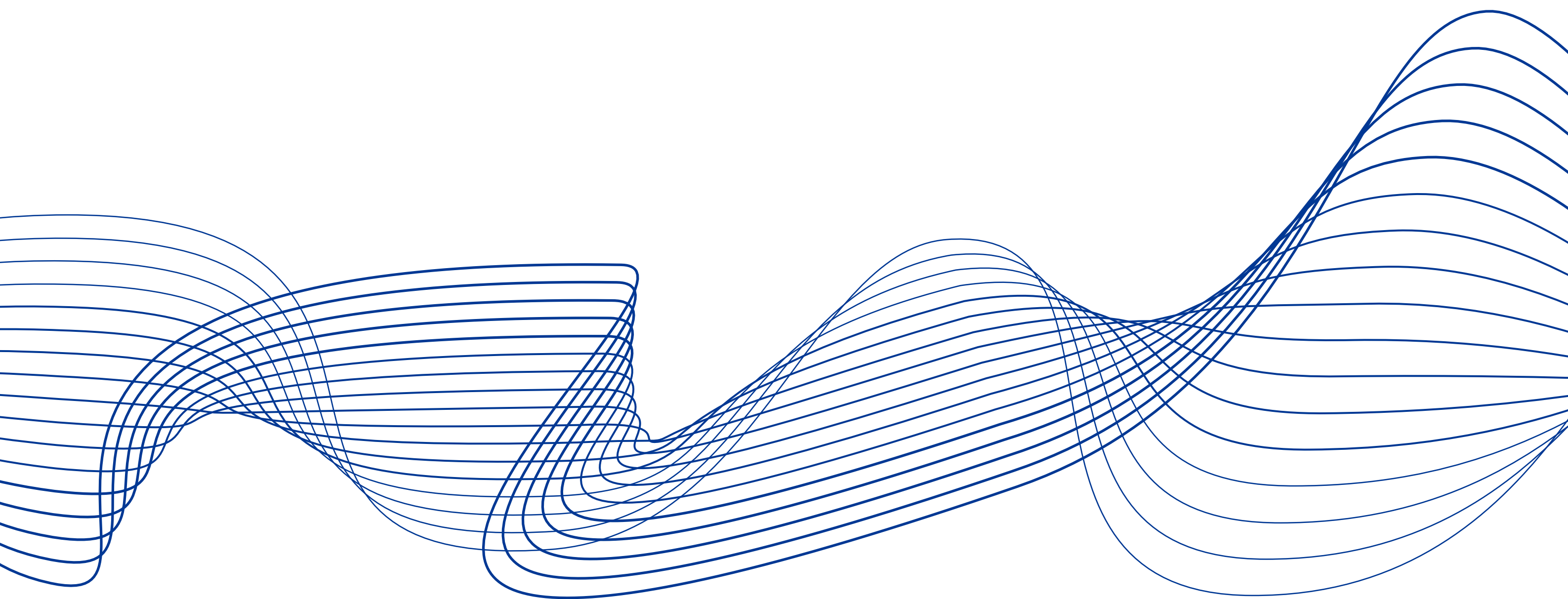
Annual Report

2022



ESRB
European Systemic Risk Board
European System of Financial Supervision

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Foreword

Christine Lagarde, Chair of the European Systemic Risk board

I am very pleased to present the 12th Annual Report of the European Systemic Risk Board (ESRB), covering the period between 1 April 2022 and 31 March 2023. The report is an important part of the ESRB's transparency and accountability framework. With this report, addressed to co-legislators in the European Union and to the European public at large, we explain how the ESRB delivered on its mandate.

The period under review was characterised by heightened geopolitical and economic uncertainty, largely owing to Russia's unjustified war against Ukraine. The war led to an increase in energy prices, which fuelled global inflationary pressures and led to tighter financing conditions. These developments have been weighing on the economic outlook. The war also fuelled the cyber threat environment across Europe. The combination of these factors meant that risks to financial stability rose substantially.

The ESRB responded to these developments in several ways. In particular, in September 2022 the ESRB called for heightened awareness of the risks to financial stability by issuing – for the first time – a **general warning** on vulnerabilities in the EU financial system. It also issued a **recommendation** to help address vulnerabilities related to commercial real estate. Moreover, in response to the heightened cyber threat environment, the ESRB took measures to facilitate the exchange of information across jurisdictions and authorities. It also published a **report** in which it set out the tools and elements needed to advance cyber resilience and strengthen preparedness to deal with cyber incidents.

The ESRB also called on the co-legislators to use reviews of relevant legislative dossiers to help address known vulnerabilities in the non-bank financial sector. As part of this, it highlighted how **Solvency II**, the regulatory framework for insurers, should be strengthened, with a focus on liquidity management tools. The ESRB also stressed that **persistently poor data quality** poses a threat to financial stability. In addition, in the context of the suggested targeted changes to the European Market Infrastructure Regulation, the ESRB proposed ways to **strengthen central clearing in the EU**.

At the end of the review period, the collapse of two mid-sized US banks and the problems that resulted in the takeover of Credit Suisse by UBS served as a reminder to remain vigilant. Sound capital and liquidity positions, as well as robust profitability, contributed to the resilience of the EU banking sector in the period under review. However, two main factors continue to weigh on the outlook for this sector: first, the deceleration in economic growth and higher interest rates, including the potential negative impact on asset quality and lending volumes; and second, the effect of rising funding costs for banks, with potential pressure on interest margins. The scale of the impact of these factors is not yet known, but it is likely to become more pronounced over time. Following its meeting at the end of March, the ESRB General Board noted that all financial

institutions should carefully preserve their current levels of resilience to ensure that they can weather a potentially less favourable environment.[1]

Finally, a number of dear and valued colleagues left their positions during the period under review, and I would like to thank all of them for their valuable contributions. My warm thanks go to Stefan Ingves, whose term as First Vice-Chair of the ESRB ended when he retired as Governor of Sveriges Riksbank. Stefan has been one of the most important driving forces behind the ESRB's work since it was established. He was Chair of the Advisory Technical Committee for the first two terms (2010-16) and supported the ESRB as its First Vice-Chair from 2020.

I would also like to warmly thank Lars Rohde, former Governor of Danmarks Nationalbank and former member of the General Board and Steering Committee, and Governor Pierre Wunsch, a former member of the Steering Committee, for their significant contributions to the work of the ESRB. Finally, I would like to express my gratitude to Professor Javier Suarez (CEMFI) for his eight years as Chair and Vice-Chair of the ESRB Advisory Scientific Committee.

Christine Lagarde
ESRB Chair

[1] See the **press release following the ESRB General Board meeting on 30 March 2023**.

Executive summary

In September 2022 the European Systemic Risk Board (ESRB) issued – for the first time – a general warning on vulnerabilities in the EU financial system, with risks to financial stability having perceptibly risen over the course of the year.[2] The economic impact of Russia's unjustified war against Ukraine, combined with the tightening of financial conditions owing to the normalisation of monetary policy, had increased the likelihood of tail-risk scenarios. The ESRB's warning called for heightened awareness of the risks to financial stability and emphasised the need for greater resilience in the EU financial sector to enable the financial system to support the economy should these risks materialise.

Risks to financial stability in the EU increased significantly in 2022. The outbreak of the war in Ukraine caused a rapid deterioration in the risk landscape, leading to greater geopolitical uncertainty, surging inflation and worsening growth prospects owing to higher energy, food and commodity prices and supply chain disruptions. As a result, risks to financial stability increased significantly across sectors, including households, non-financial firms and financial institutions, as well as across financial markets. The outlook for households deteriorated owing to a decline in real disposable incomes and the tightening of financing conditions. Non-financial corporations, particularly firms in energy-intensive sectors and those that had taken on more debt during the coronavirus (COVID-19) pandemic, became more vulnerable to rising inflation and interest rates. Financial firms became increasingly exposed to higher credit and funding risks as the macroeconomic outlook worsened. The war in Ukraine also triggered a sharp and broad-based fall in asset prices. Strong price co-movement across a wide range of asset classes reduced the benefits of diversification strategies. Moreover, the escalating geopolitical tensions increased the risk that financial institutions or the key service providers they rely on would be targeted by system-wide cyberattacks.

In the five months after the general warning was issued, near-term tail risks to the economic outlook receded to some extent. This reflected lower energy and commodity prices, better than expected bank profitability and rising equity prices. Energy savings by households and firms, coupled with a mild winter, helped to avert the tail risk of an outright energy crisis in Europe. Moreover, the reopening of the Chinese economy following the lockdown policy in the wake of the COVID-19 pandemic supported global demand.

Concerns over banking sector vulnerabilities intensified in March 2023 following the collapse of two mid-sized banks in the United States and the problems that resulted in the takeover of Credit Suisse by UBS. Policymakers in the relevant jurisdictions swiftly implemented several measures that helped restore confidence in the financial sector.[3] The ESRB noted that developments in the banking sector and financial markets in March signalled a need to remain vigilant over the vulnerabilities highlighted by these events, with regard to funding structures and the management of interest rate risk in the banking book in a challenging macro-financial

[2] The review period for this report runs from 1 April 2022 to 31 March 2023.

[3] For example, the Swiss National Bank **provided substantial liquidity assistance** to support the takeover of Credit Suisse by UBS. The Single Resolution Board, the European Banking Authority and ECB Banking Supervision issued a **joint statement** that clarified the order in which shareholders and creditors should bear losses in the event of insolvency. The Bank of Canada, the Bank of England, the Bank of Japan, the European Central Bank, the Federal Reserve System and the Swiss National Bank **announced a coordinated action** to enhance the provision of liquidity via the standing US dollar liquidity swap line arrangements.

environment. To this end, the ESRB stressed that financial institutions should carefully preserve their current levels of resilience to ensure that they can weather a potentially less favourable environment.[4]

The ESRB continued its regular monitoring activities and contributed to the stress-testing exercises of the European Supervisory Authorities. As part of monitoring risks in certain parts of the non-bank financial sector, the ESRB published its annual **EU Non-bank Financial Intermediation Risk Monitor**. It also provided adverse scenarios for **the European Banking Authority's 2023 EU-wide banking sector stress test** and **the European Securities and Markets Authority's money market fund stress test in 2022**, as well as the **climate scenario for the European Insurance and Occupational Pensions Authority's EU-wide pension fund stress test in 2022.**

During the review period the ESRB continued to work on several important cross-sectoral and cross-border policy dossiers. As part of this work, it issued a recommendation to address risks in commercial real estate (CRE) markets. CRE has strong interconnections with both the real economy and the financial system, and as such may have a systemic impact on both. The ESRB's recommendation set out short-term to medium-term policy options to increase resilience across a range of financial institutions, including banks, investment funds and insurers. The ESRB also recommended regulatory actions from the European Commission to tackle data gaps and set up activity-based regulation to address CRE vulnerabilities across the financial sector. In addition, it put forward policy suggestions on financial stability risks related to cyber incidents and climate change, as well as crypto-assets and decentralised finance. These proposals are designed to mitigate known risks and vulnerabilities that cut across the financial system. Some of these cross-cutting risks and vulnerabilities were also emphasised in the general warning, although much of this work had begun before the warning was issued.

The ESRB also continued to work on sector-specific policies, covering banks, investment funds, insurers and the central clearing ecosystem. The ESRB's September 2022 general warning highlighted the need to increase the resilience of these sectors and to reduce the likelihood of shocks being transmitted to other parts of the financial system. For the banking sector, this sector-specific work included contributions to the European Commission's five-yearly review of the macroprudential policy framework in the EU. The ESRB also supported ESRB members in their national macroprudential policy decisions. Outside the banking sector, the ESRB had repeatedly called for regulatory reforms in the non-bank financial sector[5] and had noted that little progress had been made.[6] The legislative proposals for the review of the prudential rules governing investment funds, insurers and central clearing issued by the European Commission during the review period provided an opportunity to address vulnerabilities. Reflecting this, the ESRB engaged with the co-legislators to highlight areas of these proposals in which enhancements would be welcome in order to reduce risks to financial stability.

Macroprudential policies in several EU Member States were tightened over the review period in response to the increase in cyclical risks. Countercyclical capital buffer (CCyB) rates were

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[4] See the **press release** following the ESRB General Board meeting on 30 March 2023.

[5] See, for example, the speech by Mario Draghi, then President of the ECB and Chair of the European Systemic Risk Board, "**Building on the achievements of post-crisis reforms**", at the second annual conference of the ESRB, Frankfurt am Main, 21 September 2017.

[6] See the **speech** by the ESRB Chair, Christine Lagarde, at the Hearing before the Committee on Economic and Monetary Affairs of the European Parliament on 20 March 2023.

increased in 13 EU/EEA countries over the review period (Bulgaria, Croatia, Cyprus, Estonia, France, Hungary, Ireland, Lithuania, the Netherlands, Romania, Slovenia, Slovakia and Sweden). Four countries introduced a new systemic risk buffer (SyRB). Liechtenstein, Malta and Slovenia used the SyRB to address sectoral risks related to the real estate market and the household sector. Finland imposed an SyRB on total domestic exposures. The Netherlands and Norway extended the application of existing stricter national measures (under Article 458 of the Capital Requirements Regulation – CRR[7]). In the Netherlands, the measure targeted the residential real estate (RRE) sector, while in Norway it targeted both the RRE sector and the CRE sector. Finally, Austria, Romania, Slovenia, Iceland, Ireland, Norway and Slovakia adopted new borrower-based measures (BBMs) or modified existing ones. Some of these measures applied to all borrowers of certain loan types, while others applied to specific borrower groups (e.g. first-time buyers, buyers of second or subsequent properties). While most of the decisions on BBMs resulted in a tightening of policy, in some cases BBMs were loosened for selected borrower subgroups.

The ESRB pursued its accountability and reporting obligations to the European Parliament and the public. As part of these obligations, the Chair of the ESRB attended a public hearing before the Committee on Economic and Monetary Affairs of the European Parliament (ECON) on 20 June 2022. The Vice-Chair of the ESRB attended a public hearing before ECON on 16 May 2022. On these occasions, the Members of the European Parliament were provided with first-hand information on the rationale for policy initiatives taken by the ESRB. On 28 November 2022 the Chair also held a confidential meeting with the Chair and Vice-Chairs of ECON to discuss risks to financial stability. As part of its accountability to the public, the ESRB issued its 2021 Annual Report in July 2022.

The ESRB also organised several conferences and workshops to foster discussions on macroprudential policy. As part of its mandate, the ESRB held its annual meeting with the Committee of European Audit Oversight Bodies and statutory auditors of EU-based global systemically important banks and insurers. The ESRB also held its sixth annual conference, which focused on policy challenges in the current macroeconomic environment and technological innovation and systemic risk.

[7] 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).

1 Systemic risks in the financial system of the EU

1.1 General outlook

1.1.1 General risk assessment

Until early 2022 cyclical risks had been rising against the backdrop of the low-for-long interest rate environment.[8] The prolonged period of low interest rates raised concerns over asset price valuations. Standard valuation metrics such as price/earnings ratios signalled inflated stock prices in major markets, making them susceptible to corrections. The low interest rate environment had also contributed to elevated prices in the RRE and CRE markets. Additional concerns stemmed from rising energy prices, which posed challenges to the strength of the economic recovery and the outlook for inflation.

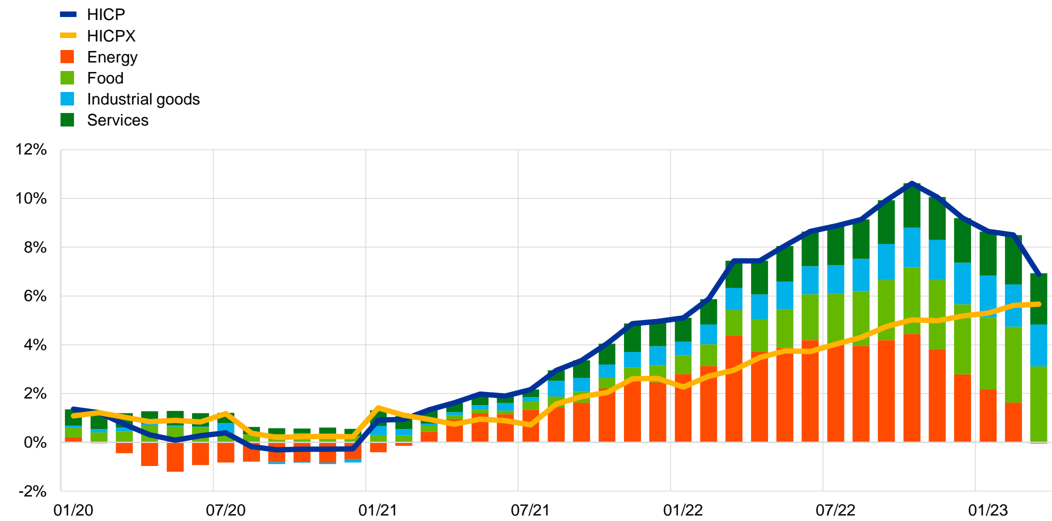
The outbreak of the war in Ukraine caused a rapid deterioration in the risk landscape. It led to greater geopolitical uncertainty, surging inflation and worsening growth prospects owing to higher energy, food and commodity prices and supply chain disruptions (Charts 1 and 2). Prolonged high inflation may lead to financial instability via several channels. First, it can cause elevated market volatility, increasing the probability of a disorderly repricing of assets. Second, longer periods of high inflation also affect the capacity of households and firms to service their debts, although inflation reduces the real value of outstanding debt. All in all, risks to financial stability increased significantly in the EU across sectors and markets, including households, non-financial firms, financial institutions and asset prices. The outlook for households deteriorated owing to the tightening of financing conditions. In the non-financial corporation (NFC) sector, vulnerabilities increased, particularly for energy-intensive firms as well as companies that had taken on relatively more debt during the coronavirus (COVID-19) pandemic. The war in Ukraine also led to a materialisation of risk in the form of a sharp and broad-based fall in asset prices. The resulting strong price co-movement across a wide range of asset classes reduced the benefits of diversification strategies. Furthermore, the challenging macroeconomic outlook contributed to higher credit and funding risks for financial institutions. The sudden intensification of geopolitical uncertainty also increased the risk that financial institutions could be targeted by system-wide cyberattacks.

[8] The cut-off date for the data included in this report was 31 March 2023.

Chart 1

Euro area headline inflation and its main components

(annual percentage changes; percentage point contributions; Jan. 2020 – Mar. 2023)



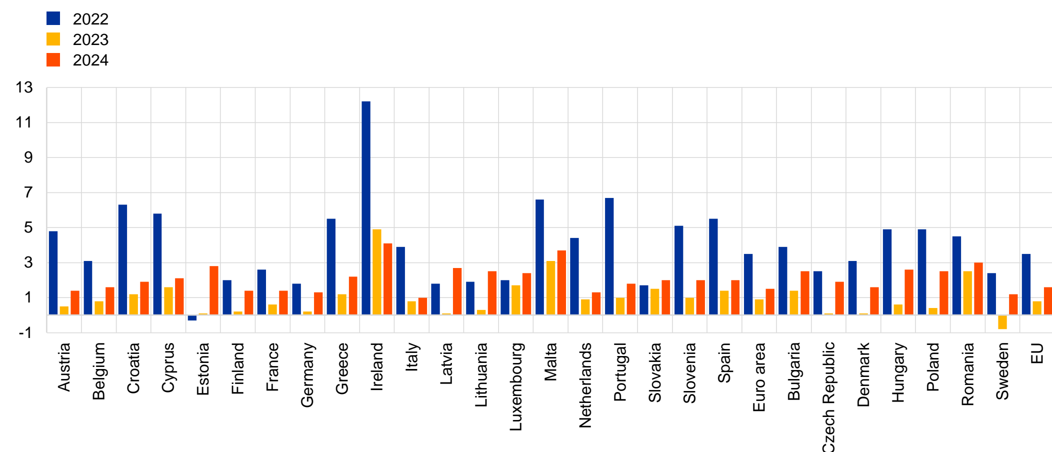
Source: ECB.

Note: Headline inflation is measured by the Harmonised Index of Consumer Prices (HICP) and HICPX refers to HICP inflation excluding energy and food.

Chart 2

GDP growth in 2022 and forecasts for 2023 and 2024

(annual percentage changes)



Source: European Commission Winter 2023 Economic Forecast.

The broad-based rise in risks related to the war in Ukraine prompted the European Systemic Risk Board (ESRB) to issue its first general warning on 22 September 2022. The warning called for heightened awareness of the risks to financial stability and emphasised the need for greater resilience in the EU financial sector to enable the financial system to support the economy should these risks materialise. The warning called on microprudential and macroprudential

authorities to make use of the full range of tools at their disposal to contain these risks and mitigate their impact, should they arise. Where macroprudential tools are not available, the warning stated that microprudential and macroprudential authorities may need to make use of their supervisory powers to mitigate risks to financial stability and ensure that markets do not become impaired. Close coordination between relevant authorities would enhance the efficiency and effectiveness of policy responses, particularly in addressing cross-sectoral and cross-border risks, while avoiding procyclicality, market fragmentation and negative externalities for other countries.

In the five months after the general warning was issued, near-term tail risks to the economic outlook receded to some extent. This reflected lower energy and commodity prices, better than expected bank profitability and rising equity prices. Energy savings by households and firms, coupled with a relatively mild start to the winter, helped to avert the tail risk of an outright energy crisis in Europe. Outside Europe, the reopening of the Chinese economy following the protracted lockdown supported global demand.

Concerns over banking sector vulnerabilities intensified in March 2023 following the collapse of two mid-sized banks in the United States and the problems that resulted in the takeover of Credit Suisse by UBS. Policymakers in the relevant jurisdictions swiftly implemented several measures that helped restore confidence in the financial sector. The ESRB noted that developments in the banking sector and financial markets in March signalled a need to remain vigilant over the vulnerabilities highlighted by these events, with regard to funding structures and the management of interest rate risk in the banking book in a challenging macro-financial environment. To this end, the ESRB stressed that financial institutions should carefully preserve their current levels of resilience to ensure that they can weather a potentially less favourable environment.

1.1.2 Key risks to financial stability

As of the end of March 2023, the ESRB had identified seven key financial stability risks over a three-year horizon. Risks 1-4 were assessed as “severe”, while risks 5-7 were considered “elevated”.[9] The main systemic risks are interlinked and affected by prevailing policy uncertainties and the economic outlook.

Risk 1. Prolonged period of low growth and high inflation resulting in balance sheet stress for the NFC and household sectors

The more challenging macroeconomic situation during the review period entailed heightened risks of balance sheet stress for NFCs and households, especially in the economic sectors and Member States most affected by the surge in energy prices.

Despite the higher level of geopolitical uncertainty, EU real gross domestic product (GDP) grew strongly in 2022, recording an annual growth rate of 3.5%. This robust growth reflected the easing of COVID-19 containment measures and the resumption of international travel and

[9] The ESRB ranks financial risk levels according to three categories: (i) systemic risk; (ii) elevated systemic risk, and (iii) severe systemic risk. The risk level is a function of both the probability of materialisation of the risk and of its potential impact.

tourism, which supported private consumption. Despite pockets of vulnerabilities, the NFC sector as a whole remained resilient in 2022, with robust profitability and investments overall.

Forecasts by international organisations envisage a sharp slowdown in economic growth in 2023. For 2023 as a whole, the European Commission's Winter 2023 Economic Forecast projects a slowdown in real GDP growth in the EU to 0.8%. The outlook for 2023 was, however, revised upwards somewhat compared with the Autumn 2022 Economic Forecast, reflecting the gradual easing of supply bottlenecks, an improved outlook for energy supply and the robust euro area labour market. Forecasts by other international organisations are broadly in line with the European Commission's assessment. The still subdued growth outlook for 2023 reflects increases in financing costs that will weigh on private consumption and likely exert a drag on investment. In the NFC sector, vulnerabilities are particularly pronounced for energy-intensive firms and those that took on relatively more debt during the pandemic. Listed companies have, so far, remained resilient to the slowing economy, as suggested by stable earnings expectations. The erosion of real disposable household income, together with rising interest rates, weakens debt servicing capacity, particularly in countries with elevated debt levels.

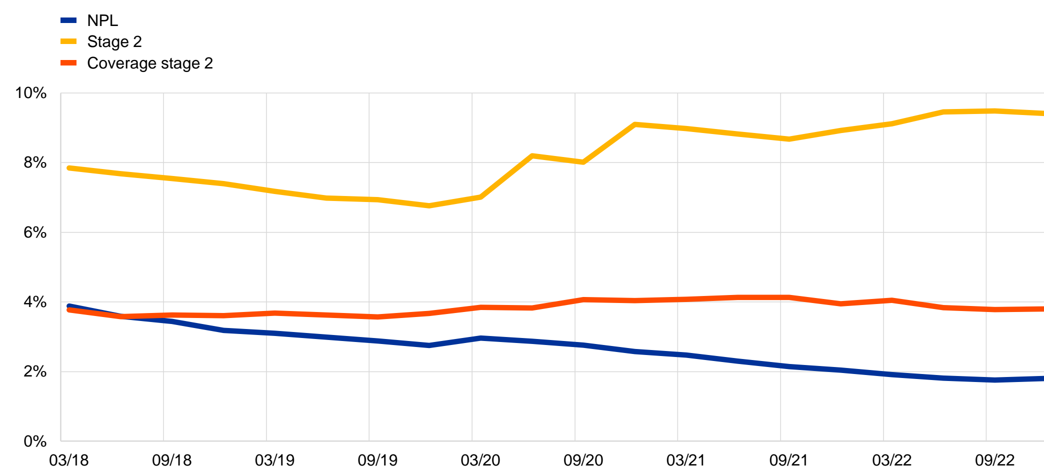
Medium-term macroeconomic risks are high and require close monitoring. The risk of a further escalation of the war in Ukraine remains elevated. In addition, despite their recent decline, energy prices can be expected to remain at historically high levels for a long time, while deglobalisation progresses. Both developments suggest a potential need for economic restructuring and a probable (temporary but possibly protracted) decline in growth potential. It also remains to be seen how much the banking-related market turbulence in March 2023 could adversely affect growth prospects via lending dynamics. Furthermore, the risk of a prolonged period of elevated inflation increases the probability of a disorderly repricing of assets. Moreover, a potential tightening of financing conditions would weigh on the debt servicing capacity of households and firms.

Risk 2. Deteriorating asset quality and profitability prospects of the banking sector interacting with interest rate and funding risks

The EU banking system's capital and liquidity positions remained generally sound in 2022, despite the challenges originating from the Russian invasion of Ukraine. The average Common Equity Tier 1 (CET1) ratio of EU banks was 15.5% in the fourth quarter of 2022. The overall CET1 ratio dropped by around 30 basis points compared with the end of 2021, but remained close to historically high levels and well above minimum requirements. The increase in risk-weighted assets (RWAs) was the biggest contributing factor to this decrease, partly offset by higher retained earnings. EU banks also reported robust liquidity ratios. The average liquidity coverage ratio (LCR) for EU banks was 164.7% and the net stable funding ratio (NSFR) was 125.6% in the fourth quarter of 2022.

Chart 3
Asset quality indicators of EU banks

(percentage, Q1 2018 – Q4 2022)



Source: EBA risk dashboard.
Note: NPL and Stage 2 indicate the share of total loans. Stage 2 includes assets that have had a significant increase in credit risk since initial recognition. Coverage stage 2 indicates the share of the Stage 2 loans covered by provisions.

EU banks recorded strong profitability in 2022, mainly driven by higher net interest income. The average return on equity (ROE) of these banks was 8% in the fourth quarter of 2022, up from 7.3% at the end of 2021. This improved profitability was mainly driven by higher net interest income, offsetting slightly higher operating costs and loan loss provisions. The tightening of monetary policy over the review period resulted in higher bank lending rates for new loans, while the pass-through to deposit rates was significantly slower, thereby improving banks' interest rate margins. Between December 2021 and February 2023, the cost of bank-based borrowing increased considerably for non-financial firms and households (composite lending rates for non-financial firms increased by 250 basis points on average, while lending rates for house purchases increased by an average of193 basis points).

The asset quality of banks remained sound in 2022, despite mounting challenges from the external environment. The non-performing loan (NPL) ratio of EU banks continued to drift lower, to 1.8% in the fourth quarter of 2022 compared with 2% a year earlier (Chart 3). The lower NPL ratio was mainly due to asset disposals and securitisation activities. At the same time, the early signs of a deterioration in asset quality could be seen in the increase in International Financial Reporting Standard 9 (IFRS 9) stage 2 loans, with some banks partially recognising the greater likelihood of future credit losses (IFRS 9 stage 2 exposures rose to 9.4% in the fourth quarter of 2022, up from 8.9% in the fourth quarter of 2021).

The capital and liquidity positions of EU banks remained strong in 2022 but may be challenged by a deteriorating economic outlook. The banking system in the EU was resilient overall to the challenges stemming from higher levels of geopolitical uncertainty, lower economic growth prospects and the turmoil in the financial sector in March 2023. This notwithstanding, financial markets will continue to reassess financial sector vulnerabilities. Greater prudence in the assessment and management of liquidity, market, operational and interest rate risks is thus required, in an environment of rising interest rates. Looking ahead, several factors may weigh on

the asset quality and profitability outlook for banks: (i) the macroeconomic environment may cause a deterioration in asset quality, (ii) the increase in banks' funding costs may reduce net interest income, and (iii) declining credit demand is likely to weigh on lending volumes. Banks need to ensure that their provisioning practices and capital planning properly account for expected and unexpected losses that may be caused by the deterioration in the risk environment.

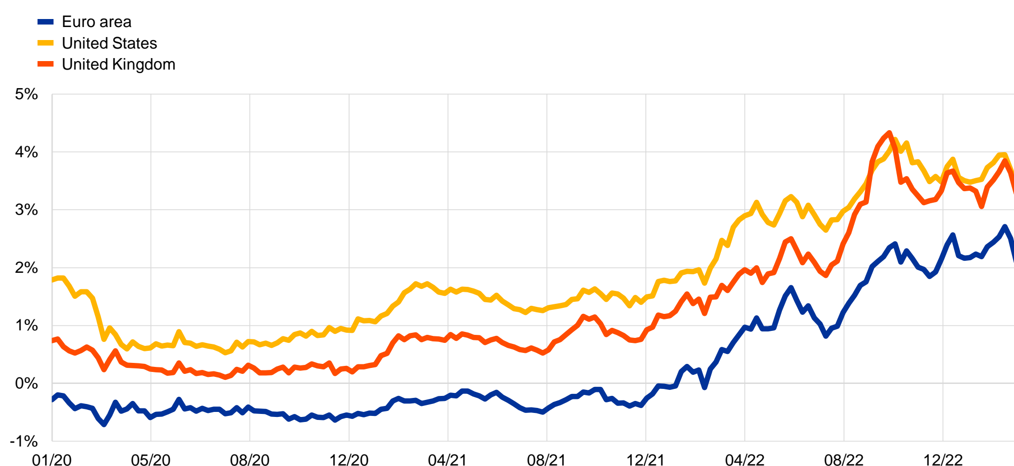
Risk 3. Sharp and broad-based asset price corrections could be compounded by vulnerabilities in the bank and non-bank financial sectors, in particular related to liquidity and leverage

The prolonged period of rising financial asset prices came to a halt in 2022. Greater geopolitical uncertainty, coupled with the more challenging macroeconomic outlook, led to a sharp correction across most major bond and stock markets.

Chart 4

Ten-year government bond yields

(percentages per annum; 3 Jan. 2020 – 31 Mar. 2022)



Source: Bloomberg.

In the global sovereign bond markets, yields increased in most major markets (Chart 4). Higher yields predominantly reflected central bank actions to bring inflation back towards levels consistent with price stability. Corporate bond yields also increased sharply in 2022 and early 2023. Apart from higher "risk-free" rates, the increases also reflected higher risk premia demanded by investors to hold corporate bonds. The increases in bond yields were more pronounced in the high-yield segment compared with investment-grade bonds.

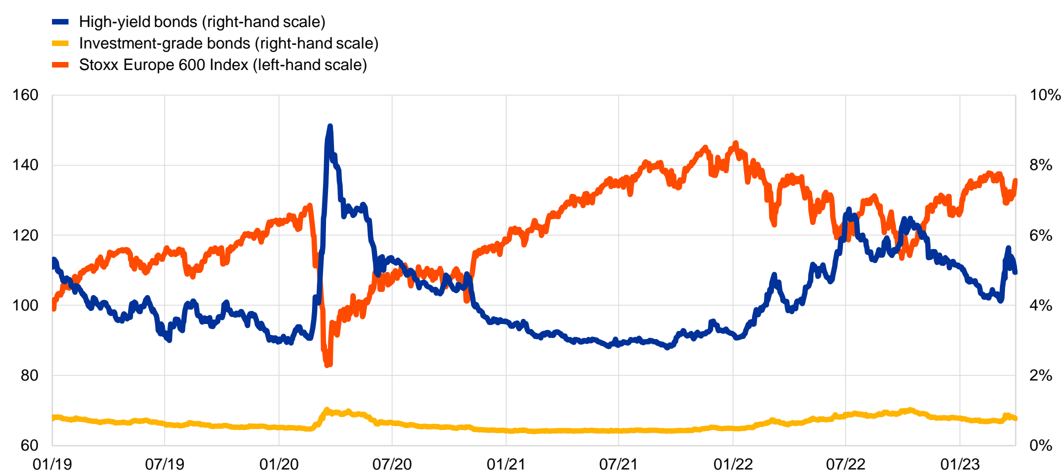
The global equity markets underwent a correction in the first three quarters of 2022, while receding risks to the growth outlook contributed to a recovery in the latter part of the review period (Chart 5). The S&P 500 index and the STOXX Europe 600 index declined by 14% and 6.3% respectively, between January 2022 and March 2023, mainly driven by greater geopolitical uncertainty, low growth prospects and the marked rise in interest rates. The sharp co-movements of bond and stock prices complicated diversification strategies and compounded losses for

investors. From October 2022 equity prices recovered some of their earlier losses, reflecting receding tail risks to economic growth prospects. In particular, the risk of an outright energy crisis did not materialise, owing to significant energy savings and a relatively mild start to the winter. Volatility in financial sector stock markets increased sharply in March 2023, following the failure of two regional banks in the United States and the events leading to the takeover of Credit Suisse by UBS. Policymakers in the relevant areas swiftly implemented several measures that helped restore confidence in the financial sector. Overall, the corrections in equity and corporate bond markets reduced some signs of over-valuation. As of the end of March 2023, both euro area corporate bond spreads and the cyclically adjusted price-to-earnings ratio (CAPE) were hovering close to their respective long-term averages.

Chart 5

EU stock prices and corporate bond spreads

(stock prices indexed to 100 in January 2019; percentages; 1 Jan. 2019 – 31 Mar. 2023)



Source: Bloomberg.
Note: High-yield and Investment-grade bonds are the market value weighted average Option Adjusted Spread for the index.

Heightened market volatility amid low liquidity and market concerns about collateral scarcity may adversely affect market functioning. In the second half of 2022, various measures of market liquidity indicated that conditions had worsened significantly across all fixed-income instruments (including government and corporate bonds). The lower liquidity in financial markets pushed up financing costs and rendered the price discovery process more difficult. Furthermore, strong demand for highly rated fixed-income instruments in the EU raised concerns about collateral scarcity. While the corrections in market liquidity and collateral scarcity have been orderly, a further deterioration in the growth outlook or an escalation of geopolitical tensions may adversely affect market functioning.

The behaviour of investment funds may amplify market corrections. There is a risk that investment funds with less liquid portfolios will compound the fall in asset prices by selling securities to meet redemption requests and/or margin calls. This could trigger an amplification mechanism between falling asset prices and the rising liquidity needs of investment funds. Funds with a pronounced liquidity mismatch (investing in less liquid assets while offering frequent

redemption opportunities, with strong first-mover incentives) and/or substantially leveraged positions are particularly vulnerable.

Looking ahead, asset prices can be expected to be highly sensitive to changes in expectations on the economic outlook and the path of monetary policy, while low financial market liquidity may amplify market volatility. Further downward revisions to economic growth and upward shifts in the expected path of inflation might increase uncertainty about monetary policy, thereby amplifying asset price volatility. In addition, a fall in asset prices could be triggered by a further escalation in geopolitical tensions or renewed concerns about the sustainability of banks' business models.

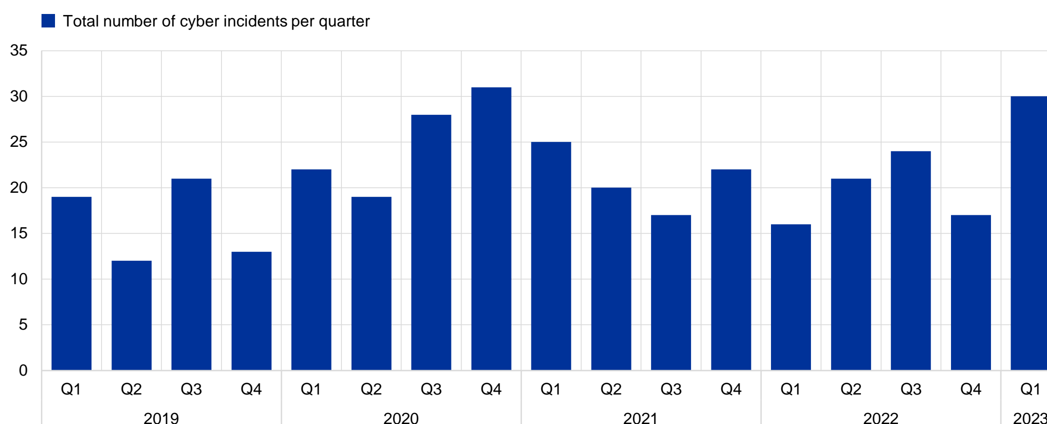
Rising interest rates also affect insurers and pension funds. These, unlike investment funds, are liability-driven investors. Like investment funds, margin calls for pay-floating interest rate swaps could trigger insurers to sell bonds to generate liquid assets. In addition, widespread surrenders by life insurance policyholders switching to investment alternatives with higher returns could amplify negative price effects on bond markets as insurers would have to generate liquidity to respond to redemptions. Non-life insurers, on the other hand, could face profitability pressure causing a shortfall in technical provisions and weighing on solvency ratios. Like insurers, defined benefit pension funds are hedging their future liabilities with pay-floating interest rate swaps and receive margin calls when interest rates rise.

Risk 4. System-wide cyber incidents

The ESRB has identified cyber incidents as a severe risk to financial stability. A cyber incident can spread quickly across the financial system, leaving authorities and institutions with insufficient time to respond adequately. The ransomware attack on ION Group at the end of January 2023, which interrupted the services of several banks, hedge funds and brokerages, was a reminder that the capabilities of attackers are constantly improving. More generally, the war in Ukraine and the broader geopolitical landscape have significantly heightened the cyber threat environment. Cyberattacks and the sabotaging of power and telecommunications infrastructure in EU Member States – on which the financial sector relies – present significant threats to financial stability.

The level of cyber incidents in the EU financial sector has been high in recent years, with distributed denial-of-service (DDoS) being the most prevalent. The number of significant cyber incidents concerning significant institutions (SIs) under direct European banking supervision remained high in 2022 and early 2023 (Chart 6). Of the SIs under ECB (European Central Bank) Banking Supervision, 37% reported a cyber incident in 2022. DDoS attacks have become increasingly frequent, sophisticated and cheaper to launch and have grown more rapidly than other types of cyber incident. DDoS attacks affect the availability of data and cause loss or degradation of critical services, loss of productivity, extensive remediation costs and acute reputational damage. They may also be used to distract from other types of cyberattack.

Chart 6
Number of significant cyber incidents reported by significant institutions under European banking supervision



Source: ECB Banking Supervision.
Notes: Cyber incidents are deemed "significant" if they pose (or are likely to pose) a material threat to the business operations of a bank. The criteria are defined along the financial dimension (potential cost) and non-financial dimension (reputational factors, legal/regulatory factors, level of internal and external escalation and systemic factors).

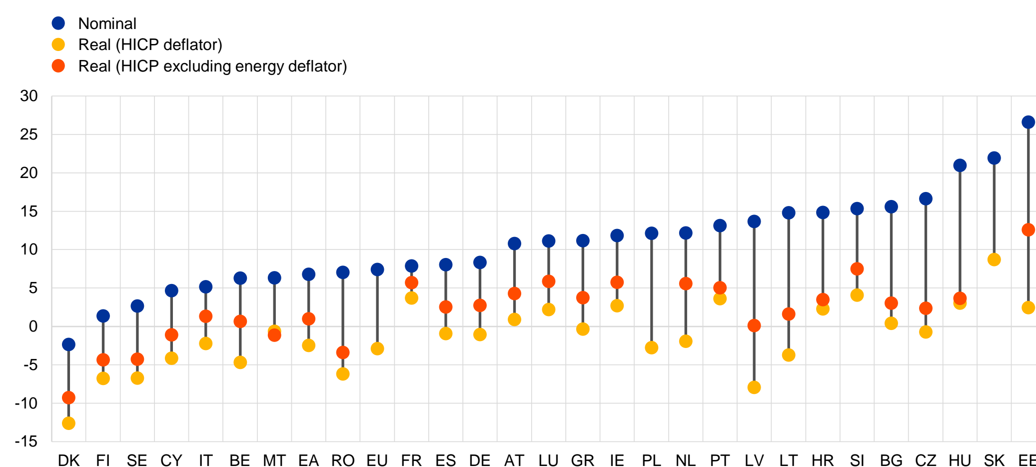
Risk 5. The materialisation of accumulated risks in the residential and commercial real estate sectors could adversely affect the financial system and the real economy through direct losses, increasing credit risk and declining collateral values

Cyclical risks have accumulated over the past few years, particularly in RRE, and reached elevated levels in the early months of 2022. House prices have grown rapidly in the RRE markets in recent years, supported by low financing costs, high demand and the attractiveness of housing for investment purposes. As a result, house price valuations were high in a number of Member States in early 2022.

Chart 7

Nominal and real house price growth in the EU

(annual growth rates; Q3 2022)



Source: ECB Statistical Data Warehouse.
Note: The latest observation is for the fourth quarter of 2022 for AT, DE, EE, GR, IE, LT, LV, SE and SK; the third quarter of 2022 for DK, FI, BE, CY, MT, EA, EU, LU, PL, NL, PT, HR, SI, BG, CZ, HU and RO; the second quarter of 2022 for IT and ES; and the first quarter of 2022 for FR.

Since the outbreak of the war in Ukraine and the sharp increase in bank lending rates for house purchases, there has been growing evidence that the real estate cycle has reached a turning point in several EU Member States. RRE prices continued to increase in 2022. Nominal house prices in the euro area rose at an annual rate of 6.8% in the third quarter of 2023 (Chart 7), decelerating from 9.2% a year earlier. Looking ahead, the pronounced increase in borrowing costs, together with the deterioration in the macroeconomic outlook, can be expected to weigh on demand for new mortgage loans and for housing. The evidence for a turning point in the RRE cycle is also supported by recent surveys. The consumer confidence indicators produced by the European Commission for the intention to buy a house within the next two years, and for the intention to improve the home within the next 12 months, have deteriorated in recent quarters. Moreover, the December 2022 euro area bank lending survey points to tightening credit standards for loans to households for house purchases in the fourth quarter of 2022, mainly owing to rising credit risk.

Vulnerabilities are also on the rise in the CRE sector. In general, the amplitude of cycles in the CRE sector is greater than overall economic cycles. This sector is therefore highly vulnerable to a possible materialisation of cyclical risks in relation to heightened inflation and the pronounced deterioration in the growth outlook owing to the Russian invasion of Ukraine and other geopolitical tensions. A number of key indicators suggest that risks in the CRE sector started to materialise over the review period. Real estate investment trust indices declined steeply and stood 39% lower in December 2022 than one year earlier. The declines were particularly pronounced for residential properties and industrial spaces. The weaker sentiment was also confirmed by CRE transactions, which decreased by around 50% between the fourth quarter of 2021 and the fourth quarter of 2022. Looking ahead, a further sharp and abrupt correction in CRE markets would cause investor losses, increase credit risk for banks and for non-bank lenders, and prompt a decline in collateral values.

Risk 6. Re-emergence of sovereign financing and debt sustainability concerns

The worsening macroeconomic outlook, together with the tightening of financial conditions, has led to a further deterioration in medium-term sovereign debt dynamics. High public debt-to-GDP ratios remain a key macroeconomic vulnerability in several EU countries. Resilience to possible future adverse shocks is low and has declined further owing to the worsening macroeconomic outlook, combined with the pronounced upward shift in the yield curve. Moreover, discretionary fiscal spending in the euro area in 2022 was increased by about 1.9% of GDP, mainly to mitigate the impact of higher energy prices. Higher than previously planned fiscal deficits, together with the rise in sovereign yields, are weighing on debt dynamics, most notably in countries with high debt levels. Short-term risks relating to higher funding costs are greater for countries with high short-term debt servicing needs. Over recent years many euro area countries have tried to reduce this risk by issuing bonds with longer maturities during the low interest period. Resurfacing market concerns about fragmentation in euro area bond markets in the context of tightening financing conditions were mitigated through the announcement of the Transmission Protection Instrument, which was approved by the ECB's Governing Council on 21 July 2022. This new instrument aims to counter unwarranted and disorderly market dynamics.

Risk 7. Disruptions to critical financial infrastructure, including central counterparties

Central clearing mitigates counterparty credit risk but can transmit liquidity risk across the financial system. For centrally cleared transactions, market participants entering derivative positions need to provide high quality collateral as the initial margin. When derivative positions create losses, market participants also need to provide a variation margin – typically in cash – to maintain their positions. In principle, market participants' own resources should therefore constrain activity in derivatives markets. In practice, the variation margin and initial margin can be funded through borrowing. Clearing member banks, who have access to central bank funding, often provide such margin funding to their clients. This eases the constraint and facilitates the growth of leverage. It also creates the risk of cliff-edge effects if and when clients' demand for borrowing approaches the credit limits of their clearing members. In this case, clients may be forced to close positions.

The surge in margin calls owing to heightened volatility in the energy and commodity markets was an example of this transmission of liquidity risk. NFCs, such as energy utilities, transacting in both physical commodities and related derivatives, experienced high margin calls during this period. Data collected under the European Market Infrastructure Regulation (EMIR)[10] show that in 2022 EU NFCs experienced the highest margin calls for their exposures to energy and commodity derivatives. Initial margins posted by EU NFCs peaked around the end of August 2022, exceeding the March 2022 peak by around €10 billion (Chart 8). NFCs typically have fewer and less liquid financial assets that can be used to meet margin requirements than financial corporations. As clearing members became less willing to fund margin calls for their clients, this

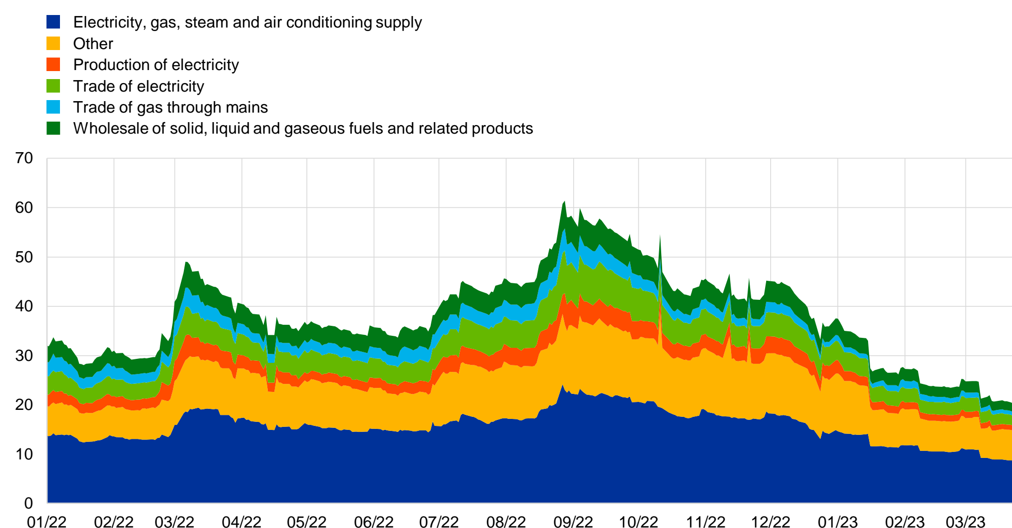
[10] Regulation (EU) No 648/2012 of the European Parliament and of the Council of 4 July 2012 on OTC derivatives, central counterparties and trade repositories (OJ L 201, 27.7.2012, p. 1).

resulted in liquidity challenges for NFCs, prompting some Member States to provide liquidity assistance.

Chart 8

Initial margins posted by EU non-financial corporations by economic activity

(EUR billions; 3 Jan. 2022 – 31 Mar. 2023)



Sources: EMIR data and ESRB Secretariat calculations.

1.2 Regular risk monitoring and risk assessment activities

The ESRB continued its regular monitoring activities and provided adverse scenarios for the stress-testing exercises of the European Supervisory Authorities (ESAs). This section describes the stress test scenarios the ESRB provided to the European Securities and Markets Authority (ESMA) and to the European Banking Authority (EBA). The section also includes a box summarising the ESRB's risk assessment of certain non-bank financial institutions, particularly investment funds (Box 1), and a box summarising the ESRB's monitoring of securitisation markets (Box 2).

1.2.1 Stress test scenarios

Stress tests are an analytical tool that helps assess the resilience of the financial system. The regulation establishing the ESAs mandates them to coordinate stress tests within their remit, in cooperation with the ESRB. As part of this cooperation, the ESRB, with technical support from the ECB, provides the adverse scenarios for these stress test exercises. Each scenario reflects the ESRB's assessment of risks and key vulnerabilities in the financial system at the relevant point in time.

During the review period of this Annual Report, the ESRB provided two adverse scenarios, each tailored to the needs of the ESA coordinating the stress test.[11] Differences between the business models and risk profiles of the various types of financial institution mean that they are vulnerable to different types of shock. Each scenario was therefore tailored to the specificities of the financial sector concerned and the focus of the stress test in question. To ensure this, each scenario was designed in close cooperation with the relevant ESA and extensively discussed with the ESRB member institutions.

In November 2022 the ESRB published the adverse financial scenario for the 2022 money market fund (MMF) stress-testing guidelines issued by ESMA. This scenario reflected the uncertainty about the economic consequences of the Russian invasion of Ukraine, geopolitical tensions in other parts of the world and the resurgence of the COVID-19 pandemic at the time. Because MMFs primarily invest in short-term public and private sector assets, the adverse scenario focused on the impact on asset prices. The shocks provided were one-off, instantaneous and permanent shifts in asset prices relative to the cut-off date levels. The scenario was approved by the ESRB General Board on 26 October 2022 and published by ESMA on 30 November 2022.

Two months later, in January 2023, the ESRB provided the adverse scenario for the 2023 EU-wide banking sector stress test exercise coordinated by the EBA. The scenario for the EU-wide stress test exercise (hereinafter, the EBA scenario) includes a macro-financial scenario stretching over a three-year period, and a market risk component with a three-month horizon. A key feature of the 2023 EBA scenario was persistently high inflation and higher interest rates. The persistence of inflation in the scenario was largely driven by energy price shocks and second-round effects, only partially offset by drag from foreign and domestic demand, reflecting a sharp fall in economic growth in the EU and globally. The scenario was more severe than the 2022 scenarios of the Bank of England and the Federal Reserve System, which in part reflects the use of updated data. One new element of the 2023 EBA scenario was that the economic growth projections were broken down into economic activities at the sectoral level. This new feature of the EBA stress test methodology was introduced to better capture the impact of the shocks and vulnerabilities, heterogeneous across sectors, related to the COVID-19 pandemic and the recent energy crisis.[12] The General Board approved the scenario on 23 January 2023, and the EBA subsequently launched the exercise on 31 January 2023.

1.2.2 Monitoring of certain non-bank financial institutions and securitisation markets

The ESRB monitors and assesses risks in certain non-bank financial institutions and is mandated by law to monitor risks to financial stability from securitisation markets. These activities complement the broader risk monitoring described in Section 1.1. The boxes in this section describe these activities in more detail.

[11] The ESRB publishes all the scenarios used for such regulatory stress tests on its **website**.

[12] Published on the European Banking Authority's **website**.

Box 1

The monitoring of risks relating to non-bank financial intermediation

In July 2022 the ESRB published the EU Non-bank Financial Intermediation Risk Monitor 2022 (NBFI Monitor). It summarises the ESRB's monitoring of systemic risks and vulnerabilities relating to non-bank financial intermediation. The report highlights three cyclical and structural risks and vulnerabilities. First, the risk that disorderly market correction could lead to losses, large investor redemptions and, in turn, liquidity strains in investment funds holding less liquid assets. Second, the risk that rising investment fund exposures to lower-rated and less liquid fixed-income instruments could lead to losses and investor redemptions and adversely affect the markets. Third, structural vulnerabilities associated with excessive use of leverage and interconnectedness could lead to contagion and magnify shocks to financial stability.

To support the identification of risk, the NBFI Monitor 2022 includes three special features. The first special feature uses the case study of Archegos – a US family office pursuing hedge fund strategies – to show how leverage and concentration risks in derivatives markets can materialise and how using regulatory data can be used to monitor systemic risk. It points to the need to address deficiencies in data and to make further progress on data management to allow for a more comprehensive risk assessment. The second special feature estimates the impact of an unexpected rise in interest rates for a sample of the largest EU bond funds, by combining data on portfolio holdings and derivatives exposures. It shows that large losses could result in increased investor redemptions, leading to asset fire sales that could further exacerbate the initial fall in bond prices. The third special feature explores the characteristics of alternative investment funds (AIFs) that are mainly held by insurers and considers whether linkages between the two sectors could contribute to the propagation of risks for AIFs. It concludes that linkages with insurers do not increase the level of risk for AIFs.

Box 2
The monitoring of risks in the EU securitisation market

A traditional securitisation is a financial instrument that bundles and transforms a pool of illiquid assets, such as residential mortgage loans, consumer loans or credit card receivables, into tradable securities. If not adequately managed, securitisations may pose risks to financial stability, as seen during the global financial crisis. They played an amplification role during the crisis, transmitting risk from one part of the financial system to another. This led to a loss of confidence, particularly in banks.

In July 2022 the ESRB published its first monitoring report on the EU securitisation market with a focus on EU residential mortgage-backed securities (RMBSs). Following the implementation of the EU Securitisation Regulation in 2017, the ESRB became responsible for macroprudential oversight of this market, in particular for the monitoring of the build-up of systemic risk generated by a combination of excessive leverage and interconnectedness. The first monitoring report only covers traditional securitisations

The report showed that in 2021 the EU securitisation market was small compared with the market in the United States, and that it had shrunk since the global financial crisis of 2008. In the second quarter of 2021, the size of the EU securitisation market was around €0.7 trillion, compared with around €9.8 trillion in the United States. This difference reflects structural features in the US and EU securitisation markets, including the greater role of market-based financing in the United States relative to the EU, and guarantees on securitisations provided by US government agencies.

The report also showed that the EU securitisation market is concentrated in a few Member States and banks are the main holders of securitisations. In the second quarter of 2021 almost 80% of total outstanding securitisations in the EU were backed with loans located in France, Italy, the Netherlands and Spain, reflecting the active and extensive use of securitisation in these Member States. EU banks remain the main holders of EU securitisations. In particular, they retain securitisations mostly for use as collateral in central bank operations.

The report set out a framework for monitoring systemic risk which was applied to EU RMBSs. By looking at specific credit quality indicators for the loans underlying EU RMBSs, the report showed that their loan-to-value (LTV) ratio was below 100% on average, but that the share of riskier loans has risen since the early 2000s. The average debt-to-income (DTI) ratio was 5.3 across all loans, with almost 34% of borrowers having a DTI ratio above 5. Finally, the report showed that the origination and holding of EU RMBSs are concentrated in a few banks domiciled in a few Member States.

The report did not identify any substantial systemic risks emanating from EU RMBSs, but noted that an analysis of asset classes or types of securitisation other than EU RMBSs could reveal sources of risk. To this end, the report pointed out that the ESRB would expand the monitoring framework beyond RMBSs over time. The report also noted that the quality of EU securitisation reporting should be enhanced to ensure that emerging risks to financial stability are identified early.

2 ESRB policies addressing systemic risk

During the review period the ESRB continued to work on several important cross-sectoral and cross-border policy dossiers. As part of this work, it issued a recommendation to address risks in CRE markets. The ESRB also progressed work on financial stability risks related to cyber incidents and climate change, as well as crypto-assets and decentralised finance (DeFi). Much of this work began before the ESRB issued its general warning in September 2022. By addressing known vulnerabilities in the financial system, this work also served to mitigate some of the risks identified in the warning. It also reflects the importance of considering the interactions of risks and vulnerabilities across the financial system as a whole that the warning highlighted.

The ESRB also continued to work on sector-specific policies. For the banking sector, this included contributions to the European Commission's five-yearly review of the macroprudential policy framework in the EU, as well as internal work to support ESRB members in their national macroprudential policy decisions. Outside of the banking sector, the ESRB continued to propose changes to the prudential rules for the insurance sector and the rules for the investment fund sector and for central counterparties (EMIR). Consistent with the ESRB's September 2022 general warning, these proposals were designed to increase the resilience of these sectors or entities to shocks, and also aim to reduce the likelihood of them transmitting shocks to other sectors or entities in the financial system, including through their impact on asset markets.

2.1 Addressing the build-up of vulnerabilities and risks across the financial system

The ESRB continued its work to address the build-up of vulnerabilities related to CRE, climate change, crypto-assets and DeFi, as well as cyber risk. Vulnerabilities in these areas would cut across bank and non-bank financial institutions and could pose broader risks to financial stability. Reflecting this, the ESRB continued to follow a thematic approach in its work in these four areas. The remainder of this section describes the work of the ESRB in more detail.

2.1.1 Commercial real estate

In January 2023 the ESRB published a report[13] and recommendation[14] on vulnerabilities in the CRE sector in the European Economic Area (EEA). Despite significant progress in closing CRE data gaps in recent years, such gaps persist in the CRE sector, making an in-depth comparative analysis across countries difficult.[15] Nonetheless, the analysis suggests that the CRE sector is vulnerable to cyclical risks related to heightened inflation, a tightening of financial

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[13] European Systemic Risk Board (2023), ***Vulnerabilities in the EEA commercial real estate sector***, January.

[14] **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).**

[15] The ESRB Recommendation on closing real estate data gaps (Recommendation ESRB/2016/14 as amended by Recommendation ESRB/2019/3) gives Eurostat the responsibility of designing, by 2025 at the latest, a system for the development, production and dissemination of indicators on physical CRE markets (including a price index, rental index, rental yield index, vacancy rates and construction starts). The work on implementing the recommendation is ongoing, as mentioned in the progress report (European Commission (2021), ***Progress Report on Commercial Real Estate Statistics***, December).

conditions that limits the scope for refinancing existing debt and for taking out new loans, and the pronounced deterioration in the growth outlook following Russia's invasion of Ukraine. The sector is also vulnerable to structural changes including the impact of climate-related economic policies, such as stricter building standards, and the shift towards e-commerce. In addition, the COVID-19 pandemic has accelerated the growth of demand for flexibility in leasable office space, as remote and hybrid working models have become more widespread. These vulnerabilities may be amplified by spillovers across countries and through interlinkages between financial institutions, as the CRE sector has strong interconnections with both the real economy and the financial system.

The analysis also showed that adverse developments in the CRE sector may have a systemic impact on the financial system and the real economy. In addition, the sector is important to many financial market actors, such as investment funds, insurance undertakings, pension funds and credit institutions. Credit institutions such as banks are particularly exposed to credit risk in the CRE sector via loans (Chart 9). The data suggest that banks lent to the sector at high LTV ratios[16] in several EEA countries in 2022. As collateral valuations continue to decrease, LTV ratios on existing exposures will rise. This will increase banks' loss-given-default ratios, leading to higher provision and capital requirements. Eventually, this could limit the banks' ability to maintain credit supply. Outside the banking sector, the behaviour of open-ended real estate investment funds is one example of where risks may arise. Some of these funds offer redemption periods to their investors that are shorter than the time the fund would need to liquidate CRE investments at prevailing market prices. Such liquidity mismatches pose a risk that funds might engage in fire sales that could amplify price falls in CRE markets. Risks related to pension funds and insurance undertakings in CRE markets differ across jurisdictions, reflecting different business models and practices, as well as different market structures. For example, the share of insurance in total CRE exposures varied between 1% and 25% across jurisdictions in the last quarter of 2021. The way in which pension funds and insurance companies are exposed to CRE also differs across countries; the analysis for the five largest fund domiciles (France, Germany, Italy, Luxembourg and the Netherlands) shows that insurance companies, together with pension funds, are the biggest investors in real estate funds. Finally, the report also highlighted that the materialisation of risks in the CRE market would negatively affect the credit ratings of securitisations used to pool CRE loans. CRE market stress may also have negative spillover effects on the real economy, for example through its impact on the construction sector, thus aggravating downturns.

The recommendation consisted of several policy measures that may have to be adopted in the short to medium term. EU and national authorities should closely monitor current and potentially emerging vulnerabilities related to CRE and ensure that financing practices in the sector are sound and that financial institutions are resilient. To increase the resilience of the banking sector, authorities may use risk weight measures or capital buffers: these measures can be used either to address broad cyclical or structural risks, or to target CRE-specific risks. In the investment fund sector, it is important to (i) ensure alignment between fund redemption terms and the liquidity of the underlying CRE assets; (ii) assess risks arising from liquidity mismatch and leverage; and (iii) use liquidity management tools and leverage limits where necessary. At the same time, insurers need to monitor the level of solvency capital requirements. This is particularly important in the treatment of collateral for CRE debt and CRE investment, and the way in which insurers account for CRE risks when investing in CRE through investment funds. Looking ahead, activity-based

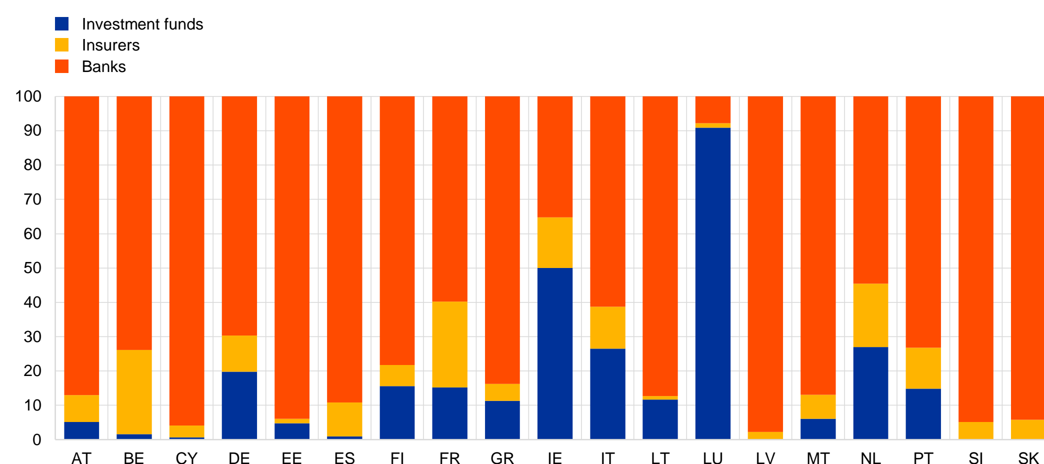
[16] If investors can use the tax shield, taking out a mortgage with a high LTV amplifies their ROE. However, if they run into problems servicing the debt (because tenants do not pay on time or because vacancy rates rise), the high LTV becomes a major burden and the investor may rapidly go bankrupt.

regulation is needed to help address CRE vulnerabilities effectively. Therefore, the European Commission should assess the current macroprudential framework and 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. In parallel, further progress should be achieved in closing CRE data gaps.

Chart 9

Share of financial institutions' CRE exposures by investor type

(percentage of countries' total exposures; Q4 2021)



Sources: AnaCredit, Alternative Investment Fund Managers Directive (AIFMD), European Insurance and Occupational Pensions Authority (EIOPA) statistics.
Notes: For the AnaCredit data, both the purpose and the protection of the exposure have been taken into account. Regarding the EIOPA data, insurers' CRE exposures were calculated according to the methodology used by EIOPA (see EIOPA, 2020 Financial Stability Report). In some countries, cross-border financing plays a significant role and the category "banks" also includes non-domestic banks.

2.1.2 Financial stability risks relating to climate change

In July 2022 the ECB and the ESRB published a joint report on the need to better gauge the implication of climate change for systemic risk and the scope for macroprudential policy responses.[17] The report is anchored in a maturing body of work from academia and relevant authorities. This body of work highlights analytical gaps relevant for systemic risk, notably regarding types of financial vulnerabilities and orders of magnitude of risks. In addition to this body of work, the joint report by the ECB and the ESRB considers macroprudential policy options to tackle the systemic dimension of climate-related financial risk, in terms of scope (interaction with financial vulnerability and economic feedback), scale (interconnectedness and contagion between financial sectors) and horizon (how long-term shocks could translate into short-term financial stress, alongside a more in-depth modelling of dynamic behaviours).

The report focuses on two important aspects of measurement, namely the mapping of exposures and systemic amplifiers. The first aspect relates to the consolidation and refining of previous climate exposure mapping. On this, the report reaches two conclusions: first, there has

[17] ECB/ESRB Project Team on climate risk monitoring (2022), ***The macroprudential challenge of climate change***, ESRB, July.

been no meaningful reduction in emission intensity in the loan portfolios of euro area banks in recent years; and second, exposures to climate-related losses remain concentrated in a small number of banks, with more than 20% of potential losses residing in the holdings of 5% of euro area banks. The second aspect is to gauge the size of systemic amplifiers. In terms of transition risks, the report finds that a disorderly sharp rise in carbon prices results in a near-doubling of the average default correlation of a broad set of firms. In terms of physical risks, climate hazards may cluster and this may aggravate fire sale dynamics. For example, the report finds that, across institutional sectors, the share of common asset holdings exposed to heat and water stress is around 30% and as much as 45% for wildfire risk.

The report deepens the understanding of three important topics for modelling financial stability risks stemming from climate change. These relate to scenario horizons, modelling of uncertainty and dynamic balance sheet modelling.

First, the report looks at how risk assessments might underplay short-term abrupt climate-related shocks by focusing on long-term horizons. While it is estimated that an orderly transition would boost EU economic output by 3% cumulatively, compared with a no policy change scenario, a disorderly transition would reduce it by 1.5% cumulatively by 2050, compared with current policies. A full assessment should also include major shifts at the level of economic sectors associated with a disorderly transition: fossil fuel producers could experience losses in the range of 40% in the case of a disorderly transition. Nearer-term analysis also tends to show that initial short-term costs of transition could exceed the initial benefits of reducing physical risks.

Second, the report highlights the uncertainty that prevails in the modelling of these risks. In order to gauge uncertainty in modelling, the report includes a “horse race” of models currently used within the ESRB/Eurosystem membership. The result of this comparison of models suggests a consensus on the description of the transmission of climate change shocks to the financial sector: such shocks would initially be manifested in revised market expectations, affecting equity prices first, before trickling into corporate bond prices.

Finally, the report tackles the issue of dynamics. Climate stress tests are often based on scenarios with longer time horizons than traditional stress tests. Therefore, to be more realistic, climate stress tests should apply a dynamic balance sheet approach, in which financial institutions’ reactions and non-financial sectors’ actions towards achieving a lower-carbon economy are reflected. The report provides a high-level summary of the methodological approaches that could be considered for dynamic balance sheet modelling for the banking, insurance and asset management sectors.

The report builds on the analytical foundations to measure climate-related financial risk and discusses the need for a macroprudential response that could be implemented in the European context. As the risks stemming from climate change become clearer, so too do the benefits of prudential climate-related policies. Indeed, these policies could limit the losses caused by climate change and help reap the benefits of a timely transition. The report discusses the options for a European macroprudential response and considers a range of possible instruments. Currently, no macroprudential instrument appears readily available and fit for purpose in its current form to help tackle climate-related financial risk. However, some instruments could be implemented with only limited adjustments and others would be straightforward to develop. An inventory of available macroprudential instruments in the banking sector suggests that adapting and developing measures to limit concentration could help address systemic risks across the board, while a

systemic risk buffer (SyRB) would offer a flexible tool to contain the build-up of climate risks and enhance the resilience of banks to the materialisation of risks.

2.1.3 Crypto-assets and decentralised finance

The ESRB believes that authorities need to better understand developments in the crypto ecosystem and their implications for financial stability. Since the latest peak in November 2021, crypto markets have contracted sharply, with prices falling 75% (although they rose again in 2023), and there have been numerous crypto corporate failures, with increasing evidence of fundamental problems related to corporate governance, conduct, market abuse and business models. However, the recent turmoil has so far been largely self-referential and contained. Policy discussions on how to approach the regulation of crypto markets, which has progressed in jurisdictions around the world, mainly focus on consumer and investor protections[18] and the need to ensure that crypto-assets and DeFi are not used to launder money or for illicit activity.[19] More specifically, the EU is set to implement the Markets in Crypto-Assets (MiCA) Regulation,[20] which creates a comprehensive framework for the regulation of crypto-asset service provision and crypto-asset issuance in the EU. However, financial stability is not a key theme of MiCA: consideration has therefore been given to the role that the ESRB might play in this area.

In June 2022 a high-level group explored the scope and priorities for future ESRB analysis of crypto-assets and DeFi from a financial stability perspective, proposing that further work be done in this area. It concluded that, although the sector has so far had few potential systemic repercussions, risks to the financial system could arise quickly and suddenly. If the rapid growth trends seen in recent years were to continue, crypto-assets could pose risks to financial stability. Therefore, the ESRB has decided to continue working on this topic.

Further ESRB work has focused on identifying any risks to financial stability that might arise and developing policy proposals to address such risks. The ESRB is investigating market developments pertaining to crypto-assets and decentralised finance, and is attempting to identify investors in the market. It is also focusing on interconnectedness with traditional finance and considering scenarios in which crypto-assets might become systemic. Legislative and regulatory proposals within the EU, in other key jurisdictions and at the international level are being explored. This work may result in policy proposals to mitigate any financial stability and macroprudential risks in the EU deriving from crypto-assets and decentralised finance.

2.1.4 Cyber risk

In February 2023 the ESRB published a report entitled “Advancing macroprudential tools for cyber resilience”, to help boost cyber resilience at the system-wide level. The report was prepared against the geopolitical backdrop of heightened cyber risk described in Section 1. It builds

[18] See the ESAs’ warning on crypto-assets in ESMA (2022), “**EU financial regulators warn consumers on the risks of crypto-assets**”, March.

[19] At the international level, the Financial Stability Board published a **comprehensive set of proposals** to ensure that all crypto-asset activities posing a risk to financial stability will be subject to comprehensive, globally coordinated regulation, supervision and oversight. The set of proposals includes **recommendations for the regulation, supervision and oversight of crypto-asset activities and markets** and **revisions to the FSB’s high-level recommendations for “global stablecoin” arrangements**.

[20] **Proposal for a Regulation of the European Parliament and of the Council on Markets in Crypto-assets, and amending Directive (EU) 2019/1937**, not yet published in the Official Journal.

on previous work by the ESRB to strengthen cyber resilience. This includes the 2022 ESRB **Recommendation** for the establishment of a pan-European systemic cyber incident coordination framework, and the accompanying report, entitled "**Mitigating systemic cyber risk**", which describes how this framework would facilitate an effective response to a major cyber incident. By focusing on the system-wide level, the report complements the work of the Joint Committee of the ESAs undertaken under the Digital Operational Resilience Act (DORA)[21], which aims to improve cyber resilience at the level of individual entities.

To boost cyber resilience at the system-wide level, the report encourages authorities across the EU to make progress on three elements. First, the report encourages authorities to pilot system-wide cyber resilience scenario testing as soon as possible, in order to deepen their understanding of the risks to system-wide cyber resilience. The report also advocates the use of systemic impact tolerance objectives (SITOs). SITOs are an analytical tool to identify and measure the effects of cyber incidents on the financial system, and to evaluate when cyber incidents are likely to breach tolerance levels and cause significant disruption. Finally, the report analyses how well existing financial crisis management tools deal with system-wide cyber incidents. As part of this, the report notes the need for further analysis to better understand which operational policy tools are most effective in responding to a system-wide cyber incident and to identify gaps across operational and financial policy tools. After the ESRB's report was published in February 2023, the Single Supervisory Mechanism (SSM) announced a thematic cyber resilience stress test that will take place during 2024, in order to test how banks can respond to, and recover from, a severe cyber incident.

2.2 Strengthening the regulatory framework for banks

The ESRB's activities in this area included following up on the comprehensive review of the EU macroprudential framework for banks to create a more forward-looking, flexible and holistic macroprudential framework for the next decade. The ESRB also supported Member States in assessing the key elements to consider when taking macroprudential decisions in the uncertain environment that characterised 2022.

2.2.1 Comprehensive review of the EU macroprudential framework for banks

The ESRB notes that the European Commission's planned review of the macroprudential framework for the banking system has been postponed. Nonetheless, the ESRB stresses that it is still crucially important for these proposals to be implemented soon. As authorities learn from past regulatory practice and banks adapt to a range of technological, structural and environmental challenges, the regulatory framework also has to adapt. The ESRB published a **concept note** in March 2022 that provides a blueprint for how to make the EU macroprudential framework fit for the next decade. A sound and up-to-date macroprudential framework is essential to enable EU and national authorities to address financial stability risks effectively. This is all the more true as the probability of the materialisation of tail-risk scenarios has increased in recent years, particularly

[21] Regulation (EU) 2022/2554 of the European Parliament and of the Council of 14 December 2022 on digital operational resilience for the financial sector and amending Regulations (EC) No 1060/2009, (EU) No 648/2012, (EU) No 600/2014, (EU) No 909/2014 and (EU) 2016/1011 (OJ L 333, 27.12.2022, p. 1).

since the beginning of 2022, as highlighted by market volatility towards the end of the review period for this ESRB 2022 Annual Report.

The ESRB would like to see a stronger drive towards making the macroprudential framework truly fit for the next decade, as described in its concept note. The ESRB continues to see the need for a comprehensive review of the EU macroprudential framework for the banking sector. It notes the need to ensure more releasable and effectively usable capital by building up buffers more proactively and earlier in the cycle. This would increase macroprudential policy space and improve banks' resilience, as well as the usability of buffers. In the ESRB's view, the existing EU macroprudential toolkit must be supplemented with BBMs. A harmonised minimum standard that follows the principles of "guided discretion" for BBMs at the EU level, such as LTV, debt service-to-income (DSTI), DTI and maturity limits, would help to effectively mitigate systemic risks related to real estate markets, reduce inaction bias and facilitate further integration of the Single Market by enhancing cross-border lending, reciprocity and the assessment and monitoring of financial stability risks. At the same time, decisions on the activation, calibration and cancellation of BBMs should remain with national authorities, to allow for sufficient flexibility in addressing national specificities. It would also be desirable to have similar requirements applying to all entities carrying out the same type of financial activity. To this end, the introduction of activity-based instruments should be considered. This would help avoid regulatory arbitrage and the transfer of risk to other, less well-monitored parts of the system. Tools that would allow macroprudential authorities to address cyber-, crypto- or climate-related financial risks should also be made available. The ESRB will continue pushing for these reforms, in order to create a more forward-looking, flexible and holistic macroprudential framework for the next decade.

2.2.2 Supporting Member States in taking macroprudential decisions

In the uncertain environment that characterised 2022, the ESRB supported Member States by assessing key elements to consider when taking macroprudential decisions. This is consistent with the ESRB's aim of contributing to the prevention or mitigation of systemic risks to financial stability in the EU, as stated in Regulation (EU) No 1092/2010[22]. To support EU Member States in their macroprudential decision-making, the ESRB evaluated whether the resilience of the banking system is commensurate with cyclical systemic risks to financial stability, using a broad set of cyclical risk indicators and applying a framework that facilitates the assessment of the macroprudential stance for capital-based measures. The latter is part of the ESRB's macroprudential stance framework, which was published in December 2021 and presented in the 2021 Annual Report.[23] The stance approach for capital-based measures adds a policy dimension to the risk analysis. "Net risk" is calculated by comparing risks, the resilience of banks and capital-based measures: resilience and policy measures are "subtracted" from gross risk. Net risk is therefore the portion of risks that is not covered by either resilience or policy. This allows an assessment of whether the macroprudential stance of a country is loose, neutral or tight. The

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[22] **Regulation (EU) No 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, 15.12.2010, p. 1)**.

[23] See ESRB (2021), ***Report of the Expert Group on Macroprudential Stance – Phase II (implementation)***, December; and Box 4 of the **ESRB 2021 Annual Report**.

conclusions drawn from these analyses were also placed within the context of the macroeconomic and macro-financial environment prevailing at the time in EU Member States.

2.3 Strengthening the regulatory framework for non-bank financial institutions

The ESRB has proposed changes to the prudential rules to address vulnerabilities in non-bank financial institutions, such as investment funds and insurers, as well as for the central clearing ecosystem. The ESRB had repeatedly called for regulatory reforms in the non-bank financial sector[24] and had noted that little progress had been made. [25] Legislative proposals for the review of the prudential rules governing investment funds, insurers and central clearing that were issued by the European Commission during the review period provided an opportunity to address vulnerabilities. Reflecting this, the ESRB engaged with the co-legislators to highlight areas in these proposals that would reduce risks to financial stability, pointing to areas where the Commission's proposals would have to be enhanced. The remainder of this section describes these, and related initiatives taken by the ESRB, in more detail.

2.3.1 Central clearing

The ESRB has engaged with ESMA and the EU co-legislators to enhance several aspects related to the EU central clearing framework. These aspects cover, inter alia, the introduction of an active account requirement and a joint monitoring mechanism (JMM) and re-emphasizes the financial stability risks associated with the current lack of data quality.

To reduce procyclical margining practices on the part of central counterparties (CCPs), the ESRB Secretariat provided input into ESMA's consultation on anti-procyclicality (APC) measures.[26] The ESRB had repeatedly stressed the need to address procyclicality in initial margining (and collateral) practices.[27] Reflecting this, the ESRB Secretariat welcomed the proposals by ESMA and pointed to areas where the proposals could be further enhanced. For example, the response noted that, in parallel with the amendments being considered on the procyclicality of margins, the procyclicality of haircuts also has to be considered[28], and that provisions in EMIR should be clarified accordingly. The ESRB Secretariat also provided ESMA with some further considerations for the revision of the anti-procyclicality framework in EMIR. These included client clearing, proportionality and the need for a proper definition of procyclicality. It also answered the questions ESMA raised in its consultation that are most relevant from a financial stability perspective.

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[24] See, for example, the speech by Mario Draghi, then President of the ECB and Chair of the European Systemic Risk Board, "**Building on the achievements of post-crisis reforms**", at the second annual conference of the ESRB, Frankfurt am Main, 21 September 2017.

[25] See the **speech** by the ESRB Chair, Christine Lagarde, at the Hearing before the Committee on Economic and Monetary Affairs of the European Parliament on 20 March 2023.

[26] **ESRB Secretariat's response to ESMA's consultation on APC measures for CCPs**

[27] **Recommendation of the European Systemic Risk Board of 25 May 2020 on liquidity risks arising from margin calls (ESRB/2020/6) 2020/C 238/01 (OJ C 238, 20.7.2020, p. 1)**.

[28] EMIR currently does not provide the legal basis for ESMA to consider the potential procyclical impact of haircuts on collateral yet, but this issue has been addressed in the European Commission proposal to review Article 46(1) of EMIR.

The ESRB responded to ESMA's report on emergency measures on collateral requirements to alleviate liquidity strains at the level of clearing members and (non-financial) clients.[29] The invasion of Ukraine by Russia resulted in substantial price increases and volatility spikes in certain commodity markets. Electricity and natural gas markets were particularly affected. This triggered substantial margin calls by CCPs to cover derivative exposures in these markets. These margin calls created liquidity strains on non-financial counterparties, which typically have fewer and less liquid financial assets that can be used to meet margin requirements than financial corporations. To alleviate these liquidity strains on non-financial counterparties, the European Commission asked ESMA to consider temporarily broadening the list of eligible collateral that CCPs can accept. In response, ESMA proposed amendments to the regulatory technical standards (RTS) specifying provisions on eligible collateral, for which consultation of the ESRB is required. The ESRB supported ESMA's proposal for a temporary, targeted expansion of eligible collateral to include public guarantees issued by EEA public entities or multilateral development banks. The ESRB felt that this might increase the ability and willingness of banks to provide liquidity to non-financial counterparties without materially transferring risks from the real economy to banks or CCPs. In contrast, the ESRB expressed reservations on the inclusion of uncollateralised bank guarantees as eligible collateral for CCPs. For both types of collateral, the ESRB called for these measures to be of a temporary and targeted nature, only to be used by non-financial counterparties and for gas and electricity derivatives traded on regulated markets, for a limited period of 12 months.

In July 2022 the ESRB expressed its concerns regarding the poor quality of the data that entities continue to report under EMIR, in a letter to the Commission.[30] The letter highlights the difficulties that persistently poor data quality poses for the adequate monitoring of financial stability risks. In particular, the letter notes that poor data quality impedes the adequate monitoring of risks by authorities, which was one of the goals of the post-crisis reforms. Poor data quality also compels policymakers to devote substantial resources and time to following up on data quality and creates blind spots owing to the exclusion of entities reporting implausible values. Although the ESRB expects data quality to improve when the amended RTS that were approved in 2020 come into force in 2024, it also believes that further structural improvements to data quality are warranted, as the reasons for misreporting should not only be attributed to the RTS specifying the reporting requirements. To this end, the letter includes proposals on how to change the legal and regulatory framework so that it provides the right incentives for CCPs, clearing members and clients to provide information that is appropriate in terms of quality and timing. The ESRB expressed a concern that poor data may be symptomatic of a more fundamental problem of poor risk management among certain reporting entities.

At the same time, the ESRB sent a letter to the European Commission, outlining its view on the targeted EMIR review with respect to central clearing in the EU.[31] In this letter, the ESRB commented on measures to increase the attractiveness of central clearing in the EU. It also set out proposals to improve the current CCP tiering framework and to strengthen supervision. In addition, the letter suggested measures to address over-reliance on, and excessive exposure to, third-country CCPs. This contribution was a follow-up to the opinion shared by the ESRB with the Commission on this topic on 22 March 2022, which is described in the ESRB 2021 Annual Report.

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[29] ESRB response to ESMA's Final Report on Emergency measures on collateral requirements, including draft RTS amending Commission Delegated Regulation (RTS) 153/2013

[30] Letter on the ESRB view regarding data quality issues and risks for financial stability.

[31] Letter on the ESRB view on the targeted EMIR review with respect to central clearing in the EU.

In response to the EMIR 3.0 proposals published by the European Commission, the ESRB sent a letter to the European Parliament and Council, with suggestions for further enhancements to the draft legislative text. The ESRB welcomed the changes proposed by the Commission, some of which had been previously put forward by the ESRB itself. These included the objective of CCPs passing through intraday variation margins, and the broadening of liquidity stress testing for CCPs by including liquidity risks generated by the default of at least any two entities. It also included the strengthening of ESMA's powers.[32] The ESRB also made further suggestions to make the financial system safer, for example when calibrating the active account requirement, by participating in the JMM and by focusing on data quality.

2.3.2 Investment funds

The ESRB Secretariat monitored the deliberations of the co-legislators to enhance the regulatory and supervisory framework for investment funds. In the previous period, in March 2022, the ESRB Secretariat had sent letters to the European Parliament and the Council Working Party in view of the **European Commission's proposed amendments** to the Directive on Alternative Investment Fund Managers (AIFMD)[33] and Directive 2009/65/EC[34]. The letters, which are described in the **ESRB 2021 Annual Report**, acknowledged that the European Commission's proposal reflected most of the considerations the ESRB had previously expressed to help address risks and vulnerabilities in investment funds, and pointed to areas where the co-legislators could enhance the European Commission's proposals. During the review period covered in this ESRB 2022 Annual Report, the ESRB Secretariat monitored the deliberations of the co-legislators, but did not engage further with them on the legislative review. The Council reached agreement on a general approach in June 2022.[35] The European Parliament agreed its position in February 2023,[36] taking into account most of the suggestions mentioned in the letters. The file entered the phase of trilogues among EU co-legislators in March 2023.

2.3.3 Insurance sector

In August 2022 the ESRB published an issues note, which set out its analysis of trade credit insurance (TCI) and identified avenues for policy work to make the TCI market more resilient during times of stress. TCI protects sellers that deliver goods and services before receipt of payment against losses if their buyers do not pay. The outbreak of the COVID-19 pandemic prompted expectations that TCI claims might increase, with a risk that insurers might curtail their exposures and withdraw TCI cover. Governments introduced ad hoc state aid schemes to ensure

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[32] **Recommendation of the European Systemic Risk Board of 25 May 2020 on liquidity risks arising from margin calls (ESRB/2020/6) 2020/C 238/01 (OJ C 238, 20.7.2020, p. 1)**.

[33] **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).**

[34] **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) (recast) (OJ L 302, 17.11.2009, p. 32)**.

[35] See **Proposal for a Directive of the European Parliament and of the Council amending Directives 2011/61/EU and 2009/65/EC as regards delegation arrangements, liquidity risk management, supervisory reporting, provision of depositary and custody services and loan origination by alternative investment funds**, not yet published in the Official Journal.

[36] See European Parliament Committee on Economic and Monetary Affairs (ECON) (2023), "**Report on the proposal for a directive of the European Parliament and of the Council amending Directives 2011/61/EU and 2009/65/EC as regards delegation arrangements, liquidity risk management, supervisory reporting, provision of depositary and custody services and loan origination by alternative investment funds**", February.

continued TCI coverage. The ESRB saw this as an indication that governments viewed any discontinuity in TCI as a potential source of systemic risk that could lead to serious disturbance in the economy. From a financial stability perspective, the economy could be harmed by lack of certainty as to whether and, if so, when and how governments might intervene with ad hoc schemes. The ESRB was also concerned that ad hoc state interventions might incentivise both insurers and insureds inappropriately. In this regard, the ESRB analysed the TCI market and published its findings, including avenues for policy work, in an issues note.

The issues note concluded that avenues for further policy work should focus on reducing the likelihood that governments will feel the need for ad hoc intervention. Avenues for policy work could be organised along two dimensions: (i) private sector solutions and (ii) pre-designed public-sector solutions. Combinations of both sets of solutions could also be considered. The issues note acknowledged that developing these policy avenues into proposals requires further analysis and engagement with stakeholders to identify and address design challenges.

In November 2022 the ESRB Secretariat sent letters to the European Parliament and the Council Working Party to express concern over amendments to the draft proposals of the European Commission for the review of Solvency II. In the previous review period, in February 2022, the ESRB Secretariat had sent letters to the European Parliament and the Council Working Party in view of the **European Commission's proposed amendments** to the prudential rules for insurers (the Solvency II Directive). These letters, which are described in the ESRB 2021 Annual Report, noted that the proposal by the European Commission was a good starting point, reflecting many of the elements that the ESRB had identified to address risks to financial stability. The letters of February 2022 stressed, however, the importance of not watering down the Commission's proposal, as it was the minimum necessary to prevent or mitigate risks to financial stability. The ESRB also highlighted opportunities to strengthen and enhance the proposal. In its letters to the co-legislators of November 2022, the ESRB Secretariat expressed concern over some amendments to the Commission's draft proposals.

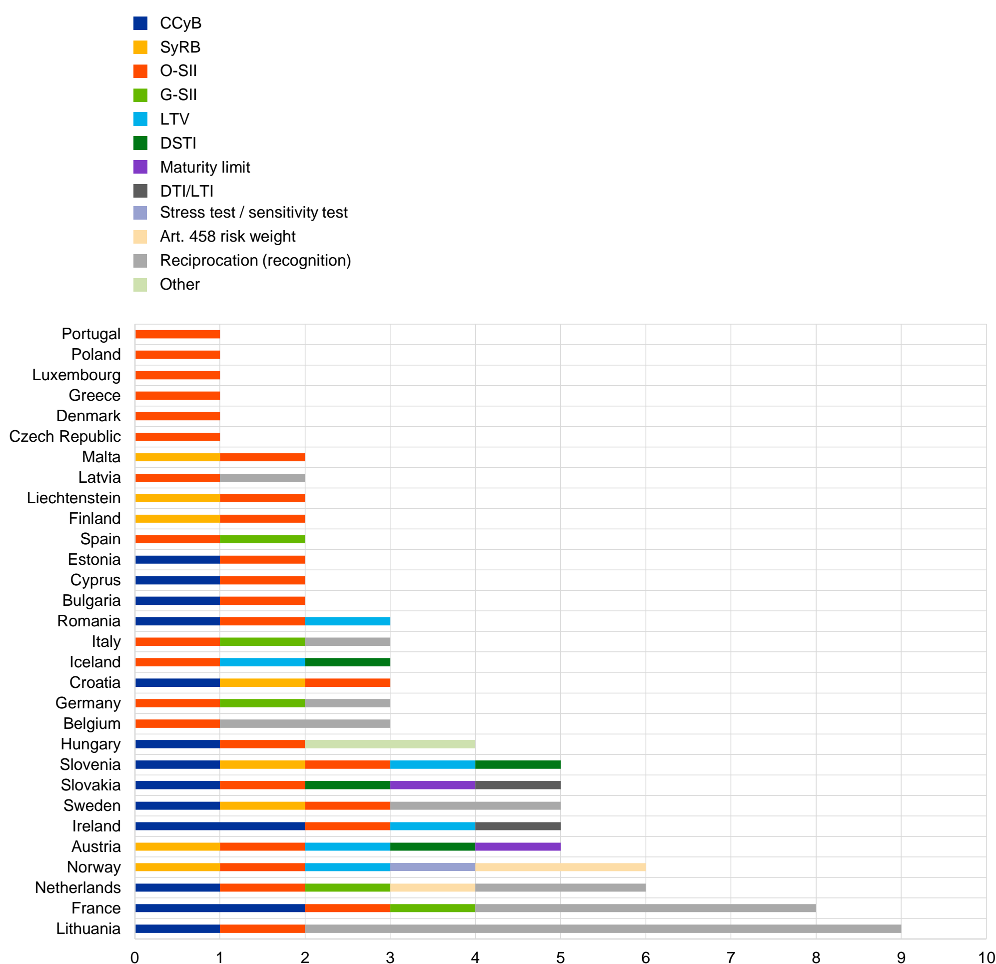
Specifically, the November 2022 letters expressed the ESRB's concern that the proposed amendments meant that powers designed to help national authorities identify and mitigate liquidity risks were either insufficient or had been watered down or deleted. This posed a risk that supervisors would be unable to identify those insurers that might have a vulnerable liquidity profile and that – even if they could identify those insurers – they would lack the tools to act before liquidity risk materialised. The letters pointed out that liquidity risk is pervasive and that even financial institutions that do not engage in liquidity transformation may be exposed to liquidity risks, even if they hold long-term liabilities and pursue liability-driven investment strategies. For example, this risk had crystallised in September 2022 in UK pension funds, triggering an intervention by the Bank of England in the market for UK government bonds. The letters also pointed out that, because liquidity risk can materialise rapidly, the ability of supervisors to act pre-emptively is paramount.

3 Review of national measures

This section provides an overview of measures by EEA countries notified to the ESRB during the review period.[37] In line with its broad mandate and EEA-wide perspective, the ESRB acts as an information hub for macroprudential measures adopted by its member countries. Several such measures were notified to the ESRB and published on its website. In this section, the actions notified to the ESRB are ordered by type of instrument.

Chart 10

Notifications received by the ESRB between April 2022 and March 2023 by type of measure and by country



Source: ESRB.

Notes: Only measures adopted or publicly announced during the review period and before the cut-off date of 31 March 2023 have been included. Reciprocation (recognition) measures shown are decisions made by countries to reciprocate other countries' measures. CCyB: countercyclical capital buffer, SyRB: systemic risk buffer, O-SII: buffer for other systemically

[37] This refers to measures that were notified and announced during the review period, i.e. between 1 April 2022 and 31 March 2023.

important institutions, G-SII: buffer for global systemically important institutions, LTV: loan-to-value limit, DSTI: debt service-to-income limit, DTI/LTI: debt-to-income/loan-to-income limits.

3.1 Overview of measures

During the period under review macroprudential policies in the EEA countries were tightened, particularly on capital buffers. Several countries adopted new BBMs or tightened existing BBMs, either generally or for a specific group of borrowers. In some cases, BBMs were loosened for borrower subgroups. Countercyclical capital buffer (CCyB) rates increased across the EEA in this review period, with several countries either activating the buffer for the first time or increasing the rate further. Four countries introduced new SyRBs: three countries used them to address sectoral risks in real estate markets, and the fourth imposed an SyRB on all domestic exposures. Finally, two countries extended the application of existing stricter national measures (under Article 458 of the Capital Requirements Regulation (CRR)[38]).

3.2 Countercyclical capital buffer

During the review period 13 countries announced an increase in their CCyB rates in order to help counter cyclical risks. France and Ireland reacted with gradual increases in their buffer rates, both reaching 1% in two steps. Bulgaria, Croatia, Estonia, Lithuania, Romania, Slovakia and Sweden each adjusted their rates once. Cyprus, Hungary, the Netherlands and Slovenia activated CCyB rates for the first time at 0.5%, 0.5%, 1% and 0.5% respectively.

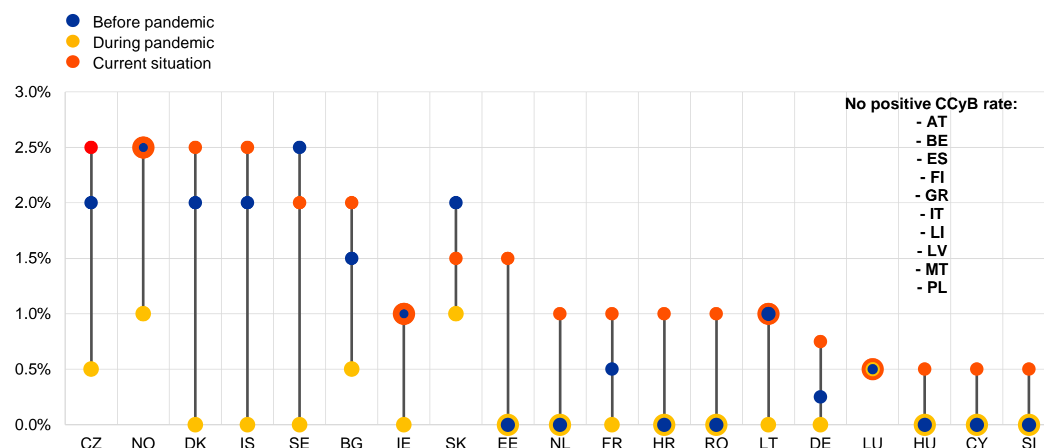
Some of these increases were not motivated by an increase in cyclical systemic risks, but related to the use of the concept of positive neutral CCyB rates in certain countries. More and more countries are starting to apply a positive neutral CCyB framework to ensure that sufficient capital is available for release in case of an unexpected systemic shock. Cyprus, the Czech Republic, Estonia, Ireland, Lithuania, the Netherlands and Sweden have all announced that they intend to apply a positive CCyB rate in an environment where cyclical risks are neither elevated nor subdued.

By the end of the review period (31 March 2023), a positive CCyB rate was either announced or in effect in a total of 19 countries, including 17 that maintained or increased their buffer levels at or above pre-pandemic levels. Ireland, Lithuania and Norway restored their CCyB rates to pre-pandemic levels (1%, 1% and 2.5% respectively), while Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, France, Germany, Hungary, Iceland, the Netherlands, Romania and Slovenia increased their CCyB rates to levels above those applicable before the pandemic. Luxembourg has kept its CCyB rate unchanged since announcing a 0.5% rate at the end of 2019. Slovakia increased its CCyB rate to 1.5% and Sweden to 2% (compared with pre-pandemic rates of 2% and 2.5% respectively).

[38] 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).

Chart 11

CCyB rates in EEA countries



Source: ESRB.
Note: "Before pandemic" refers to the period until the first quarter of 2020; "during pandemic" refers to the period starting from the first quarter of 2020 (inclusive) to the fourth quarter of 2021; "current situation" refers to the period from the first quarter of 2022 and takes into account already announced CCyB policy actions that will only enter into force in the future.

EU capital rules for banks also allow CCyB rates to be set on exposures to third countries. Given the very large number of third countries to which this measure could apply, the ESRB, the ECB and EU Member States share the responsibility for this task and focus on identifying and monitoring only those countries to which the banking system of the EEA as a whole, or any individual EEA country, has material exposures. In order to implement a consistent EU-wide approach, the ESRB has provided details of its approach in a recommendation and a decision.[39] In particular, the ESRB establishes a list of material third countries for the EEA banking system as a whole and monitors developments in those countries. Since 2020 the identification sample – the banks whose exposures to third countries are taken into account – has been extended from the EU to the whole of the EEA.[40]

During the review period the ESRB reviewed the list of material third countries that it had established in 2021 for the EEA as a whole, and left it unchanged. Thus, the **list of material third countries** published in 2022 comprises Brazil, China, Hong Kong, Mexico, Russia, Singapore, Switzerland, Turkey, the United Kingdom and the United States. In line with Recommendation ESRB/2015/1, individual EEA countries identified third countries that were material from the perspective of their national banking systems and reviewed their lists in 2022 on the basis of their respective existing methodologies.

[39] **Recommendation of the European Systemic Risk Board of 11 December 2015 on recognising and setting countercyclical capital buffer rates for exposures to third countries (ESRB/2015/1) (OJ C 97, 12.3.2016, p. 1)** and **Decision of the European Systemic Risk Board of 11 December 2015 on the assessment of materiality of third countries for the Union's banking system in relation to the recognition and setting of countercyclical buffer rates (ESRB/2015/3) (OJ C 97, 12.3.2016, p. 23)**.

[40] The definition of a third country in Decision ESRB/2015/3 (i.e. any country outside of the EEA), combined with the fact that since 1 January 2020 the macroprudential tools of the Capital Requirements Directive (CRD) and the Capital Requirements Regulation (CRR) have been applicable in Iceland, Liechtenstein and Norway, implied that all EEA countries should now be included in the identification sample. See **Decision of the EEA Joint Committee No 79/2019 of 29 March 2019 amending Annex IX (Financial services) to the EEA Agreement [2019/2133] (OJ L 321, 12.12.2019, p. 170)**.

3.3 Systemic risk buffer

Liechtenstein, Malta and Slovenia introduced sectoral SyRBs to address vulnerabilities related to the real estate market and the household sector. Liechtenstein changed the calibration and scope of its existing SyRB, switching from a buffer applicable to all exposures of selected institutions to one applicable to sectoral exposures of all institutions. The buffer was introduced at 1% in May 2022. It now applies to all institutions authorised in Liechtenstein for their retail exposures to natural persons secured by residential property in Liechtenstein, and all exposures to legal persons secured by mortgages on commercial immovable property in Liechtenstein. Malta activated a sectoral SyRB buffer that applies to domestic mortgages to natural persons secured by domestic RRE. A 1% rate will apply from 30 September 2023, increasing to 1.5% from 31 March 2024. Slovenia introduced a new sectoral SyRB, which is set at 1% for all retail exposures to natural persons secured by residential immovable property and 0.5% for all other exposures to natural persons.

In March 2023 Finland activated a new SyRB on all exposures of all credit institutions authorised in Finland. The applicable buffer rate is set at 1%. The calibration is based on the outcome of stress tests. The decision to activate was based on higher indicator-based risk levels compared with other Member States and in relation to historical Finnish data signalling a prevailing threat to the stability of the Finnish financial system, particularly due to the banking sector's size relative to GDP, cross-border connections and risk exposures linked to mortgage and real estate lending, as well as the overall level of household debt.

3.4 Buffers for systemically important institutions (O-SIIs and G-SIIs)

As of 1 January 2023, 182 other systemically important institutions (O-SIIs) were identified in the EEA, six more than in the previous year. The lowest O-SII buffer rate applicable to O-SIIs was 0.25%,[41] while the highest was 3%. The long-observed heterogeneity in buffer-setting for O-SIIs persisted, i.e. authorities in different countries applied different buffer rates to banks with comparable systemic importance scores. As the ESRB noted,[42] this heterogeneity is not fully explained by economic or financial sector specificities, such as the size of the banking sector relative to GDP or Member States' positions in the financial cycle.

For 2023 eight global systemically important institutions (G-SIIs) were identified across five EEA countries. In compliance with the globally systemic banks (G-SIB) list published in November 2021 by the Financial Stability Board (FSB), four G-SIIs were identified in France, while one was identified in each of Germany, Italy, the Netherlands and Spain. Six of the eight banking groups were assigned a G-SII buffer rate of 1%, while the other two banks were assigned a buffer rate of 1.5%. There was no change to the list of identified institutions or to the rates applied to them compared with the previous year.

[41] A 0% O-SII buffer rate applied to one bank in Lithuania in 2022. The bank was identified as an O-SII from 2022 and should maintain an O-SII buffer of 1%, which is applicable from 1 July 2023.

[42] "**Review of the EU Macroprudential Framework for the Banking Sector: Response to the call for advice**", ESRB, March 2022, p. 32.

3.5 Risk weight measures

De Nederlandsche Bank (DNB) notified the ESRB on 8 August 2022 of its intention to extend the period of application of its existing stricter national measure concerning risk weights targeting asset bubbles in the residential property sector. The measure, which was initially activated on 1 January 2022, imposes a minimum average risk weight for the calculation of regulatory capital requirements applicable to exposures to natural persons secured by mortgages on residential property located in the Netherlands, based on Article 458(2)(d)(iv) of the CRR. The stricter requirement applies to credit institutions that use the internal ratings-based (IRB) approach to calculate regulatory capital requirements. The minimum average risk weight imposed on the portfolio is the weighted average of the risk weights of individual exposures. The minimum risk weight of each individual exposure item within the scope of the measure is calculated as follows: (i) a 12% risk weight is assigned to the portion of the loan not exceeding 55% of the market value of the property serving as a collateral; and (ii) a 45% risk weight is assigned to the remaining portion of the loan. By differentiating the average minimum risk weight based on the LTV of a mortgage, the measure is specifically targeted at an important source of systemic risk in the Netherlands: the high exposure of Dutch banks to high-LTV loans. The original measure applied until 30 November 2022, but with the extension, it will continue to apply for two additional years, from 1 December 2022 until 30 November 2024. Pursuant to Article 458(4) in conjunction with Article 458(9) of the CRR, the ESRB provided the Council, the European Commission and the Netherlands with an opinion on 6 September 2022. The ESRB was of the view that the measure for which the extension was proposed would help to increase the resilience of Dutch banks to any materialisation of systemic risk in the Dutch RRE market, and should therefore be extended. The ESRB also believed that it would be appropriate to keep the calibration of the measure unchanged, amid increasing vulnerabilities related to the Dutch RRE market, given that the overall economic outlook was deteriorating. The ESRB also took the view that the alternative macroprudential instruments listed in Article 458 of the CRR would be less suitable or effective in addressing the risk at hand. Overall, the ESRB considered that extension of the measure would not entail disproportionate adverse effects on the whole or parts of the financial system in other Member States or in the EU as a whole.

The Norwegian Ministry of Finance notified the ESRB on 16 December 2022 of its decision to extend its existing risk weight floor targeting asset bubbles in the residential and corporate real estate sector, pursuant to Article 458(10) of the CRR. The measure was initially implemented with effect from 31 December 2020 due to increased systemic risk resulting from high levels of debt for both households and real estate corporates, and from marked real estate price increases. Since then, house prices have continued to rise, with increased debt concentration in households with high DTI ratios. The corporate real estate market has been affected by growing uncertainty, due to the long-term impact of the COVID-19 pandemic, increased geopolitical and climate risks, and a deteriorating economic outlook. Considering these risks, the previously set risk weight floors of 20% for Norwegian RRE exposures and 35% for Norwegian CRE exposures were still regarded as sufficient. The risk weight floors apply to all Norwegian institutions with relevant exposures using the IRB approach. The measure is intended to remain in effect for a minimum of two years. As the resulting increase in risk weights was less than 25%, it did not warrant the issuance of an ESRB opinion, in accordance with Article 458(10) of the CRR.

3.6 Borrower-based measures

Against the backdrop of increasing vulnerabilities in the real estate market, seven countries adjusted their BBMs. National authorities adopted a wide range of measures, including the introduction and amendment of LTV, DTI, DSTI, loan-to-income (LTI) and maturity limits. Some countries tightened existing BBM measures, either generally or for a specific group of borrowers, while in other cases, BBMs were loosened for borrower subgroups.

Austria introduced a range of new legally binding BBMs, effective from 1 August 2022. To address systemic risks arising from RRE loans granted to households, Austria set the following measures: an upper limit of 90% on LTV (with a maximum of 20% of newly extended loans in a six-month period exempt from the limit), an upper limit of 40% for DSTI ratios (with a maximum of 10% of newly extended loans in a six-month period exempt from the limit) and an upper limit of 35 years for loan maturities (with a maximum of 5% of newly extended loans in a six-month period exempt from the limit). The goal of the exemptions is to balance the need to reduce the build-up of systemic risks with the need to offer banks adequate operational flexibility.

Considering limits applying to the collateralisation of mortgages, a number of countries announced changes to their existing LTV limits. Romania lowered its legally binding LTV limits by 10 percentage points, to 50-75%,[43] for loans granted to individuals to purchase property not intended for their own residential use. Slovenia introduced a similar measure: the recommended maximum LTV was decreased from 80% to 70% for borrowers not buying primary property. Iceland reduced the LTV limit for first-time buyers from 90% to 85%. Ireland increased the LTV limit for buyers of second or subsequent properties from 80% to 90%, but left the limit unchanged for other borrowers. In Norway, the separate LTV limit of 60% for loans on secondary dwellings in Oslo as collateral is no longer in effect as of 1 January 2023, and the general 85% limit now applies to all loans.

With regard to measures that relate to the income of borrowers, there were also some changes regarding both limit levels and calculation methods. Iceland modified the calculation method for its DSTI limit for mortgage loans, introducing prescribed minimum interest rates and prescribed maximum loan maturities to be used when calculating the limit. Ireland increased its LTI limit for first-time buyers from 3.5 to 4. Changes were also introduced to the proportion of lending allowed above the LTV and LTI limits, which now apply at the level of borrower type (e.g. first-time buyers) rather than the individual limit (e.g. first-time buyers LTI). Norway amended its requirement on debt servicing ability, so that lenders must ensure that the customer has sufficient funds to cover regular expenses after an interest rate increase of at least 3 percentage points and at a minimum interest rate of 7%. The previous requirement was coverage of regular expenses after an interest rate increase of at least 5 percentage points. Slovakia tightened its DTI limit gradually for borrowers above 40 years of age, where the loan maturity exceeds the retirement age of the borrower. At the same time, it eased the DSTI limit and maturity limit for "green consumer loans". Slovenia slightly changed the conditions under which deviations from the DSTI cap are permitted: previously, even loans allowed to deviate from the DSTI limit had to meet the condition of at least 76% of the gross minimum wage after debt servicing costs remaining with the consumer. In order to improve credit availability for low income individuals, this condition no longer applies to these loans. The aim is to offset the increased risks related to this change by simultaneously introducing the sectoral SyRB.

[43] The exact level within this range depends on the currency of the loan.

3.7 Other measures

Regarding measures targeting banks' funding risks, Hungary amended its Mortgage Funding Adequacy Ratio (MFAR) Regulation, which is designed to reduce banks' maturity mismatches. The main amendment to the regulation was the inclusion of mortgage bonds and refinancing loans denominated in foreign currency (with limitations) in the calculation of the MFAR from 1 July 2022. Previously, only mortgage-based funds denominated in HUF were eligible. At the same time, the tightening of measures originally scheduled to take effect on 1 October 2022 was postponed for one year in April 2022. These measures included increasing the required minimum level of the MFAR, limiting bank cross-ownership and requiring the listing of all mortgage bonds on a stock exchange. These tightening measures were postponed again in December 2022 for an indefinite period, due to growing macroeconomic and financial market uncertainty caused by inflation and the geopolitical tensions driven by the war in Ukraine.

The ESRB may also receive notifications from national competent authorities when they act to address risks related to money market funds (MMFs) or AIFs. In accordance with **Article 43(3) of Regulation 2017/1131 on money market funds** (MMFR)[44], national competent authorities are required to communicate to the ESRB information relevant for monitoring and responding to the potential implications of the activities of individual MMFs, or MMFs collectively, for the stability of systemically relevant financial institutions and the orderly functioning of markets on which MMFs are active. In accordance with **Article 25(3) of the AIFMD**, notification to the ESRB is also mandatory when competent authorities impose limits on the leverage that AIF managers are entitled to employ or other restrictions on the management of the AIF to limit the extent to which the use of leverage contributes to the build-up of systemic risk in the financial system or the risk of disorderly markets.

During the period under review, the ESRB received – for the first time – such notifications related to investment funds. In April 2022, in accordance with **Article 43(3) of the MMFR**, the French financial market regulator (Autorité des Marchés Financiers – AMF) informed the ESRB of the suspension of an MMF. The suspension related to uncertainties on fund valuation caused by sizeable exposures to financial instruments issued by Gazcapital, a subsidiary of Gazprom. In November 2022 the Central Bank of Ireland (CBI) informed the ESRB of its intention to impose leverage limits under **Article 25(3) of the AIFMD**. The measure limits the ratio of a fund's total debt to total assets to 60%. It applies to AIFs established in Ireland with at least 50% of their assets under management directly or indirectly invested in physical Irish property assets. On 23 November 2022 ESMA issued advice[45] supporting the proposed measure. In addition to the notification, the CBI announced the introduction of guidance to limit liquidity mismatch for Irish property funds. It establishes a mandatory period of at least 12 months between the submission of a redemption request by an investor and the investor's receipt of the proceeds of that redemption. The CBI policy measures were discussed in the meeting of the ESRB's Advisory Technical Committee (ATC) in November and by the General Board in December in the context of the ESRB Recommendation on vulnerabilities in the CRE sector in the EEA (Section 2.1.1).

[44] **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)**.

[45] **ESMA advice of 23 November 2022 on a proposed measure by the Central Bank of Ireland under Article 25 of the Directive.**

3.8 Reciprocation

Reciprocation should ensure that the same macroprudential measure applies to all financial institutions within the EU that are exposed to the risk targeted by the measure, regardless of where they are located. Macroprudential measures taken in one Member State often apply only to the exposures of financial institutions domiciled in that Member State. Therefore, such measures generally do not apply to the exposures of financial institutions from other Member States held either through branches or directly across borders. Reciprocity is the policy instrument that ensures that these measures also apply to the exposures of these other financial institutions, which would otherwise not be covered. Reciprocation occurs when the relevant authority in the reciprocating Member State applies a macroprudential measure that is the same as, or equivalent to, a measure taken in the activating Member State in order to address a risk related to a specific exposure. The reciprocation of macroprudential measures enhances the effectiveness and consistency of macroprudential policy in the EU and contributes to a level playing field in the Single Market. At the end of 2015, the ESRB put in place a **framework of voluntary reciprocity for macroprudential policy measures**. The reciprocity framework lays the foundation for a coordinated approach to the reciprocation of macroprudential measures for which EU legislation does not foresee mandatory recognition. The reciprocation process is initiated by means of a formal request submitted to the ESRB by the authority that activated the initial measure. If deemed justified, the ESRB will issue a recommendation to reciprocate the measure.

In line with its reciprocity framework, the ESRB recommended the reciprocation of a sectoral SyRB set by the Nationale Bank van België/Banque Nationale de Belgique and notified on 11 January 2022. The goal of the measure is to prevent and mitigate macroprudential or systemic risks stemming from IRB exposures secured by residential immovable property for which the collateral is located in Belgium. The measure entails a 9% SyRB rate on all IRB retail exposures to natural persons secured by such property. In order to prevent the materialisation of negative cross-border effects in the form of leakages and regulatory arbitrage that could result from the implementation of the macroprudential policy measure that will become applicable in Belgium, the ESRB recommended the reciprocation of the measure with an institution-specific materiality threshold of €2 billion.

The ESRB also recommended the reciprocation of a sectoral SyRB for all exposures in Germany secured by residential property. BaFin notified the ESRB of its reciprocation request concerning a sectoral SyRB on RRE exposures on 10 March 2022. For banks using the IRB approach, a sectoral SyRB rate of 2% applies to all exposures to natural and legal persons secured by residential immovable property located in Germany, while for institutions using the standardised approach, this rate applies to the fully and completely secured part of such exposures. In order to prevent the materialisation of negative cross-border effects in the form of leakages and regulatory arbitrage that could result from the implementation of the macroprudential policy measure that will become applicable in Germany, the ESRB recommended the reciprocation of the measure with an institution-specific materiality threshold of €10 billion.

Finally, the ESRB decided to continue recommending the reciprocation of three measures pursuant to Article 133 of the Capital Requirements Directive (CRD) and Article 458 of the CRR that have been extended by two more years and were notified on 16 December 2022 by the Norwegian Ministry of Finance. The measures comprise (i) an SyRB for all exposures located in Norway, (ii) a floor for (exposure-weighted) average risk weights applicable to RRE

exposures located in Norway of credit institutions using the IRB approach; and (iii) a floor for (exposure-weighted) average risk weights applicable to CRE exposures located in Norway of credit institutions using the IRB approach. In order to (i) prevent the materialisation of negative cross-border effects in the form of leakages and regulatory arbitrage that could result from the implementation of the macroprudential policy measures applied in Norway; and (ii) preserve a level playing field among EEA credit institutions, the ESRB decided to continue recommending the reciprocation of the measures and to amend slightly the parameters of the recommendation to reciprocate the SyRB. In accordance with the request by the Norwegian Ministry of Finance, the materiality threshold for reciprocating the SyRB was lowered and set at a risk-weighted exposure amount of NOK 5 billion.

4 Institutional framework: implementation and accountability

This section provides an overview of the action taken to enhance the ESRB's accountability. First, it explores the outcomes of the assessments of compliance with ESRB recommendations carried out in the review period. Second, it gives an account of the ESRB's reporting to the European Parliament and describes some of the events that the ESRB organised over the review period.

4.1 Assessment of compliance with ESRB recommendations

Warnings and recommendations are the main tools at the disposal of the ESRB in its mission to prevent and mitigate systemic risks to financial stability. ESRB recommendations contain instructions for remedial action and establish deadlines for implementation by addressees. Although these recommendations are not legally binding, they are subject to a "comply or explain" regime in accordance with **Article 17 of the ESRB Regulation.** This means that the addressees of recommendations – i.e. the EU as a whole, Member States, the ESAs, national authorities, designated authorities, resolution authorities, the ECB, the Single Resolution Board (SRB) and the European Commission – must either communicate to the European Parliament, the Council, the Commission and the ESRB the actions that they have taken to comply with a recommendation, or provide adequate justification in the case of inaction.

In recent years, the ESRB has issued several recommendations on various sources of cross-sectoral and sector-specific systemic risk. Reflecting this diversity of topics, the ESRB assesses compliance with each recommendation through dedicated Assessment Teams. These Assessment Teams are established under the auspices of the ATC. Each Assessment Team is composed of experts from ESRB member institutions. Assessing compliance with ESRB recommendations is key to the effective implementation of ESRB measures.

The Assessment Teams observed a high level of compliance with the ESRB recommendations that were assessed over the review period. From April 2022 until March 2023, the Assessment Teams completed four assessments of compliance with ESRB recommendations[46]. Most addressees were assessed as "fully compliant", "sufficiently explained" or "largely compliant".

The compliance report of **Recommendation ESRB/2016/14 on closing real estate data gaps** as amended by **ESRB/2019/3** shows that a risk monitoring framework for the domestic CRE sector is in place in all 30 EEA countries. Most addressees were assessed as being either fully or largely

[46] The compliance reports of the **Recommendation of the European Systemic Risk Board of 15 December 2020 amending Recommendation ESRB/2020/7 on restriction of distributions during the COVID-19 pandemic (ESRB/2020/15) 2021/C 27/01 (OJ C 27, 25.1.2021, p. 1)**, the **Recommendation of the European Systemic Risk Board of 25 May 2020 on liquidity risks arising from margin calls (ESRB/2020/6) 2020/C 238/01 (OJ C 238, 20.7.2020, p. 1)**, the **Recommendation of the European Systemic Risk Board of 21 March 2019 amending Recommendation ESRB/2016/14 on closing real estate data gaps (ESRB/2019/3) (OJ C 271, 13.8.2019, p. 1)** and the **Recommendation of the European Systemic Risk Board of 11 December 2015 on recognising and setting countercyclical buffer rates for exposures to third countries (ESRB/2015/1) (OJ C 97, 12.3.2016, p. 1)** are available on the ESRB website.

compliant with the requirements of the recommendation and already have, or will have, most of the relevant CRE risk indicators and relative breakdowns available in line with the recommendation, revealing a significant evolution of the risk monitoring framework for the domestic CRE sector and of the availability of CRE risk indicators. The assessment also showed that actions taken by Eurostat will ultimately help to form the basis for possible future EU legislation on a common minimum framework for physical CRE market indicators.

The findings of the compliance report of **Recommendation ESRB/2015/1 on recognising and setting countercyclical buffer rates for exposures to third countries** also show a high level of compliance. Addressees mostly used the methodology to assess the materiality of third countries for the EU's banking system in relation to the recognition and setting of countercyclical buffer rates proposed by the ESRB, with few adjustments.

The compliance report of **Recommendation ESRB/2020/6 on liquidity risks arising from margin calls** highlights the fact that the European Commission's proposal for a targeted review of EMIR[47] envisages the expansion of the scope of liquidity stress tests (Article 44(1) of the EMIR) in line with the recommendation, thus contributing to the achievement of its objectives. Under the proposal, liquidity stress tests are required to reflect the liquidity risk generated by the default of at least the two entities to which CCPs have the largest exposures, including clearing members and liquidity service providers.

Lastly, the overall findings of the compliance report of **Recommendation ESRB/2020/7 on restriction of distributions during the COVID-19 pandemic** as amended by **ESRB/2020/15** show that the relevant authorities took the necessary actions to ensure that financial institutions across the financial sector maintained sufficiently high levels of capital to mitigate systemic risk and contribute to economic recovery, in line with the objectives of the recommendation.

The assessments of compliance with the **Recommendation of the European Systemic Risk Board of 7 December 2017 on liquidity and leverage risks in investment funds (ESRB/2017/6)** and the **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)** were mainly conducted during the review period and the respective reports are expected to be published in the second quarter of 2023.

With a view to compliance with **Recommendation ESRB/2017/6**, ESMA shared with the ESRB a note on practices regarding the use of leverage limits and the imposition of other restrictions on the management of AIFs in 2022, which focused on leverage restrictions in real estate AIFs, including measures introduced by the CBI (Section 3.7).

4.2 Reporting to the European Parliament and other institutional aspects

The Chair of the ESRB attended hearings before the European Parliament's Committee on Economic and Monetary Affairs (ECON) in line with the ESRB's accountability and reporting

[47] **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, COM(2022) 697 final, 2022/0403(COD)**, published on 7 December 2022.

obligations. During the period under review the ESRB Chair attended one public hearing before ECON on 20 June 2022 and two confidential meetings with the Chair and Vice-Chairs of ECON to discuss risks to financial stability.

During the public hearing the ESRB Chair provided Members of the European Parliament (MEPs) with an assessment of risks to financial stability in the EU, stressing that the probability and severity of tail risks had perceptibly increased. The Chair **highlighted** that changing financial conditions in the context of normalisation of monetary policy and Russia's invasion of Ukraine were affecting the recovery from the COVID-19 crisis. The ESRB Chair also outlined to MEPs the ESRB's strategic priorities for building a strong macroprudential framework for both banks and non-banks. As regards the latter, the Chair explained the ESRB's priorities for the ongoing reviews of Solvency II and of the AIFMD. The ESRB Annual report for 2021 was published on the same day.

The ESRB First Vice-Chair, Stefan Ingves, appeared before the ECON Committee for a confirmatory hearing on 16 May 2022. The First Vice-Chair set out the ESRB's assessment of risks to the EU's financial stability, including a preliminary assessment of the impact of the Russian invasion of Ukraine. He also set out the role of macroprudential policy when the economy is hit by a major external shock. He stressed that the macroprudential framework needs to have a strong countercyclical dimension. Finally, he highlighted the need to make substantial progress to improve data quality, as poor data quality continued to undermine one of the key pillars of the post-crisis reforms: enhancing the transparency of the financial system for policymakers and regulators.

The ESRB Vice-Chair and the Head of the ESRB Secretariat reported regularly to the Economic and Financial Committee on the ESRB risk assessment. The Economic and Financial Committee is an EU committee set up to promote policy coordination among Member States. In addition, the Head and Deputy Head of the ESRB Secretariat regularly represented the ESRB in meetings of the Boards of Supervisors of the ESAs.

4.3 Organisational structure of the ESRB

The organisational structure of the ESRB comprises a General Board, a Steering Committee, an Advisory Scientific Committee (ASC), an Advisory Technical Committee (ATC) and a Secretariat. Over the review period Stefan Ingves, ESRB First Vice-Chair, and Lars Rhode, a national member of the Steering Committee, retired from their respective positions as Governor of Sveriges Riksbank and Governor of Danmarks Nationalbank. Following a secret ballot that began on 30 March 2023, the electoral body elected, on 5 April 2023, Olli Rehn, Governor of Suomen Pankki – Finlands Bank, as the new ESRB First Vice-Chair[48] and Christian Kettel Thomsen, Governor of Danmarks Nationalbank, as a new national member of the Steering Committee. Furthermore, the General Board reappointed Professor Loriana Pelizzon (Goethe University Frankfurt) and Professor Stephen Cecchetti (Brandeis University) and appointed Professor Thorsten Beck (European University Institute) as Chair and Vice-Chairs of the ASC. Finally, in June 2022 the General Board reappointed Pablo Hernández de Cos, Governor of the Banco de España, as Chair of the ATC.

[48] Governor Olli Rehn **announced** on 21 June 2023 that he was making himself available to run as a candidate in Finland's 2024 presidential election. In connection with this, he immediately took leave from his official duties at Suomen Pankki – Finlands Bank.

The ESRB Secretariat organised a total of 163 meetings of the General Board, Steering Committee, ASC and ATC and their main substructures. The day-to-day business of the ESRB is carried out by its Secretariat. The Head of the ESRB Secretariat is Francesco Mazzaferro and the Deputy Head is Tuomas Peltonen. During the period under review, there were 22 active working groups within the ESRB.

The ECB supports the work of the ESRB in various ways. In accordance **with Council Regulation (EU) No 1096/2010**, the ECB ensures the functioning of the Secretariat of the ESRB, providing the ESRB with analytical, statistical, logistical and administrative support. In 2022 the ECB provided the ESRB with support in the form of 59.5 full-time equivalent (FTE) staff. Of these, 31.7 FTEs were employed within the Secretariat and 27.8 FTEs provided other forms of support. The direct costs incurred by the ECB amounted to €9.5 million. The indirect costs for other support services shared with the ECB (e.g. human resources, IT and general administration) are in addition to this amount. Over the same period other member institutions of the ESRB provided approximately 68.4 FTEs for analytical support in the context of ESRB groups and ESRB group chair positions.

4.4 ESRB public events

On 20 June 2022 Pablo Hernández de Cos, Governor of the Banco de España and Chair of the ATC, delivered a keynote speech at the sixth DNB-Riksbank-Bundesbank Macroprudential Conference, which focused on the ESRB concept note on the EU macroprudential framework.

On 24 and 25 October 2022 the ESRB held its annual meeting with the Committee of European Auditing Oversight Bodies (CEAOB) and statutory auditors of EU-based global systemically important financial institutions (G-SIFIs). This meeting is mandatory under **EU law** in order to inform the ESRB of sectoral developments or any significant developments regarding the G-SIFIs. The meeting took place in a hybrid format. The discussion revolved around the impact of Russia's war on Ukraine on auditing, and especially the initial difficulties of compliance with sanctions on Russian citizens and corporations owing to their pace, scale and complexity in the spring of 2022. Climate risks in financial statements were also touched upon, particularly in the context of the new European Sustainability Reporting Standards, with environmental, sustainability and governance (ESG) criteria and the potential role of auditors in this context. Finally, in terms of other risks, the discussion touched upon risks related to cyberattacks.

The sixth ESRB Annual Conference took place on 8 December 2022 as a virtual event and was dedicated to the question of how to address financial stability challenges. The conference was **opened** by the ESRB Chair, Christine Lagarde. It included two panels. The first was chaired by Pablo Hernández de Cos (Governor of the Banco de España and Chair of the ESRB ATC) and focused on **policy challenges in the prevailing macroeconomic environment**. The second covered technological innovation and systemic risk and was chaired by Cecilia Skingsley (Head, BIS Innovation Hub, Bank of International Settlements). Two keynote speeches were also given. The first, by Daron Acemoğlu (Institute Professor, Massachusetts Institute of Technology), was entitled "**Can we have a better future for work, wages and democracy?**". The second, "**Macroprudential policy: Where do we come from and what's next?**", was delivered by Stefan Ingves (Governor of Sveriges Riksbank and First Vice-Chair of the ESRB). Finally,

Francesco Mazzaferro, in his capacity as Head of the ESRB Secretariat, concluded the conference with **closing remarks**. The **recording of the conference** is available on the ESRB's website.

Each year the ASC awards the Ieke van den Burg Prize in recognition of outstanding research by young scholars on topics related to the ESRB's mandate. The prize was established in 2014 in memory of Ieke van den Burg, who was a member of the ASC (2011–14) and a member of the European Parliament (1999–2009). In 2022 the prize was awarded to Antonio Coppola and Thomas Krön for their respective papers entitled "**In safe hands: The financial and real impact of investor composition over the credit cycle**" and "**Payout restrictions and bank risk-shifting**".

Annex: Publications on the ESRB website from 1 April 2022 to 31 March 2023

Working papers

The externalities of fire sales: evidence from collateralized loan obligations
01/03/2023

Financial fragility in open-ended mutual funds: the role of liquidity management tools
01/03/2023

Corrective regulation with imperfect instruments
28/09/2022

The effect of structural risks on financial downturns
28/09/2022

Macroprudential policy and the role of institutional investors in housing markets
15/08/2022

Interbank credit exposures and financial stability
15/08/2022

Are fund managers rewarded for taking cyclical risks?
01/07/2022

Housing and credit misalignments in a two-market disequilibrium framework
01/07/2022

Occasional papers

The market for short-term debt securities in Europe: what we know and what we do not know
01/12/2022

The economics of debt relief during a pandemic: lessons from the experience in Ireland
01/04/2022

ESRB reports

Advancing macroprudential tools for cyber resilience
14/02/2023

Vulnerabilities in the EEA commercial real estate sector
25/01/2023

Fiscal support and macroprudential policy - Lessons from the COVID-19 pandemic
21/11/2022

Issues note on macroprudential aspects of trade credit insurance
30/08/2022

The macroprudential challenge of climate change
26/07/2022

EU Non-bank Financial Intermediation Risk Monitor 2022
15/07/2022

Monitoring systemic risks in the EU securitisation market
01/07/2022

Risk dashboards

ESRB risk dashboard, November 2022 (Issue 42)
Annex I
Annex II
08/12/2022

ESRB risk dashboard, September 2022 (Issue 41)
Annex I
Annex II
29/09/2022

ESRB risk dashboard, June 2022 (Issue 40)
Annex I
Annex II
30/06/2022

Stress testing

Macro-financial scenario for the 2023 EU-wide banking sector stress test (updated on 20 March 2023)
20/03/2023

Adverse scenario for the European Securities and Markets Authority’s money market fund stress testing guidelines in 2022
30/11/2022

Climate scenario for the European Insurance and Occupational Pensions Authority's EU-wide pension fund stress test in 2022
04/04/2022

Opinions

Opinion of the European Systemic Risk Board of 15 November 2022 regarding the existing systemic risk buffer pursuant to Article 133 and the Norwegian notification of the setting or resetting of an O-SII buffer pursuant to Article 131 of Directive 2013/36/EU of the European Parliament and of the Council on access to the activity of credit institutions and the prudential supervision of credit institutions (ESRB/2022/8)
Report
15/11/2022

Opinion of the European Systemic Risk Board of 6 September 2022 regarding Dutch notification of an extension of the period of application of a stricter national measure based on Article 458 of Regulation (EU) No 575/2013 of the European Parliament and of the Council on prudential requirements for credit institutions (ESRB/2022/6)
Report
06/09/2022

Opinion of the European Systemic Risk Board of 28 July 2022 regarding the existing systemic risk buffer pursuant to Article 133 and the Belgian notification of the setting or resetting of O-SII buffer rates pursuant to Article 131 of Directive 2013/36/EU of the European Parliament and of the Council on access to the activity of credit institutions and the prudential supervision of credit institutions (ESRB/2022/5)
Report
28/07/2022

ASC reports

Stabilising financial markets: lending and market making as a last resort
24/01/2023

Compliance reports

Recommendation ESRB/2019/3 – Summary Compliance Report (Recommendations C, D and F)
27/02/2023

Recommendation ESRB/2020/6 – Summary Compliance Report (Sub-Recommendations B(1) and D(1))
15/02/2023

Recommendation ESRB/2020/15 – Summary Compliance Report
26/09/2022

Recommendation ESRB/2015/1 – Summary Compliance Report
19/05/2022

Recommendations

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)
25/01/2023

Warnings

Warning of the European Systemic Risk Board of 22 September 2022 on vulnerabilities in the Union financial system (ESRB/2022/7)
29/09/2022

Responses and letters

Letter from the ECB President and ESRB Chair to Ms Mairead McGuinness, European Commissioner for Financial Stability, Financial Services and Capital Markets Union, on stress testing
30/03/2023

Letter to Members of the European Parliament on EMIR review
20/03/2023

Letter to the Council Working Party on EMIR review
20/03/2023

Letter to the Council Working Party on the Solvency II Review and Liquidity Risk Management
16/11/2022

Letter to Members of the European Parliament on the Solvency II Review and Liquidity Risk Management
16/11/2022

Letter on ESRB view on the targeted EMIR review with respect to central clearing in the EU
19/07/2022

Letter on ESRB view regarding data quality issues and risks for financial stability
13/07/2022

ESRB response letter to the European Commission consultation on the review of the mortgage credit directive
01/04/2022

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For specific terminology please refer to the **ESRB glossary** (available in English only).

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