr and Zhou (2023),[344] NBFI entities rely heavily on wholesale funding (Jiang et al., 2024)[345] and serve price-sensitive borrowers (see Xiao, 2020).[346] Furthermore, they lack access to central bank liquidity (Irani et al., 2021).[347] All in all, this makes them more financially fragile (Fleckenstein et al., 2020).[348] Therefore, existing capital requirements for NBFI entities make the sector more resilient in the event of an adverse shock, insofar as the business model is such that the risk remains on the balance sheet of an entity (as happens in the insurance sector). Hence, such measures should be entity-specific.

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342 For a more detailed proposal on RRE loans, see European Systemic Risk Board (2022b).

343 An NFC was defined as being highly leveraged if its ultimate parent company had both a net leverage ratio greater than 100% and an interest coverage ratio below three.

344 See Aldasoro, Doerr and Zhou (2023).

345 See Jiang et al. (2024).

346 See Xiao (2020).

347 See Irani et al. (2021).

348 See Fleckenstein et al. (2020).

Turning to the risk of a lender amassing excessive leverage, leverage limits could be introduced at entity level.[349] In fact, structural leverage limits have already been introduced in some entity-specific legislation. For example, Article 25 AIFMD allows the competent authorities of the home Member State to impose discretionary leverage limits on specific entities, and set up a backstop from a certain level (limit) onwards. The AIFMD also sets leverage limits for loan-originating funds, while the UCITS Directive and the MMF Regulation also include limits on the leverage of in-scope entities. Leverage limits also exist for banks in the form of risk-based minimum capital requirements uniform across the EU, macroprudential capital buffers set by relevant competent authorities and the leverage ratio, which acts as a backstop to risk-based requirements. Insurers and IORPs do not need such leverage limits as they have a different business model.

Excessive exposure concentration risks are currently being addressed through large exposure limits or concentration limits operating as entity-based measures. For example, the AIFMD includes concentration limits on loan-originating funds as a pre-emptive measure: depending on the borrower type, the aggregate notional value of loans granted to any single borrower may not exceed 20% of the fund's total capital. Meanwhile, the CRR imposes large exposure limits in the banking sector to reduce systemic arising risk from concentration and interconnectedness.[350] While insurers are not subject to concentration limits, concentration risk is subject to capital requirements under Solvency II. Insurers will typically seek diversification of exposures and counterparties and will carry out risk-mitigating actions to manage the potential impact of such exposures. Insurers should also address significant risk concentrations as part of their overall risk management framework, their own risk solvency assessment, and when applying the prudent person principle to investments.

The risk of liquidity mismatch and maturity transformation is specific to certain business models. Making long-term loans, such as mortgages, and taking short-term deposits go to the heart of the banking business model. The resulting maturity and liquidity mismatch is a structural vulnerability that exposes banks to liquidity risk. In contrast, the business model of life insurers means that most of their liabilities are long term. So, while a life insurer would be exposed to the credit risk of a long-term loan in the same way as a bank, that same loan would also typically reduce the maturity mismatch between its assets and liabilities. Liquidity mismatch also occurs in the investment fund sector, as redemption periods in open-ended funds can be significantly shorter than the liquidity of their assets. In the case of maturity mismatches in the banking sector, liquidity coverage ratios to help maintain an appropriate level of liquidity buffers are probably the most suitable tool. Banks also happen to have access to central bank funding. In the investment fund sector, the risk stemming from liquidity mismatch could be reduced by ensuring closer alignment between the fund's redemption terms and its investment strategy, which might be achieved by introducing longer notice periods and/or by relying on liquidity management tools (LMTs) (see also Policy Digest 1 and Policy Digest 2 to this note).[351] All these measures are more effective when implemented under entity-based regulation.

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349 The **ESMA Guidelines on Article 25 AIFMD** explicitly mention the interruption of credit provision as a risk.

350 According to Article 392 CRR, an institution's exposure to a client or a group of connected clients shall be considered a large exposure where the value of the exposure is equal to or exceeds 10% of its Tier 1 capital. This exposure may not exceed 25% of Tier 1 capital, after taking into account credit risk mitigation measures (Article 395 CRR), such as securitisation or collateralisation by a third party (Article 403 CRR).

351 See European Systemic Risk Board (2023c) and European Systemic Risk Board (2024c).

The risk of misaligned incentives can occur across entities and for specific products where the exposures are transferred to third parties. To reduce this risk in the banking sector, banks are subject to asset retention requirements in respect of their loan securitisation activities.[352] In tandem, the AIFMD requires AIF managers to ensure, as a pre-emptive measure, that their loan-originating AIF retains 5% of the nominal value of each loan it originates and subsequently transfers to a third party. Asset retention requirements can also be implemented to enforce diversification limits (limiting loans to a single borrower at 20% of the AIF's capital), as can rules on the use of leverage by loan-originating AIFs, whereby leverage is capped at 300% for closed-ended AIFs and at 175% for open-ended AIFs. In principle, any transaction that involves the transfer of risk from one party to another could result in misaligned incentives, although as things currently stand such transfers occur mainly in the banking sector through securitisation, and also in investment funds. Therefore, keeping entity-based regulation for retention requirements seems to be the best approach, although activity-based rules should also be implemented to ensure more transparency in respect of borrowers (e.g. information on the consolidated balance sheet of NFC borrowing for loans and bond issuance).

Contagion effects across the financial system due to the interconnectedness associated with lending activities can be reduced by setting dedicated capital charges or minimum retention requirements, through existing entity-based regulation. Such risks can be reduced through additional capital requirements for entities with high interconnectedness. As it happens, such regulation already exists in the banking industry, as global systemically important institutions (G-SIIs) and other systemically important institutions (O-SIIs) must meet supplementary buffer requirements to cover the potential negative effects that these institutions could have on the domestic or international financial system if they were to fail. The definition of significant institutions includes criteria related to interconnectedness with the domestic and international financial system, as well as criteria related to the size of the bank. When it comes to NBFI entities, such regulation already exists for insurance firms that are subject to capital requirements under Solvency II. In addition, asset retention requirements for loan-originating funds can be viewed as a type of capital requirement. The impact of contagion risk should be reduced through the above-mentioned measures targeting lending directly, particularly when also including NBFI lending and interconnectedness between institutions (also between banks and NBFI entities) and across countries as criteria for calibrating such entity-based measures. However, it is also important to improve data availability for cross-entity and cross-country linkages to assess risks stemming from interconnectedness.

To support the application of the above proposals, the European Commission should enact EU legislation to ensure loan-level reporting among NBFI entities (see Chapter 1). Moreover, when assessing compliance with BBMs, it is important to ensure the existence of data on lending standards beyond the banking sector. Lastly, data sharing among institutions, both within and across borders, would also be crucial to improve knowledge about possible contagion effects that could arise due to interconnectedness with institutional investors. In this context, the introduction of regular system-wide stress tests that include interactions between different entities and countries

[352] See **Regulation (EU) 2017/2402 of the European Parliament and of the Council of 12 December 2017 laying down a general framework for securitisation and creating a specific framework for simple, transparent and standardised securitisation, and amending Directives 2009/65/EC, 2009/138/EC and 2011/61/EU and Regulations (EC) No 1060/2009 and (EU) No 648/2012**– (OJ L 347, 28.12.2017, p. 35).

would help to identify specific risks and ensure the existence of suitable macroprudential measures.[353]

Overall, in order to ensure a consistent macroprudential policy for lending activity, the ESRB calls on the European Commission to introduce EU legislation governing activity-based regulation related to BBMs, exposure concentration limits to highly indebted companies, and transparency requirements, and also to improve existing data reporting requirements. Other tools, such as capital requirements, leverage limits, concentration limits and measures addressing liquidity risk might be better suited to an entity-based regulation, although they should still be consistent across all lenders and in terms of the contribution they make to systemic risk. The application and calibration of these tools should be further informed by enhanced data requirements and system-wide stress tests. Improving data availability is crucial for the proper design and implementation of all the policy measures proposed.

[353] Stress tests are currently carried out by the EBA for the banking sector, by ESMA for MMFs and CCPs, and by EIOPA for insurers and IORPs. The ESRB is currently conducting a system-wide liquidity stress test exercise.

Annex - Additional tables

Table A

Overview of prudential tools directly or indirectly affecting bank lending

	Tool	Regulation	Purpose
Capital tools	Pillar I minimum capital requirements	CRR	Provides minimum requirements for the capitalisation (and loss-absorbing capacity) of banks, depending on their risk profile
	Capital conservation buffer (CCoB)	CRD	Increases resilience by ensuring that banks have an additional layer of usable capital that can be drawn down when losses are incurred
	Countercyclical capital buffer (CCyB)	CRD	Designed to counter procyclicality in the financial system and to protect the banking system against potential losses due to excessive credit growth or other cyclical systemic risks, thus supporting the sustainable provision of credit to the economy
	Global systemically important institutions (G-SII) buffer	CRD	Increases capital to reduce probability of default and limit the systemic impact of misaligned incentives.
	Other systemically important institutions (O-SII) buffer	CRD	Increases capital to reduce probability of default and limit the systemic impact of misaligned incentives
	Systemic risk buffer (SyRB)	CRD	Addresses systemic risks that are not covered by the Capital Requirements Regulation and the other capital buffers
	Pillar 2 requirement/guidance	CRD	Capital requirement which supplements the minimum capital requirement (Pillar 1), depending on the idiosyncratic risks of the individual institutions
	Leverage ratio	CRD	Limits leverage, safeguards against error in risk-based capital buffers
	Large exposure limits	CRR	Reduces systemic risk from concentration and interconnectedness
Liquidity tools	LCR/NSFR	CRR	LCR: requires appropriate short-term (30-day) resilience to a liquidity shock; NSFR: reduces the funding risk over a longer time horizon
	Loan-to-deposit ratio (LDR)	National frameworks	Constrains credit growth by assessing a bank's liquidity and comparing its total loans to its total deposits for the same period

	Tool	Regulation	Purpose
Risk weight tools	Risk weights applied to exposures secured by mortgages on immovable property for institutions applying the standardised approach to the calculation of own funds requirements	CRR	Setting higher risk weights or stricter criteria on risk weights
	Loss given default (LGD) applied to retail exposures secured by immovable property for institutions applying the internal ratings-based approach to the calculation of own funds requirements	CRR	Increasing minimum values for LGD
BBMs	Loan-to-value (LTV)	National frameworks	Cap on the ratio of the value of the loan relative to the value of the underlying (real estate) collateral
	Debt-to-income (DTI) ratio/loan-to-income (LTI) ratio	National frameworks	Cap on the value of the debt/loan relative to the disposable income of the borrower
	Debt service-to-income (DSTI) ratio	National frameworks	Cap on the debt servicing cost relative to the disposable income of the borrower
	Maturity and amortisation limits	National frameworks	Limits on the maturity of the loan and on the timing of repayment

Source: ESRB.

Table B

Overview of prudential tools directly or indirectly affecting NBFI lending

Legislation	Entities affected	Tools (ex post and pre-emptive measure)	Objective & effectiveness
Alternative Investment Fund Managers Directive (AIFMD) **(Directive 2011/61/EU)**	Alternative investment fund managers and funds	AIFM must set "reasonable" limits on maximum leverage for AIFs and disclose leverage to NCAs where leverage is used on a substantial basis (pre-emptive measure; Art. 15.4, 24.4 and 25.3 AIFMD) If leverage creates a substantial risk, ESMA may issue a recommendation to NCAs (pre-emptive measure; Art. 25.7 AIFMD) Additional leverage limits may be applied by NCAs (pre-emptive measure; Art. 25.3 AIFMD)	Structural measure capable of restricting lending directly; binding limits on the amount of leverage an AIF may use; obligation to disclose excessive use of leverage to NCAs. Structural measure allowing ESMA to intervene. Structural measure allowing NCAs to impose additional leverage limits on AIFs and restrict their lending.

Legislation	Entities affected	Tools (ex post and pre-emptive measure)	Objective & effectiveness
Undertakings for Collective Investment in Transferable Securities (UCITS) Directive **(Directive 2009/65/EC)**	Undertakings for collective investment in transferable securities	UCITS leverage limit: UCITS fund exposure may not exceed 100% of the UCITS' NAV (pre-emptive measure; Commission Recommendation 2004/383/EC of 27 April 2004)	Structural measure capable of restricting lending directly; binding limits on the amount of leverage a UCITS fund may use.
Amendments to AIFMD and UCITS (Directive 2024/927)	Alternative investment fund managers and funds; Undertakings for collective investment in transferable securities	Liquidity management tools (LMTs) applied to open-ended AIFs to mitigate financial stability risks (e.g. a loan-originating fund (LOF) may only be granted open-ended status if it demonstrates to the NCA that its liquidity risk management system is sound; pre-emptive measure) Suspension of redemption rights by NCAs due to financial stability risks (e.g. if the AIF or UCITS manager fails to effectively implement selected LMTs in light of systemic risk; ex post measure) Concentration limits on loan-originating funds (LOFs): depending on the borrower type, the aggregate notional value of loans granted to any single borrower may not exceed 20% of the fund's capital (pre-emptive measure) Leverage limits on LOFs (e.g. 175% for open-ended AIFs and 300% for closed-ended AIFs; pre-emptive measure) Asset retention requirement for LOFs: the AIF manager must ensure that a loan-originating AIF retains 5% of the nominal value of each loan it originates and transfers to third parties (pre-emptive measure)	Structural measure requiring open-ended AIFs to adequately manage liquidity risks; general requirement for LOFs to be closed-ended (with exceptions). Structural measure allowing NCAs to suspend the redemption rights of an AIF/UCITS fund in the case of systemic risks, thus restricting its potential lending. Specific structural measure on LOFs to contain concentration. Specific structural measure for LOFs to limit the use of leverage. Specific structural requirement for LOFs to hold a certain portion of each loan as risk retention.
Money Market Fund Regulation (MMFR) **(Regulation (EU) 2017/1131)**	Money market fund managers and funds	Stress testing for macro shocks (pre-emptive measure; Art. 28) Structural limits on leverage (pre-emptive measure; such as no borrowing/lending money, derivatives trading only for hedging and short sale ban; Art. 9 and 13) Structural liquidity buffers (pre-emptive measure; Art. 24-25)	Requirements for sound risk management of MMFs (i.e. those engaged in lending activities). Structural measure imposing limits on the amount of leverage a MMF may use. Requirements for liquidity risk management of MMFs.

Legislation	Entities affected	Tools (ex post and pre-emptive measure)	Objective & effectiveness
European Market Infrastructure Regulation (EMIR) **(Regulation (EU) No 648/2012)**	Central counterparties and trade repositories	OTC derivative clearing obligation (pre-emptive measure; Art. 4 EMIR) Suspension of clearing obligation based on financial stability threats (ex post measure; Art. 6a EMIR) Anti-procyclicality measures under EMIR (Commission Delegated Regulation 153/2013) concerning margins (margin buffers, lookback periods, weight of stressed observations in margin models; pre-emptive measures) Conservative calculation of haircuts according to EMIR (Commission Delegated Regulation 153/2013), to limit procyclical effects; other measures to avoid haircut procyclicality are under discussion in the EMIR review	The clearing obligation protects counterparties (e.g. NBFIs as lenders using credit derivatives) from losses. Suspension of the clearing obligation by ESMA or NCAs may further restrict lending. Rules-based margins, calibrated over the cycle, reduce margin reactivity and incentives to deleverage in times of stress. Haircuts limit the build-up of synthetic leverage and net borrowing by raising the cost of leverage in a manner proportionate to its risks.
Solvency II Directive **(Directive 2009/138/EC)** **Delegated Regulation (EU) 2015/35**	Insurance and reinsurance undertakings (life and non-life)	Activities and supervisory decisions should reflect macro-prudential considerations (pre-emptive measure; Art. 28, 45 and 132) Setting up of liquidity risk management plans (pre-emptive measure; Art. 144a; forthcoming in Solvency II review) National supervisors authorised to temporarily suspend redemption rights of policyholders of life insurance (ex post measure; Art. 144b; forthcoming in Solvency II review) Restriction or suspension of capital distributions and variable remuneration at vulnerable companies (Art. 144c; forthcoming in Solvency II review) Insurance and reinsurance undertakings are required to retain a capital charge on corporate bonds and loans in their investment portfolio (Article 176 of the Level 2 Delegated Regulation)	The supervision of insurance and reinsurance firms by NCAs should reflect macro-prudential considerations, including those relating to lending. Structural measure requiring insurance and reinsurance firms to adequately manage liquidity risks (also as a condition for them to engage in lending activities). Structural measure allowing NCAs to suspend the redemption rights of life insurance policyholders in the case of financial stability risks. Structural measure allowing NCAs to limit or suspend capital distributions and variable remuneration at vulnerable firms in the case of financial stability risks. To contain spread risks of corporate bonds and loans, capital requirements depend on the duration of the bond and the credit quality of the bond or loan.
Markets in Financial Instruments Directive (MiFID 2)/Markets in Financial Instruments Regulation (MiFIR)	Investment firms and trading venues	ESMA, EBA and NCAs authorised to prohibit or restrict marketing of a financial instrument or a financial activity to protect financial stability (pre-emptive and ex post measure; Art. 40-42 MiFIR)	ESMA, EBA and NCAs may activate tools to prohibit or restrict the marketing of a financial instrument or financial activity. These measures may affect the lending activities of investment firms (e.g. investment in corporate bonds).

Legislation	Entities affected	Tools (ex post and pre-emptive measure)	Objective & effectiveness
Directive 2014/65/EU (MiFID 2) **Regulation (EU) No 600/2014 (MiFIR)**		ESMA's position management powers over commodity derivatives for financial stability purposes (ex post measure; Art. 45(2)(a) MiFIR) Exemption to the obligation to provide non-discriminatory access to a CCP and trading venue if it affects systemic risk (pre-emptive measure; Art. 35-36 MiFIR)	ESMA's powers to restrict investment firms' positions in commodity derivatives may have an indirect effect on the use of synthetic leverage in lending activities. Restricting investment firms' access to a CCP and trading venue in the event of financial stability risks may also limit their use of credit derivatives.

Source: Targeted consultation assessing the adequacy of macroprudential policies for non-bank financial intermediation, European Commission, 2024.

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