

Financial Stability Review

November 2024

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Foreword



Alongside geopolitical and policy uncertainty, global trade tensions are on the rise, increasing the risk of tail events. Financial markets have seen a resurgence of volatility, enduring several notable spikes since the last edition of the Financial Stability Review was published. In the euro area, while inflation pressures are receding, market participants are concerned about the potential for weaker than expected growth.

So far, financial markets have demonstrated resilience, with episodes of volatility proving brief and having only a limited impact on the broader financial system. However, underlying financial market vulnerabilities – notably stretched valuations and risk concentration – remain significant, making further bouts of volatility more likely than usual. At the same time, liquidity fragilities in non-bank financial intermediaries, in some cases coupled with high financial and synthetic leverage, have the potential to intensify and render market stress more enduring.

Meanwhile, sovereign vulnerabilities are deepening. Despite recent reductions in debt-to-GDP ratios, fiscal challenges persist in several euro area countries, exacerbated by structural issues such as weak potential growth and heightened policy uncertainty. While non-financial sectors appear broadly resilient, there are credit risk concerns for some euro area households and firms, particularly in the real estate sector and among lower-income households and small and medium-sized enterprises which would be most affected should growth slow.

The main aim of the ECB's Financial Stability Review is to promote awareness of systemic risks among policymakers, the financial industry and the public at large, with the ultimate goal of promoting financial stability. This edition marks the 20th anniversary of the Review. Its structure and scope have evolved over the past two decades, adapting to lessons learned from financial crises, the evolution of the financial system and the ECB's acquisition of a macroprudential policy mandate in 2014. Special Feature A provides a retrospective analysis to commemorate this milestone. Additionally, this edition includes a study of weak productivity among euro area firms, examining the role of finance and its implications for financial stability.

The FSR has been prepared with the involvement of the ESCB Financial Stability Committee, which assists the decision-making bodies of the ECB in the fulfilment of their tasks.

Luis de Guindos
Vice-President of the European Central Bank

Overview

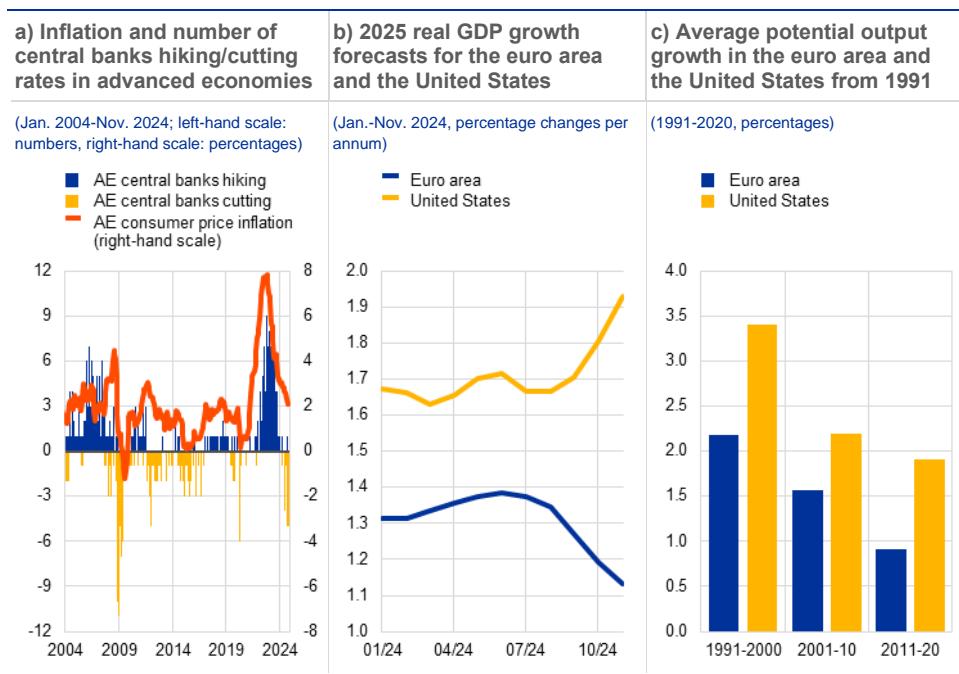


Bouts of market volatility emerge in an environment of high macro-financial and geopolitical uncertainty

Since the previous issue of the Financial Stability Review was published, the balance of macro risks in the euro area has shifted from concerns about inflation remaining high to fears over growth. Consumer price inflation has moved closer to central bank targets in both the euro area and other major advanced economies in recent months (**Chart 1**, panel a). At the same time, economic data released after June tended to disappoint expectations in the euro area, and private sector forecasters have revised down their 2025 real GDP growth forecasts (**Chart 1**, panel b). Easing inflationary pressures and weaker growth prospects have allowed interest rate cycles to turn in most major advanced economies. At the time of finalisation of this issue of the Financial Stability Review, financial markets were pricing in additional rate cuts for both the euro area and the United States. While most official and private sector forecasters still see a soft landing as the baseline scenario for the euro area and global economies, risks to growth are tilted to the downside, with the outlook clouded by heightened macro-financial and geopolitical uncertainty. Cyclical headwinds for euro area growth are compounding structural issues of low productivity and weak potential growth across the euro area economy (**Chart 1**, panel c and **Special Feature B**).

Chart 1

The balance of risks has shifted from worries that inflation will remain high to growth fears, with structurally low growth potential compounded by cyclical headwinds



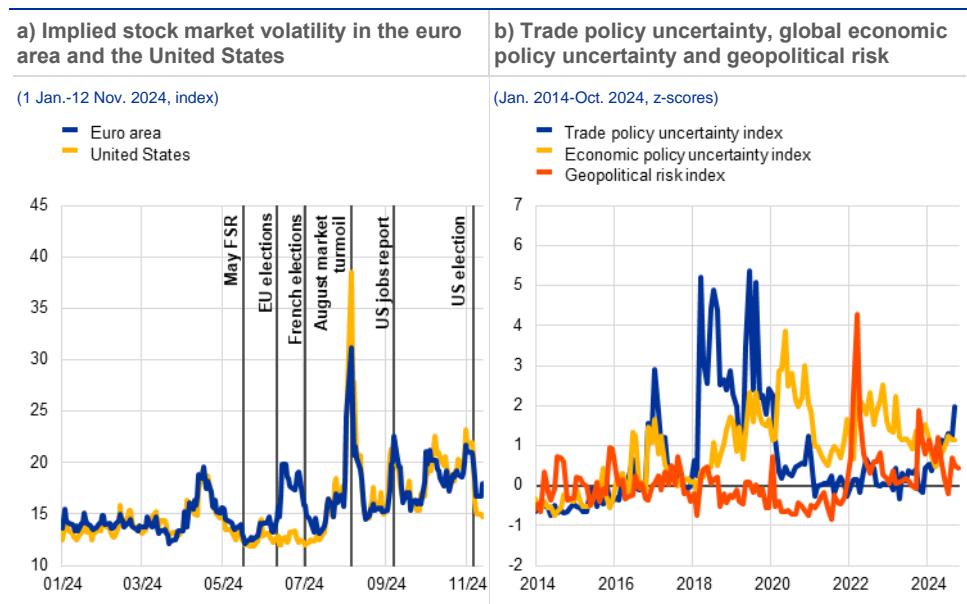
Sources: BIS, Haver Analytics, Consensus Economics Inc., European Commission (AMECO) and ECB calculations.

Notes: Panel a: AE stands for advanced economy. The chart covers 22 advanced economies and the 11 corresponding rate-setting central banks. AE inflation is the average of CPI inflation rates weighted by each country's share of total nominal GDP in 2015. The number of rate moves is shown as at 12 November 2024 and the latest observations for the inflation rate are for September 2024. Panel c: "Euro area" refers to the euro area-12 composition.

Financial markets have experienced several pronounced but short-lived spikes in volatility, while geopolitical risks remain pronounced. Initially, these spikes were linked to unexpected European and national election outcomes, with the effects mostly contained within Europe (**Chart 2**, panel a). Later in the summer, a combination of stretched positions in a low equity market volatility environment, market expectations of faster US monetary policy easing in a context of disappointing labour market data and an unexpected tightening of monetary policy in Japan (which led to the unwinding of yen-funded carry trades) resulted in a significant volatility spike with global repercussions (**Chapter 2**). Although the market correction did not last long and prices recovered quickly for most asset classes, these episodes indicate greater sensitivity than usual to macroeconomic data surprises, raising the potential for heightened volatility going forward. Alongside high macro-financial uncertainty, geopolitical risks and economic policy uncertainty have also been on the rise in recent months (**Chart 2**, panel b), increasing the likelihood of tail events materialising and further amplifying the growing threat of cyber risks. Also, rising global trade tensions and a possible further strengthening of protectionist tendencies across the world raise concerns about the potential adverse impact on global growth, inflation and asset prices.

Chart 2

Heightened macro-financial and geopolitical uncertainty has triggered bouts of market volatility, underscoring the risk of abrupt shifts in market sentiment



Sources: Bloomberg Finance L.P., Caldara and Iacoviello*, Caldara et al.**, Baker, Bloom and Davis*** and ECB calculations.
 Notes: Panel a: implied stock market volatility is measured by the VIX and the VSTOXX Index for the United States and the euro area respectively. Panel b: indices are shown as z-scores, i.e. standard deviations from their long-term averages since 1997. The latest observations for the trade policy uncertainty and economic policy uncertainty indices are for September 2024.
*) Caldara, D. and Iacoviello, M., "Measuring Geopolitical Risk", *American Economic Review*, Vol. 112, No 4, Apr. 2022, pp. 1194-1225.
**) Caldara, D., Iacoviello, M., Molligo, P., Prestipino, A. and Raffo, A., "The economic effects of trade policy uncertainty", *Journal of Monetary Economics*, Vol. 109, January 2020, pp. 38-59.
***) Baker, S., Bloom, N. and Davis, S., "Measuring Economic Policy Uncertainty", *The Quarterly Journal of Economics*, Vol. 131, No 4, November 2016, pp. 1593-1636.

Against this backdrop, there are three key sources of risk and vulnerabilities for financial stability in the euro area over the next two years. First, stretched valuations in equity and corporate bond markets together with high risk concentration

make financial markets susceptible to adverse dynamics, which could be amplified by non-bank liquidity and leverage vulnerabilities. Second, heightened policy and geopolitical uncertainty, weak fiscal fundamentals and sluggish trend growth raise concerns about the sustainability of sovereign debt in some euro area countries. Third, credit risk concerns in some cohorts of the corporate and household sectors may lead to asset quality headwinds for banks and non-banks.

Financial markets remain vulnerable to adverse dynamics which could be amplified by non-bank liquidity fragilities

High valuations and risk concentration render financial markets susceptible to sudden, sharp adjustments, notably in equity markets. While stock markets have recently absorbed tail events swiftly, underlying vulnerabilities make them prone to similar episodes in the future. There are signs that investors may be underestimating and under-pricing the likelihood and impact of adverse scenarios, as indicated by record low equity risk premia and relatively compressed corporate bond spreads on both sides of the Atlantic (**Chart 3**, panel a). Also, concentration of equity market capitalisation and earnings among a handful of single names, notably in the United States, has increased greatly in recent years (**Chart 3**, panel b). This concentration among a few large firms raises concerns over the possibility of an AI-related asset price bubble. Also, in a context of deeply integrated global equity markets, it points to the risk of adverse global spillovers, should earnings expectations for these firms be disappointed (**Chapter 2**). As such, there is a greater likelihood that negative surprises – including sharply deteriorating economic growth prospects, sudden changes in monetary policy expectations or further escalation of ongoing geopolitical conflicts – could trigger abrupt shifts in investor sentiment, resulting in spillovers across asset classes.

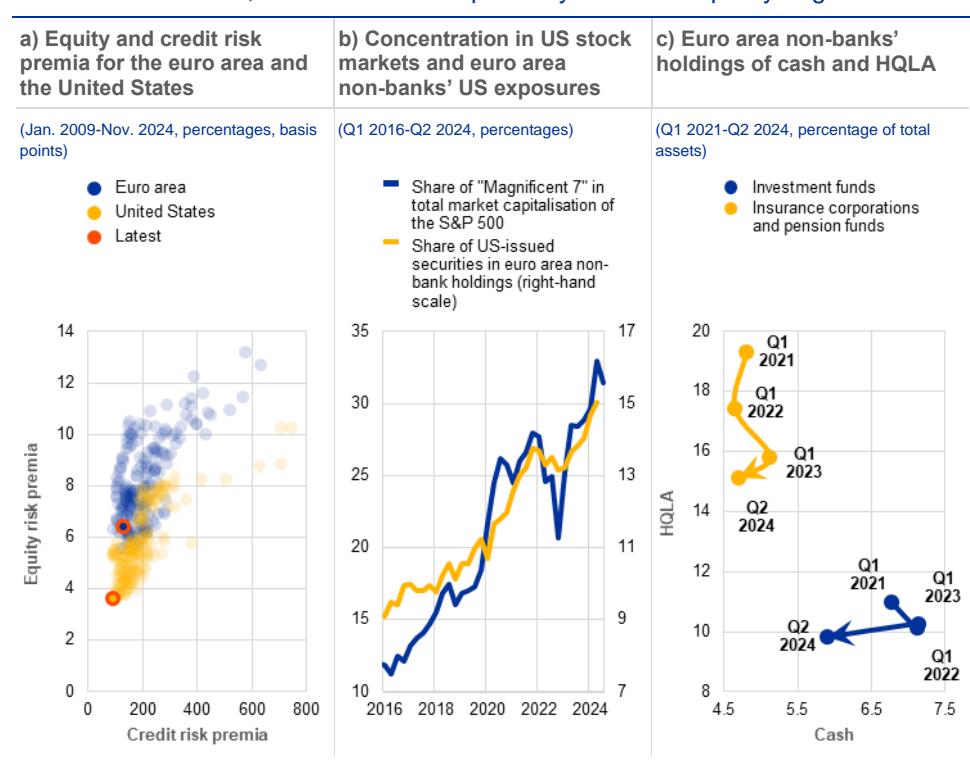
Concentrated exposures, liquidity mismatches and high leverage in parts of the non-bank financial intermediation (NBFI) sector could amplify adverse market dynamics. Non-banks have remained resilient to recent bouts of market volatility and have continued to support market-based finance in the euro area across all credit risk categories. However, broader market shocks could trigger sudden investment fund outflows or margin calls on derivatives exposures. Given relatively low liquid asset holdings and significant liquidity mismatches in some types of open-ended investment funds (**Chart 3**, panel c), cash shortages could result in forced asset sales that could amplify downward asset price adjustments (**Box 5**). While generally limited, pockets of elevated financial and synthetic leverage in some entities, like hedge funds, may add to spillover risks (**Chapter 4.2**). Concentration in equity portfolios – notably in some investment funds due to their exposure to a few large firms – has also risen markedly in recent years, making investment portfolios more vulnerable to negative firm- or sector-specific surprises. Also, rising exposure to US assets increases the potential for adverse macro-financial spillovers.

Structural vulnerabilities in the NBFI sector require a comprehensive policy response to enhance the sector's resilience from a macroprudential perspective. A growing market footprint and interconnectedness of non-banks calls

for a wide-ranging set of policy measures to increase the sector's resilience. This includes policies aimed at enhancing the liquidity preparedness of non-bank market participants to meet margin and collateral calls, tackling risks from non-bank leverage, mitigating liquidity mismatch in open-ended funds and fostering the resilience of money market funds to liquidity shocks (**Section 5.3**). A more integrated EU-wide system of supervision for non-banks would ensure a level playing field and reduce the potential for regulatory arbitrage. A resilient NBFIs sector would also help to promote more integrated capital markets, which could enhance financial stability and complement the objectives of the capital markets union that would form part of a renewed strategy aimed at supporting Europe's productivity and economic growth.

Chart 3

High valuations and increasing risk concentration render equity and credit markets vulnerable to shocks, which could be amplified by non-bank liquidity fragilities



Sources: Bloomberg Finance L.P., ECB (CSDB, SHS, ICB, IVF, PFBR) and ECB calculations.

Notes: Panel a: equity risk premia are calculated as the five-year CAPE yield for the EURO STOXX (euro area) and S&P 500 (United States) less the five-year real (inflation swap-adjusted) government bond yield (German for the euro area); credit risk premia are calculated as the option-adjusted spread for BBB-rated corporate bonds with a residual maturity of five to seven years. "Latest" refers to 12 November 2024. Panel b: "Magnificent 7" comprises the stocks of Alphabet, Amazon, Apple, Meta, Microsoft, Nvidia and Tesla. Panel c: HQLA (high-quality liquid assets) are defined as HQLA Level 1 securities according to [Commission Delegated Regulation \(EU\) 2015/61](#).

Sovereign vulnerabilities are increasing, driven by heightened policy uncertainty and sluggish growth

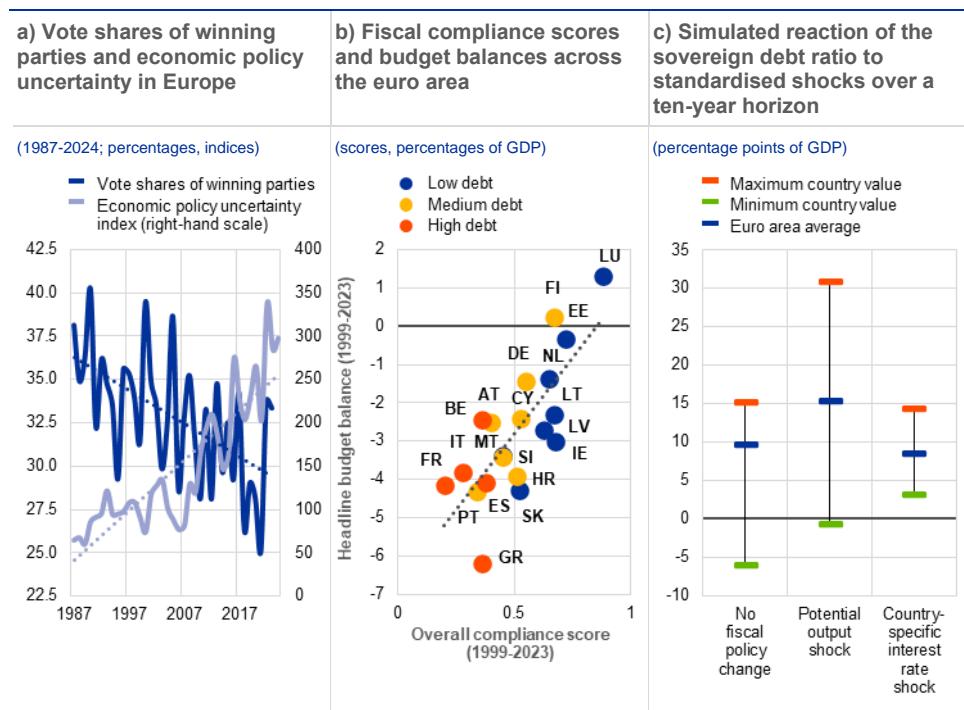
Heightened geopolitical and policy uncertainty is exacerbating sovereign vulnerabilities. Since the previous issue of the Financial Stability Review was published, election outcomes at the European and national levels, notably in France, have rekindled concerns about sovereign debt sustainability. Greater policy

uncertainties and market concerns about their implications for debt sustainability have resulted in some sovereign spreads widening for some euro area sovereigns with high levels of debt (**Section 1.2**), albeit with limited cross-border spillovers for now.

Concurrently, the longer-term trend of rising political fragmentation observed over the past three decades has made it more challenging to form stable government coalitions. This may contribute to delays in reaching agreement on key fiscal and structural reforms while also raising economic policy uncertainty (**Chart 4**, panel a). Furthermore, rising geopolitical uncertainty may imply an additional burden for sovereigns in dealing with the consequences of geopolitical fallout (e.g. energy subsidies). This would be particularly challenging for countries where public debt levels are high, given their limited fiscal space to support the economy in the event of adverse shocks.

Chart 4

Sovereign vulnerabilities have increased, given heightened geopolitical and policy uncertainty, weak fiscal fundamentals and sluggish potential growth



Sources: parlgov.org, Baker, Bloom and Davis*, Larch, Malzubris and Santacroce**, European Commission and ECB calculations.
 Notes: Panel b: low-debt countries have sovereign debt-to-GDP ratios of below 60%, medium-debt countries of between 60% and 100%, and high-debt countries of above 100% as at year-end 2023. Overall compliance scores capture whether relevant fiscal aggregates moved within or outside the perimeters set by the four main fiscal rules of the EU's Stability and Growth Pact. Panel c: the no-fiscal-policy-change (NFPC) with ageing cost scenario assumes that beyond the medium-term macroeconomic projection horizon, i.e. from 2027 on, the structural primary balance only changes by the expected change in ageing cost, otherwise it remains constant. The potential output shock assumes ten-year convergence to the median contribution of capital and total factor productivity to the potential output growth. The resulting potential output path is then used in combination with the NFPC assumption on the fiscal side. The interest rate shock is calibrated so that the interest rate growth differential ($i-g$) for each country returns to its historical average by the end of the simulation horizon.

* Baker, S., Bloom, N. and Davis, S., "Measuring Economic Policy Uncertainty", *The Quarterly Journal of Economics*, Vol. 131, No 4, November 2016, pp. 1593-1636.

**) Larch, M., Malzubris, J. and Santacroce, S., "Numerical Compliance with EU Fiscal Rules: Facts and Figures from a New Database", *Intereconomics*, Vol. 58, No 1, 2023, pp. 32-42.

Fiscal fundamentals remain vulnerable to slippage and weak potential growth in some countries. Despite the declines in sovereign debt-to-GDP ratios after the surge seen during the pandemic, fiscal fundamentals remain weak in some countries, given elevated debt levels, ongoing excessive deficit procedures and poor historical

compliance with EU fiscal rules (**Chart 4**, panel b). Even though the interest rate cycle has turned, sovereign debt service costs are expected to rise further as maturing debt is rolled over at higher interest rates than on outstanding debt. Fiscal slippage or uncertainties around fiscal consolidation paths under the new EU fiscal framework could lead to a repricing of sovereign risk, fuelling bond market volatility and policy uncertainty (**Box 1**). Structural headwinds to potential growth from factors like weak productivity could also threaten debt sustainability (**Chart 4**, panel c). Fiscal reform to ensure a long-term growth-friendly composition of public finances and structural reforms are key to raising potential growth in the euro area. Also, greater discipline on current spending would help create the fiscal space needed to meet the structural challenges of climate change, defence spending, ageing and digital transformation, as envisaged by the new EU fiscal framework.

The market response to elections in Europe earlier this year proved temporary and localised, with limited cross-sector spillovers. Greater volatility in sovereign debt markets was paralleled by falling bank share prices in countries where policy uncertainty is high. The falls proved short-lived, however, and spillovers to other sectors and countries remained contained. On a positive note, euro area banks' sovereign exposures relative to their capital remain, on average, below their multi-year averages despite a recent rise, while sovereign bonds are for the most part also held at amortised cost. This makes increases in sovereign spreads and market volatility less of an immediate worry. Sovereign debt sustainability concerns coupled with heightened policy uncertainty may spill over to the corporate sector via rating downgrades and higher funding costs. They could also result in forced and procyclical asset sales by non-banks if there is an abrupt increase in sovereign bond yields or broad-based rating downgrades, reinforcing adverse feedback loops across sectors.

Credit risk concerns for some corporates and households may affect bank and non-bank asset quality

High funding costs and weak economic growth continue to affect corporate balance sheets, especially of commercial real estate (CRE) firms and SMEs.

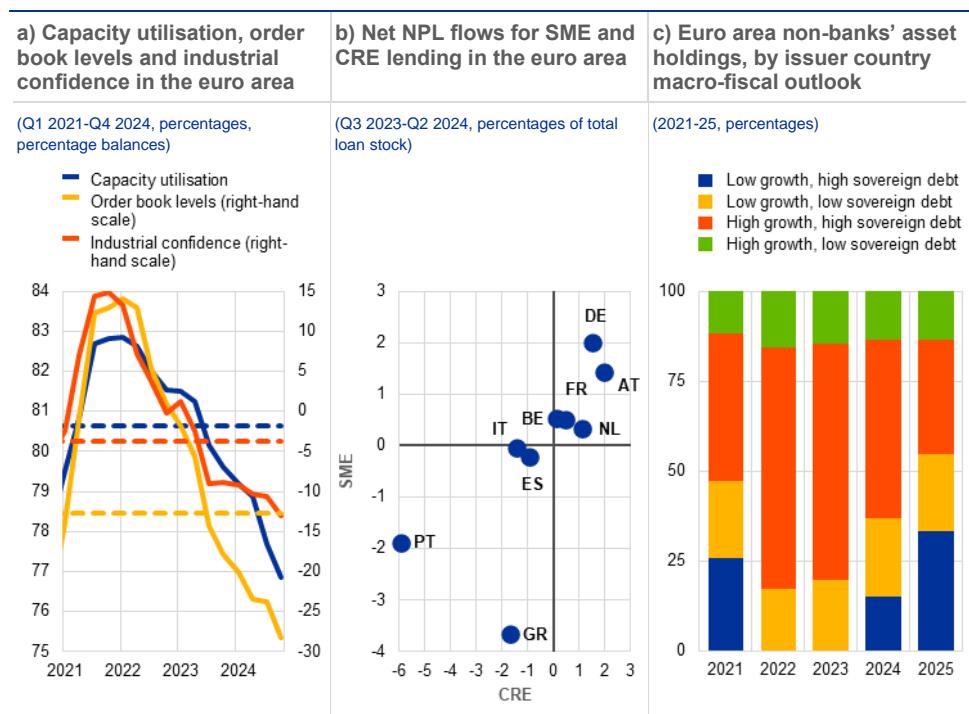
Interest costs continue to weigh on firm profitability even as new lending rates decline. Insolvencies – a lagged indicator of corporate financial health – have been rising across sectors and countries (**Section 1.3**), albeit from moderate levels. This reflects both the phasing-out of pandemic-related policy support and continued weak and uncertain business prospects (**Chart 5**, panel a). The debt servicing capacity of SMEs appears to be particularly vulnerable to a slowdown in economic activity and higher borrowing costs. Conditions in euro area CRE markets show signs of stabilisation, with investor demand recovering somewhat, in line with less restrictive monetary policy (**Section 1.5**). However, structural factors related to the post-pandemic shift to remote working and e-commerce, as well as environmental considerations, continue to make the outlook for some real estate firms challenging.

Euro area household vulnerabilities have eased, yet interest costs are challenging low-income cohorts. Household finances have benefited from lower leverage, resilient labour markets, strong income growth and higher savings.

However, households with lower incomes and floating-rate mortgages are being challenged by high interest rates. Slower growth and weaker labour markets could undermine households' debt servicing capacity. In turn, residential real estate (RRE) markets could suffer. For now, adjustments have remained orderly, but risks are skewed to the downside, especially in countries with elevated mortgage debt levels and overvalued property markets ([Section 1.5](#)). RRE markets could yet face stress if labour market conditions were to worsen markedly, adding to affordability challenges arising from high, albeit declining, mortgage rates.

Chart 5

Credit risk concerns in some segments of the corporate and household sectors may lead to asset quality headwinds for both banks and non-banks going forward



Sources: European Commission, ECB (supervisory data, SHS) and ECB calculations.

Notes: Panel a: dashed lines indicate long-term averages since 1999. The latest observations for order book levels and industrial confidence are for October 2024. Panel b: CRE lending to SME firms has been excluded from the CRE sample. Panel c: includes exposures to non-financial corporation listed shares and debt securities, and sovereign debt securities. High (low) growth refers to a 2025 potential GDP growth outlook above (below) 1%. High (low) sovereign debt refers to debt-to-GDP ratios of above (below) 100%.

Bank asset quality has remained resilient, but credit quality concerns in parts of the non-financial sectors suggest challenges lie ahead. While non-performing loan (NPL) ratios are at historical lows, aggregate losses in cyclically sensitive loan portfolios – notably CRE, SME and consumer lending – have been rising, albeit with significant cross-country variation ([Chart 5](#), panel b). CRE loan books have been the main contributor to weakening asset quality, but their relatively modest size mitigates systemic impacts on the banking sector. At the same time, these exposures are concentrated, and banks with above-average CRE exposures could still face stress if CRE asset quality were to worsen further. The deterioration of SME credit quality has been more contained, but it is also more widespread. Its persistence could have a stronger impact on banks and the real economy than currently expected. The credit risk outlook for corporate and household portfolios remains tilted to the downside, given weak macro-financial conditions, downside risks to economic growth and the

lagged impact of high interest rates on borrowers. Banks may yet face higher provisioning costs if risks in non-financial sectors were to materialise, not least because declining collateral values may not be fully reflected in their balance sheets.

Banks' ability to absorb further asset quality deterioration continues to be supported by high levels of profitability together with strong capital and liquidity buffers. Lower operating expenses and strong net interest margins have enabled euro area banks to maintain high levels of profitability. Their resilience is aided by solid capital ratios and liquidity buffers, despite the gradual phasing-out of funding from targeted longer-term refinancing operations. That said, bank profitability may have peaked, as downward pressure on earnings on floating-rate assets become a headwind for interest income while credit losses start to rise. In this context, it is key for macroprudential capital buffer requirements to be kept at levels that preserve banks' resilience. Existing borrower-based measures should be maintained to serve as structural backstops and ensure sound lending standards in all phases of the financial cycle.

Asset quality in non-bank portfolios may be impaired by weak corporate fundamentals and property market conditions. Despite some rebalancing of their investment portfolios towards safer assets in recent years, non-banks still face elevated credit risks. High economic uncertainty and weak corporate fundamentals have led to a deteriorating credit outlook, exposing the NBFI sector to revaluation losses from downgrades and increasing default risk. Exposures to countries with low economic growth and fragile public finances seem particularly vulnerable, as weaker sovereigns may lack the fiscal space to help the economy weather adverse shocks (**Chart 5**, panel c). Valuation risks also extend to non-banks' real estate portfolios. Sharp falls in CRE prices may not yet be fully reflected in the valuations of real estate investment funds, posing risks of sizeable unrealised losses (**Section 4.2**). Further price declines in euro area CRE markets could lead to fund outflows, exacerbated by procyclical selling by non-banks. Strong linkages could cause any stress in the NBFI sector to spill over to euro area banks, especially via funding.

Euro area financial stability vulnerabilities remain elevated in a volatile environment

All in all, sources of risk and vulnerability for financial stability have remained elevated since the previous issue of the Financial Stability Review was published. While financial markets and non-banks have proven resilient to recent bouts of volatility, the likelihood of tail events remains high as the balance of risks shifts in the euro area from concerns about inflation remaining high to fears over growth. In a context of elevated macro-financial and geopolitical uncertainty, there could be a sudden sharp reversal in risk sentiment, given high asset valuations and concentrated risk exposures in the financial system. Political and policy uncertainties have turned the spotlight back on sovereign risks, causing sovereign vulnerabilities to rise. Possible escalation in tensions associated with the conflicts in the Middle East and Ukraine, plus heightened trade policy uncertainty, could trigger a weakening of

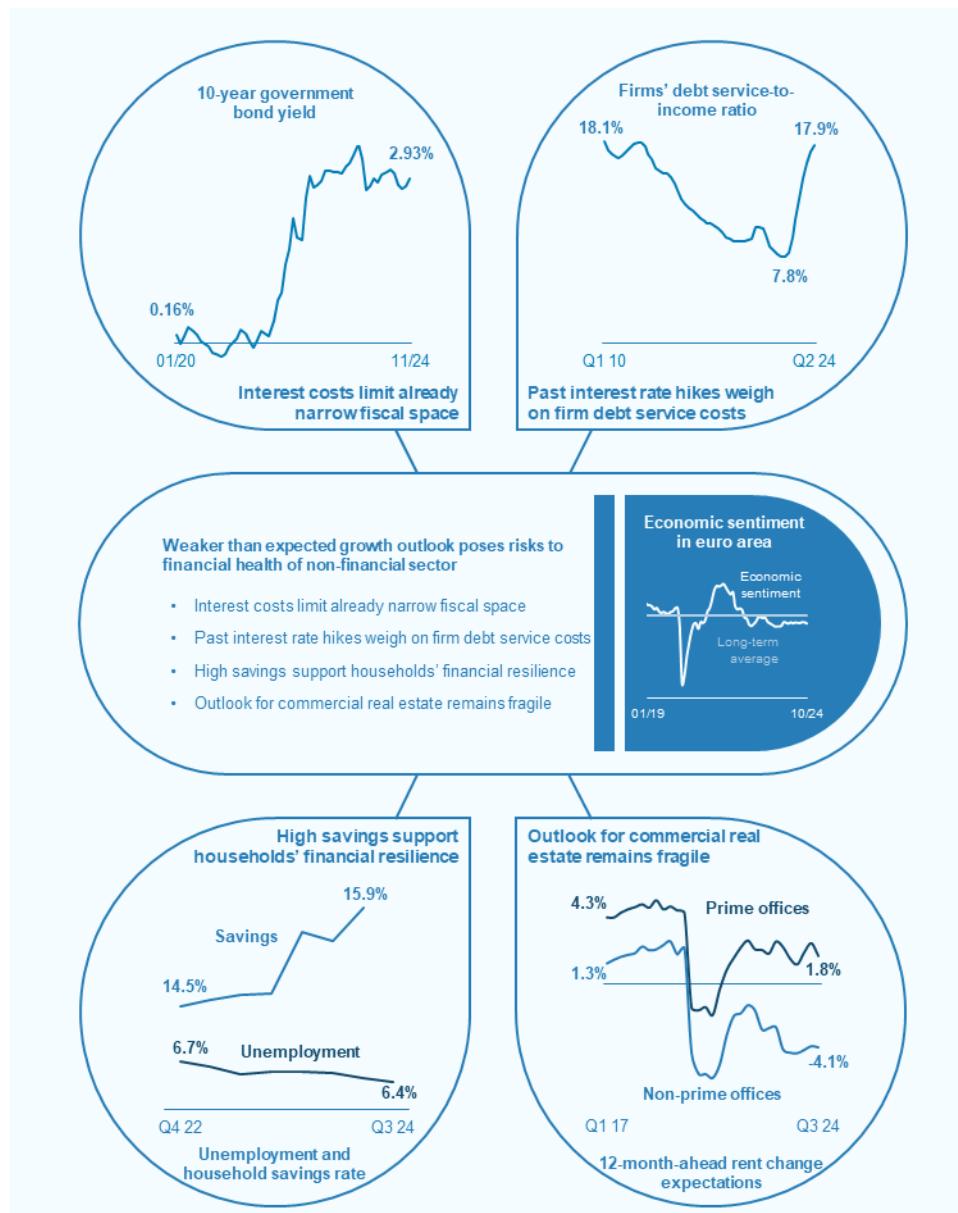
macro-financial conditions, with repercussions for credit risk in the financial and non-financial sectors.

In addition, several cross-cutting structural issues remain critical for financial stability and could interact with and amplify existing cyclical vulnerabilities.

These issues are associated with climate-related risks – both transition and physical – on the way to a low-carbon economy; cybersecurity weaknesses, including outages of systemic IT providers, and the rise of AI; and geopolitical fragmentation sending global economic, trade and financial integration into reverse. The potential for these cyclical and structural vulnerabilities to materialise simultaneously and amplify one another raises the risks to financial stability, potentially creating adverse feedback loops across various sectors.

1

Macro-financial and credit environment



1.1

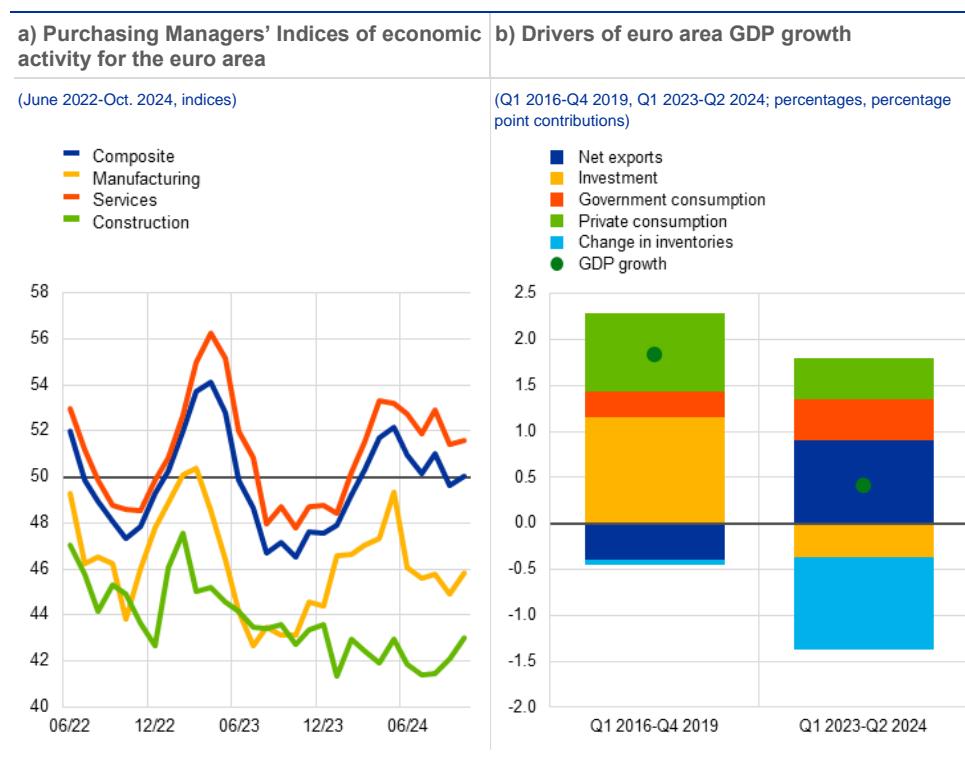
Policy uncertainty and geopolitical tensions weigh on euro area growth outlook

The euro area economy is recovering from the energy crisis and the post-pandemic surge in inflation, albeit at a slower pace than expected six months ago. Progress in bringing down inflation allowed the ECB and other central banks to start lowering their policy rates earlier this year. While the resulting easing of financing conditions should support the economic recovery ahead, the past interest

rate hikes are still weighing on the euro area economy. Activity in capital-intensive sectors that tend to be more sensitive to changes in interest rates, such as manufacturing and construction, has underperformed the services sector. That said, recent indicators point to a broader weakening in business activity in the near term (**Chart 1.1**, panel a). Poor growth in the manufacturing sector partly reflects structural factors related to subdued productivity growth and losses in competitiveness of euro area producers. The latter are due to energy prices in the euro area still being higher than in other regions amid fiercer price competition from third countries. Economic growth in recent quarters has been supported by external demand for euro area goods and services. However, competitiveness issues are likely to continue dragging on euro area export growth. Recent household surveys point to high levels of saving and restrained consumption ahead (**Section 1.4**), which could pose a downside risk to broader economic growth as well, as private consumption has been making a positive contribution to economic expansion of late (**Chart 1.1**, panel b). Overall, the pace of economic recovery in the euro area is likely to be slower than expected a few months ago.

Chart 1.1

Economic recovery remains uneven across sectors and domestic demand is picking up only slowly



Sources: S&P Global Market Intelligence, Eurostat and ECB calculations.

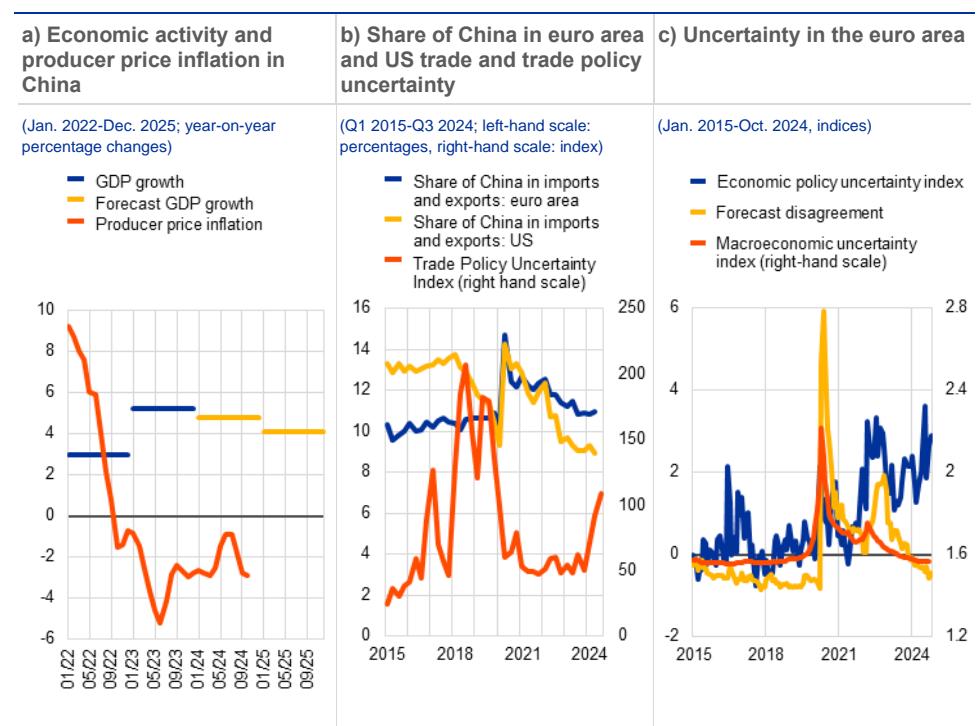
Notes: Panel a: a PMI value above (below) 50 implies an improvement (deterioration) in economic activity. Panel b: the chart shows average annualised quarter-on-quarter GDP growth rates and average contributions from different components.

Risks to the macro-financial outlook are tilted to the downside. The main domestic sources of risk are a stronger than expected impact of past monetary policy tightening, weaker consumer confidence and slower productivity growth. Slow growth could challenge the debt servicing capacity of all sectors in the economy and thus have an adverse impact on financial stability. In this context, **Special Feature B** looks

at the link between low firm productivity and financial stability in more detail. Outside of the euro area, a stronger than expected slowdown in China, coupled with continued downward pressure on global export prices from Chinese producers, could weaken euro area exports further (**Chart 1.2**, panel a). At the same time, financial markets remain vulnerable to bouts of volatility (**Chapter 2**) amid persistently high uncertainty about the economic policy and geopolitical outlook.

Chart 1.2

Geopolitical risks and uncertainty about economic policies pose downside risks to the euro area growth outlook



Sources: IMF, S&P Global Market Intelligence, Haver Analytics, Consensus Economics Inc., Caldara et al.*, Jurado, Ludvigson and Ng**, Baker, Bloom and Davis*** and ECB calculations.

Notes: Panel a: GDP growth values for 2024–25 are forecasts taken from the IMF's [October 2024 World Economic Update](#). Panel c: forecast disagreement is captured by the average standard deviation of one-year ahead Consensus Economics forecasts for a range of macroeconomic variables.

*) Caldara, D., Iacoviello, M., Moligio, P., Prestipino, A. and Raffo, A., "The economic effects of trade policy uncertainty", *Journal of Monetary Economics*, Vol. 109, January 2020, pp. 38-59.

**) Jurado, K., Ludvigson, S. and Ng, S., "Measuring Uncertainty", *American Economic Review*, Vol. 105, No 3, March 2015, pp. 1177-1216.

***) Baker, S., Bloom, N. and Davis, S., "Measuring Economic Policy Uncertainty", *The Quarterly Journal of Economics*, Vol. 131, No 4, November 2016, pp. 1593-1636.

Uncertainty stemming from geopolitical tensions and economic policies remains elevated.

Russia's war against Ukraine and the conflict in the Middle East continue to be the major sources of geopolitical risk. A further escalation of the tensions could have a considerable adverse impact on euro area growth – through higher energy and import prices and lower confidence among euro area households and firms – and could pose upside risks to the disinflation process. In this context, natural gas prices have declined from their 2022 peaks, but remain higher and more volatile than before Russia's full-scale invasion of Ukraine, contributing to the competitiveness pressures faced by euro area firms. Relatedly, uncertainty about global trade policy is on the rise as well. While trade links among some of the major economies have weakened in recent years amid heightened geopolitical tensions, this

has not been the case for the euro area. For example, China now accounts for a somewhat larger share of euro area trade than before the COVID-19 pandemic (**Chart 1.2**, panel b). This makes the euro area vulnerable to the risk of further geopolitical, economic and financial fragmentation in the global economy. Finally, domestic uncertainty is also high. In particular, while there now seems to be more clarity regarding future macroeconomic developments, as reflected in declining disagreement among professional forecasters, uncertainty about the future path of domestic economic policy is increasing (**Chart 1.2**, panel c). This could reflect both upcoming elections and uncertainty about the policies of recently elected governments across the EU.

1.2

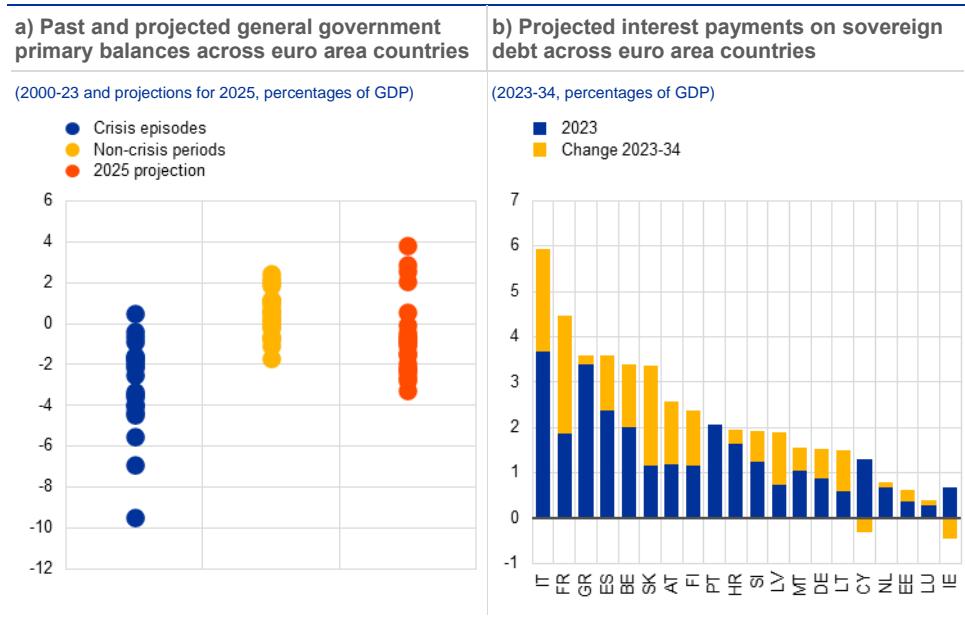
Concerns about sovereign debt levels have risen

Projected high levels of sovereign debt in several countries limit the policy space available for governments to respond to adverse shocks. While the aggregate euro area debt-to-GDP ratio has declined considerably from its pandemic peak, debt levels remain high in many countries owing to persistent primary deficits. Given a weaker than expected pace of economic recovery, governments in these countries will have to balance the need to bring debt ratios to prudent levels against the need to support economic growth. In principle, general government primary balances tend to recover during normal times, as a direct result of the cyclical improvement in macroeconomic conditions and its positive impact on government revenues (**Chart 1.3**, panel a). This in turn allows governments to increase spending in response to adverse shocks without significantly raising debt sustainability concerns. However, primary balances in many countries are currently forecast to remain below the levels observed outside of crisis periods, meaning that future fiscal space to react to such shocks will likely be limited. Large primary deficits also make it harder to provide additional investment to combat structural challenges, including climate change, defence spending and low productivity.¹ This in turn could give rise to a negative feedback loop between low growth and sovereign debt sustainability. Headwinds to economic growth from factors like weak productivity make elevated debt levels and budget deficits more likely to reignite debt sustainability concerns and to push sovereign credit risk premia higher in the event of adverse macro-financial surprises.

¹ On Europe's strategic investment needs, see Bouabdallah, O., Dorruci, E., Hoendervangers, L. and Nerlich, C., “[Mind the gap: Europe's strategic investment needs and how to support them](#)”, *The ECB Blog*, 27 June 2024.

Chart 1.3

Persistent primary deficits raise risks related to high debt levels, especially as interest payments are set to rise further



Sources: European Commission (AMECO), Eurostat and ECB (GFS) and ECB calculations.

Note: Panel a: the dots correspond to average general government primary balances in individual euro area countries within the given period. "Crisis episodes" includes the global financial crisis (2008-09), the European sovereign debt crisis (2010-12) and the COVID-19 pandemic (2020-21). Panel b: values for "Change 2023-34" are projections from the European Commission's [Debt Sustainability Monitor 2023](#), updated with the Commission's Autumn 2024 Economic Forecast. As such, they depend on a range of fiscal and macro-financial assumptions, including no-policy-change on the fiscal side, EU commonly agreed methodology for long-term economic growth and market-based interest rate projections.

Interest costs are set to rise further and weigh on government finances for many years to come, raising the need for timely fiscal consolidation. Even though ECB policy rates and borrowing costs for euro area governments are expected to decline further, interest payments on sovereign debt relative to GDP are projected to increase in the medium term and beyond for most euro area countries (**Chart 1.3**, panel b). This is because, at eight years, the average maturity of sovereign debt is relatively long, as a result of which maturing public debt is still being rolled over at interest rates that are higher than they were a few years ago. Higher interest payments will limit the remaining fiscal space further and make timely fiscal consolidation even more important. Overall, while euro area sovereigns have benefited from the easing of global financing conditions since the end of 2023, their debt service costs are set to rise in the near term, particularly for sovereigns with higher debt-to-GDP levels (**Chart 1.4**, panel a). In this context, implementing the EU's revised economic governance framework fully, transparently and without delay will help governments bring down budget deficits and debt ratios on a sustained basis. Governments should now make a strong start in this direction in their medium-term plans for fiscal and structural policies. Importantly, given the structural challenges related to low potential growth, consolidation of public finances will need to be designed in a growth-friendly manner.

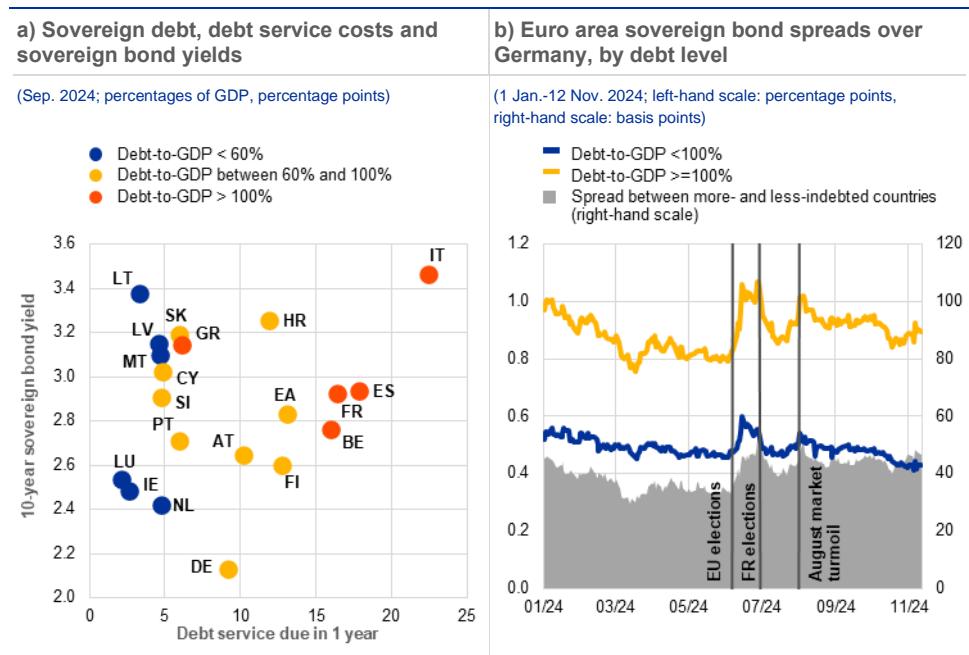
Elevated policy uncertainty is contributing to rising sovereign vulnerabilities.

Policy risks related to European Parliament and national elections, as well as struggles in some countries to achieve planned fiscal targets, caused financial

markets to examine high levels of sovereign debt and fiscal policies earlier this year. Measures of stress in sovereign debt markets increased temporarily in countries with high policy uncertainty, and sovereign bond yields rose in countries with high debt levels (**Chart 1.4**, panel b). In some cases, rising stress in sovereign debt markets went hand in hand with short-lived but noticeable declines in bank share prices, raising fears that the sovereign-bank nexus could re-emerge. The market corrections did not last long and have had limited cross-border spillovers for now. Nonetheless, the persisting policy uncertainty, including around the fiscal consolidation paths under the new EU fiscal framework, and the possibility of further fiscal slippage are weighing on the outlook for sovereign borrowing, as they could lead market participants to reprice sovereign risk further. In addition, as sovereign bonds act as a benchmark for the pricing of other assets, any repricing of sovereign risk could result in a rapid tightening of credit conditions (**Box 1**). This would have an adverse impact on growth and add to the downside risk surrounding macroeconomic activity.

Chart 1.4

Rising debt service costs and high policy uncertainty in some countries are putting fiscal policies in market focus



Sources: European Commission (AMECO), Eurostat and ECB (GFS, MNA), LSEG, Bloomberg Finance L.P. and ECB calculations.
Notes: Panel a: "Debt service due in 1 year" includes the face value of the sovereign bonds due within one year and interest to accrue on all outstanding sovereign bonds in one year or less. Data for debt-to-GDP ratios are for 2023. Due to limited debt issuance, the ten-year sovereign bond yield easily comparable to other countries is not available for Estonia. Estonia's debt service due was 3.2% of GDP as of September 2024 and its debt-to-GDP ratio was 20.2% in 2023. Panel b: the spreads of ten-year sovereign bond yields (excluding Germany) against the ten-year German bond yield are weighted by annual GDP in 2023. "EU elections" refers to the elections to the European Parliament on 6-9 June 2024, "FR elections" to the French parliamentary elections on 7 July 2024 and "August market turmoil" to the period of heightened financial market volatility and carry trade unwind around 5 August 2024.

Box 1

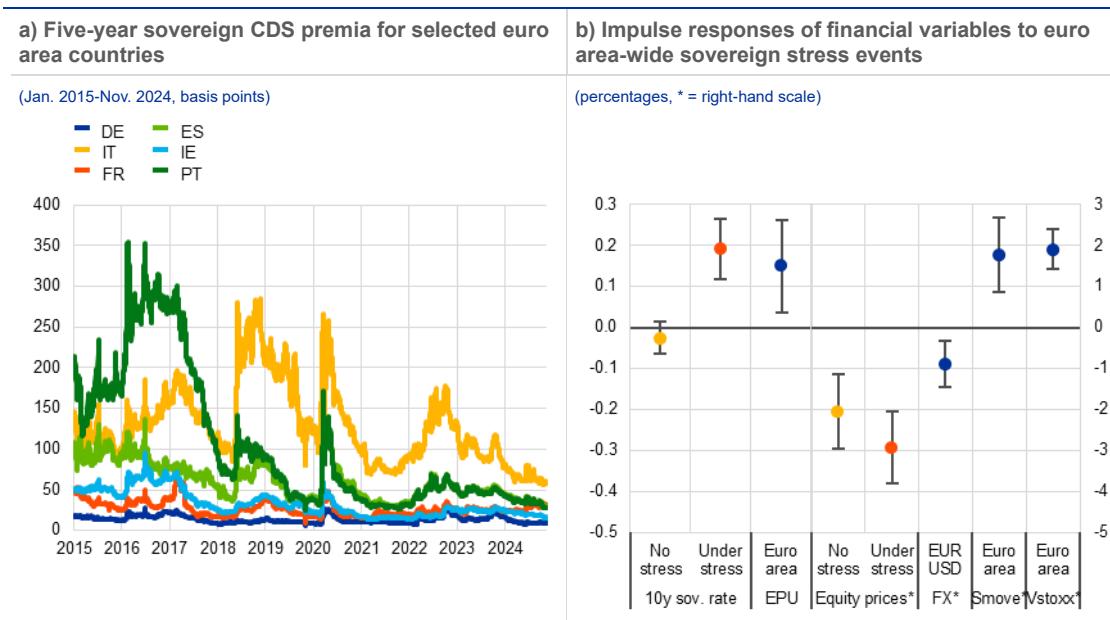
Financial markets and investor behaviour in times of stress in euro area sovereign bond markets

Prepared by Pablo Anaya Longaric, Katharina Cera, Georgios Georgiadis and Christoph Kaufmann

This box explores financial market reactions and investor behaviour during episodes of stress in euro area sovereign bond markets. In view of elevated levels of sovereign indebtedness in several euro area countries, financial markets have become increasingly sensitive to macroeconomic and political news. Consequently, recent episodes of widening bond spreads have led to renewed concerns about financial stability related to sovereign risk. Against this backdrop, the analysis below evaluates the shifts in financing conditions for both sovereigns and non-financial corporations, as well as changes in the sovereign bond holdings of domestic and foreign investors following a sovereign stress shock.²

Chart A

Financing conditions for sovereigns and firms deteriorate after sovereign stress events, while financial and political uncertainty increase



Sources: CMA, Bloomberg Finance L.P., ECB and ECB calculations.

Notes: Panel b: the figure shows the estimated impact of a 1 standard deviation euro area-wide sovereign stress shock on financial variables. The sample covers the period from January 2007 to December 2023. The dots indicate the peak or trough effect within the first six months after the shock. The sovereign stress shock is proxied by the monthly change in the CDS spread between countries which are more vulnerable to market scrutiny ("Under stress") and countries which are less vulnerable to market scrutiny ("No stress"), purged from other macro-financial determinants of sovereign risk. The key identification assumption is that sovereign stress – but not other macro-financial shocks – drives changes in the CDS spread. It can be demonstrated that the largest spikes in this series can indeed all be attributed to unexpected events relating to elections and episodes of political uncertainty. The effects of sovereign stress shocks are estimated using country-level panel local projections, which include as control variables one lag of the dependent variable, lags of the euro area one-year sovereign bond rate and the logarithms of industrial production and consumer prices. To control for macro-financial drivers of sovereign risk other than euro area-wide sovereign stress shocks, we include lags of differentials in the sovereign composite indicator of systemic stress and year-on-year industrial production growth. Red (yellow) dots indicate responses in countries under stress (not under stress), while blue dots indicate euro area wide responses. Bars around the dots indicate statistical significance at the 10% level, based on Driscoll-Kraay standard errors. "10y sov. rate" denotes the average ten-year sovereign yield of two country groups. EPU stands for the economic policy uncertainty index for Europe as set out in Baker, S., Bloom, N. and Davis, S., "Measuring Economic Policy Uncertainty", *The Quarterly Journal of Economics*, Vol. 131, Issue 4, November 2016, pp. 1593-1636.

² International portfolio adjustment and changes in bond holdings of different types of investors have been studied extensively. See, for example, Galstyan, P. and Lane, P.R., "Bilateral portfolio dynamics during the global financial crisis", *European Economic Review*, Vol. 57, January 2013, pp. 63-74, and Timmer, Y., "Cyclical investment behavior across financial institutions", *Journal of Financial Economics*, Vol. 129, Issue, 2, August 2018, pp. 268-286.

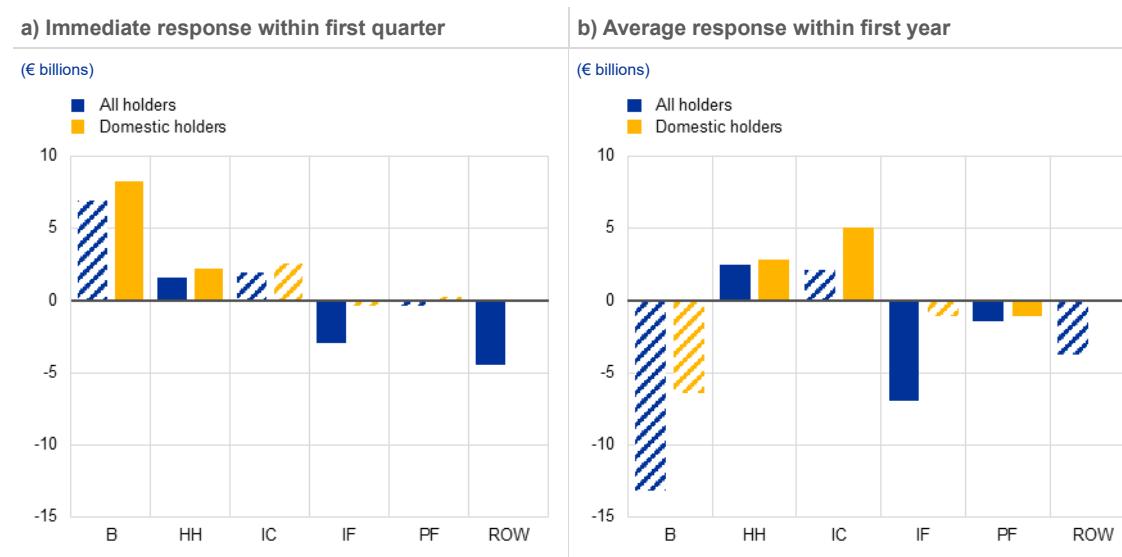
Sovereign stress peaked during the EU sovereign debt crisis, but there have also been more recent bouts of volatility. Using CDS premia as a proxy for sovereign stress indicates that various countries have come under sudden market scrutiny over recent years (**Chart A**, panel a). The most significant spikes in these series often occur around unexpected events, such as the onset of the COVID-19 pandemic or episodes of political uncertainty related at times to election outcomes. Country-specific events frequently propagate to other euro area countries through contagion effects. In this analysis, euro area countries are categorised based on their historical vulnerability to sovereign stress and the contagion effects that follow.³

Financing conditions in countries under market scrutiny deteriorate after sovereign stress events, while overall market volatility and policy uncertainty increase. Following a sovereign stress event, sovereign bond yields rise significantly and persistently in countries which are more vulnerable to market scrutiny (“under stress”). By contrast, yields in euro area countries which are less vulnerable to market scrutiny are unaffected (**Chart A**, panel b). Stock market indices decline consistently in both country groups, indicating that sovereign stress events have a negative impact on firms’ financing conditions across the entire euro area. Financial market volatility and risk aversion (as measured by the SMOVE and VSTOXX indices) increase, as does economic policy uncertainty. At the same time, the euro depreciates against the dollar. Overall, these findings suggest that sovereign stress events trigger widespread uncertainty and a general deterioration in investor risk sentiment.

Chart B

When sovereign stress events occur, investment funds and global investors withdraw from euro sovereign debt markets, while domestic investors step in

Impulse responses to sovereign stress shocks of holdings of sovereign debt from countries subject market scrutiny, by investor type and holder area



Sources: ECB (SHS), CMA, Bloomberg Finance L.P. and ECB calculations.

Notes: The chart shows the effects across investors of a euro sovereign stress shock of 1 standard deviation on holdings of sovereign debt from countries vulnerable to market scrutiny, on impact (panel a) and for the average effect over the first four quarters (panel b). Blue (yellow) bars indicate point estimates for all (only domestic) holders. The striped bars indicate that effects are not statistically significant at the 10% level. The estimates are obtained from weighted holder-country ISIN panel local-projection regressions run separately for each holder sector. Weights are given by the average holdings at country level over the sample period from Q4 2013 to Q4 2023. The control variables are the same as those in Chart A, panel b. Standard errors are clustered at the issuer-country-time level. Euro area holder sectors: B stands for banks; HH stands for households; IC stands for insurance corporations; IF stands for investment funds; PF stands for pension funds; ROW stands rest of the world (non-euro area).

³ The vulnerability of some countries to sovereign stress has changed significantly over time. In view of the historical perspective taken in this analysis, the following countries are categorised as subject to more market scrutiny: Ireland, Greece, Spain, Italy, Cyprus, Portugal, Slovenia, Slovakia and Slovenia.

Investors significantly adjust their debt holdings from countries under market scrutiny following sovereign stress events. Investment funds and investors from the rest of the world (including global hedge and investment funds) are the primary sellers of debt when such events occur (**Chart B**). This means these investors can amplify the procyclical effects of sovereign stress events on financial markets, while also acting as a disciplining force. Notably, most of the bonds sold are absorbed by domestic investors, with banks being the primary buyers in the short run (**Chart B**, panel a) and households and insurers stepping in over the medium term (**Chart B**, panel b). Given that investment funds and foreign investors are holding increasing amounts of euro area sovereign debt, these findings suggest that fiscal policy needs to account for potentially growing volatility in the investor base for such debt.⁴ Moreover, the shift towards domestic investors in times of stress reinforces the well-known nexus between governments on one side and banks and insurers on the other. As diversifying the investor base can mitigate the risks associated with overreliance on specific investor groups and reduce the likelihood of market fragmentation during periods of stress, further efforts to complete the capital markets union appear warranted.

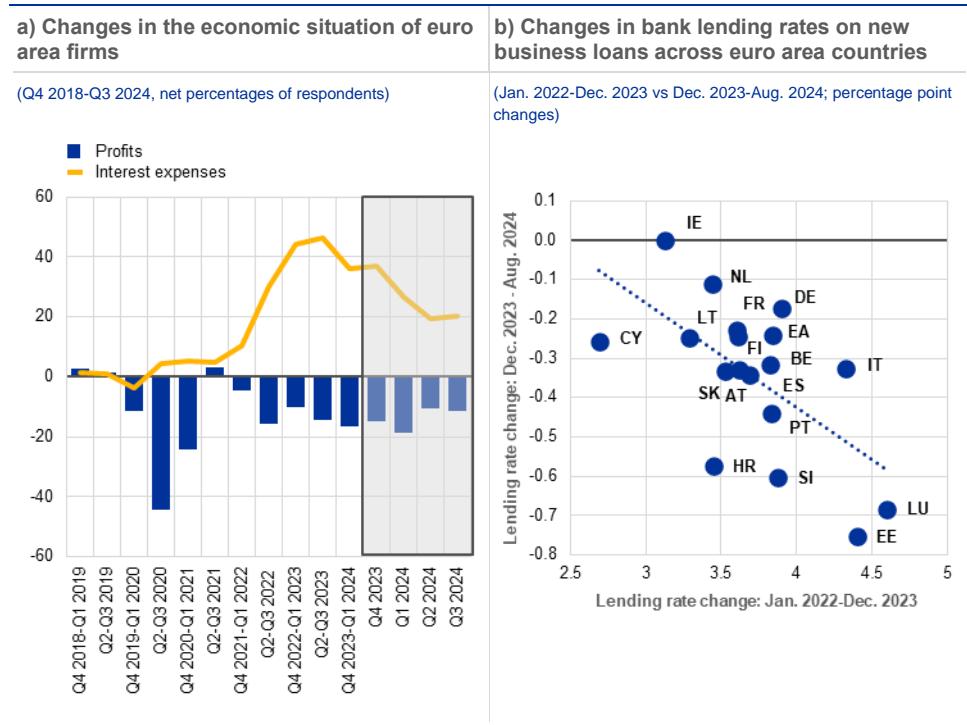
1.3 High borrowing costs and weak growth prospects put pressure on corporate balance sheets

Past interest rate increases are weighing on firms' debt service costs, despite the gradual easing in financing conditions. Euro area firms surveyed by the ECB in the third quarter of 2024 reported a further deterioration in profits in recent months, consistent with the slower than expected pick-up in domestic demand. They also indicated that high interest payments continued to squeeze their profitability, although the impact had moderated compared to half a year before (**Chart 1.5**, panel a). Even if falling ECB policy rates keep lowering the cost of new borrowing, external funding is likely to remain expensive compared with the historical average, at least in the near term. However, there is some variation across countries, with bank lending rates on new business loans falling faster in countries that saw larger increases during the monetary tightening cycle, supporting an earlier recovery in lending from the deeper trough experienced in these countries (**Chart 1.5**, panel b). The effect of high debt service costs on profitability, and thus on retained earnings, should be mitigated to some extent by normalising commodity and other input costs, and by the gradual easing of wage pressures. Nevertheless, with downside risks to economic growth in place, the outlook for firms' retained earnings is also skewed to the downside.

⁴ Although the market footprint of investment funds and foreign investors declined when the Eurosystem was making positive net asset purchases, these investors started returning to euro area sovereign bond markets after 2022. On this topic, see also the box entitled "[Sovereign bond markets and financial stability: examining the risk to absorption capacity](#)", *Financial Stability Review*, ECB, November 2023.

Chart 1.5

High interest expenses weigh on firm profitability even as new lending rates decline



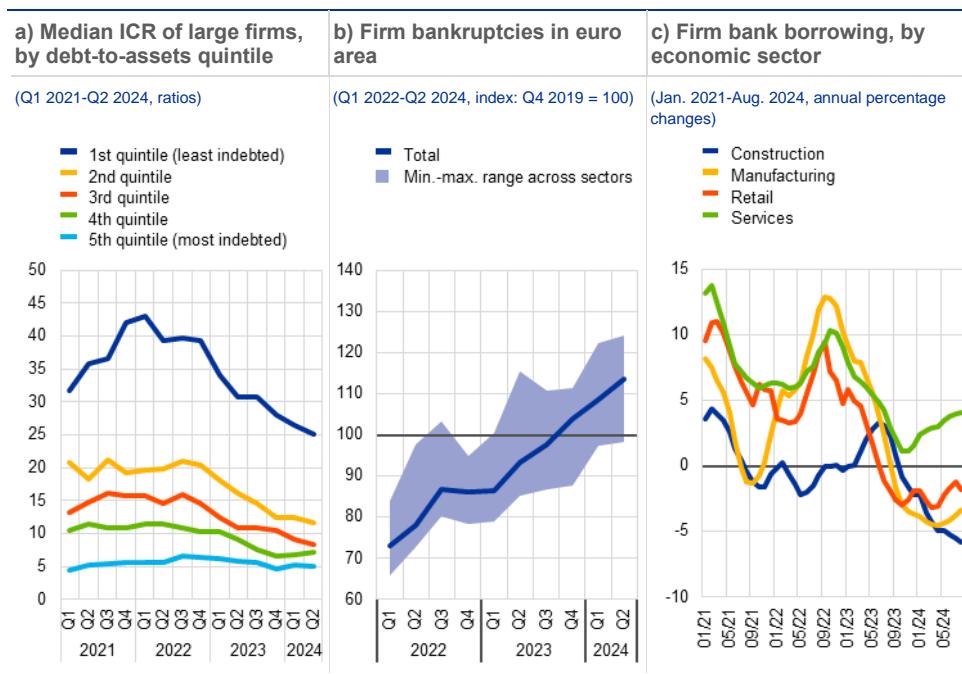
Sources: ECB (SAFE), Eurostat and ECB (MNA, QSA), LSEG, S&P Global Market Intelligence and ECB calculations.

Notes: Panel a: the grey area represents responses to the same question within a reference period of three months, while the rest of the chart covers reference periods of six months. The values of the variables indicate the net percentage of respondents signalling an increase (a positive value) or a decrease (a negative value) in profits or interest expenses over the previous three months. The aggregate numbers shown in the chart mask heterogeneous developments across large firms compared with small and medium-sized enterprises (SMEs), with the former reporting a large rebound in profits in the second half of 2021 and in early 2022. While both types of enterprise report worsening profits in the survey round conducted in the third quarter of 2024, SMEs indicate larger declines. Panel b: owing to data limitations, changes in lending rates on new business loans in Greece, Latvia and Malta are not included.

Although corporate debt servicing capacity continues to be resilient in the euro area as a whole, some firms are struggling to meet debt obligations. Overall, firms are coping well with higher funding costs, and low demand for external funding amid higher financing costs has contributed to a considerable decline in their indebtedness. Nevertheless, corporate debt levels are still elevated in some countries. Measures of debt servicing capacity, such as the ratio of firm earnings to interest expenses (interest coverage ratio), continue to worsen on average, albeit from the high levels reached during the COVID-19 pandemic and with some signs of stabilisation for the most indebted large firms (**Chart 1.6**, panel a). Firm insolvencies – a lagged indicator of corporate financial health – are rising across sectors (**Chart 1.6**, panel b) and countries too, although from very low levels. Data on bank loan default rates show that SMEs, as well as firms in the commercial real estate sector, have the most fragile balance sheets. While the increase in insolvencies could reflect the fading impact of pandemic-era support measures (**Special Feature B**), continued economic weakness is also a contributing factor. Looking ahead, lower than expected economic growth – given its impact on corporate earnings – remains the main downside risk to firms' ability to service their debt.

Chart 1.6

Signs of stretched debt servicing capacity are becoming more visible as corporate bankruptcies rise and deleveraging continues



Sources: S&P Global Market Intelligence, Eurostat, ECB (AnaCredit, RIAD) and ECB calculations.

Notes: Panel a: ICR stands for interest coverage ratio and is defined as the ratio of earnings before interest, taxes, depreciation and amortisation (EBITDA) to interest expenses. Firm-level ICRs are computed as four-quarter moving averages. Panel b: the blue area shows the minimum-maximum range of index values across sectors: construction, trade, transport, accommodation and food services, information and communication, finance and real estate and professional services, industry excluding construction, education and health care.

New borrowing by firms remains subdued, but with considerable cross-sector heterogeneity owing to varying capital intensity and economic prospects. New borrowing by firms remains muted across all borrowing instruments, driven by weak demand for external financing on the back of sluggish growth and high borrowing costs, as well as by tight lending standards. Loan growth has been the most negative in the capital-intensive manufacturing and construction sectors, which are currently facing the biggest economic challenges, while in the services sector it has moderated but remains positive (**Chart 1.6**, panel c). As the outlook for near-term growth is subdued across sectors, corporate borrowing is likely to remain weak too. While cash buffers accumulated since the pandemic have helped firms to service their debt and manage short-term liquidity needs without resorting to external financing, they continue to decline. As a result, demand for external funding could rise in the future. If downside risks to economic growth and corporate earnings materialise, and lending standards remain tight for longer, this could hamper firms' capacity to service their debt.

1.4

Higher savings underpin household resilience

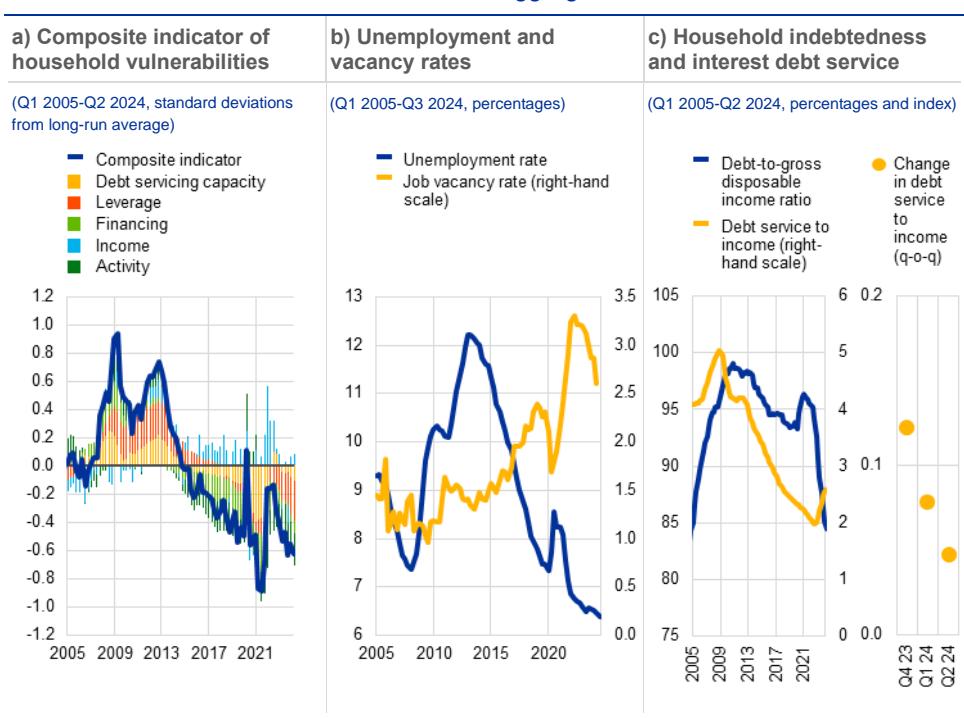
Household vulnerabilities have, overall, decreased from what was already a moderate level. The ECB's composite indicator of household sector vulnerabilities points to a continued decrease in vulnerabilities over the past six months (**Chart 1.7**,

panel a). This decline has been driven largely by improvements in households' debt servicing capacity and a reduction in leverage. At the same time, financing conditions have played a greater role in the reduction, likely reflecting the peak in the ECB's policy rate hiking cycle and the subsequent moderation in the degree of monetary policy restriction. The contribution of economic activity in this context has remained relatively stable, given that the euro area economy has avoided a deep recession.

Robust employment and wage growth have supported the debt servicing capacity of euro area households, although there are signs of softening in the labour market. Unemployment in the euro area as a whole is at a historical low, and it is also at a low level compared with historical levels in a broad majority of individual countries. However, there are early signs of a softening in the labour market with the job vacancy rate, which peaked in 2022, having started to decline significantly (**Chart 1.7**, panel b). A downturn in vacancies often precedes a rise in unemployment, potentially signalling an impending labour market softening.

Chart 1.7

Households' economic situation is robust in aggregate



Sources: Eurostat, ECB and ECB calculations.

Notes: Panel a: the composite indicator is based on a broad set of indicators along five dimensions: (i) debt servicing capacity (measured by gross interest payments-to-income ratio, saving ratio and expectation of personal financial situation); (ii) leverage (gross debt-to-income and gross debt-to-total assets ratios); (iii) financing (bank lending rate, short-term debt-to-long-term debt ratio, quick ratio (defined as current financial assets/current liabilities) and credit impulse (defined as the change in new credit issued as a share of GDP)); (iv) income (real income growth and income-to-GDP ratio); and (v) activity (labour participation rate and unemployment expectations). The indicators are standardised by transforming them into z-scores, meaning that they are converted into a common scale with a mean of zero and a standard deviation of one. Composite sub-indicators are calculated for each of the five dimensions by taking the simple arithmetic mean of the respective underlying z-scores of the individual indicators. Finally, the overall composite indicator is obtained by equally weighting the composite z-scores of the five sub-categories. Positive values indicate higher vulnerability, while negative values indicate lower vulnerability. Panel b: the latest data for the job vacancy rate refer to the fourth quarter of 2022.

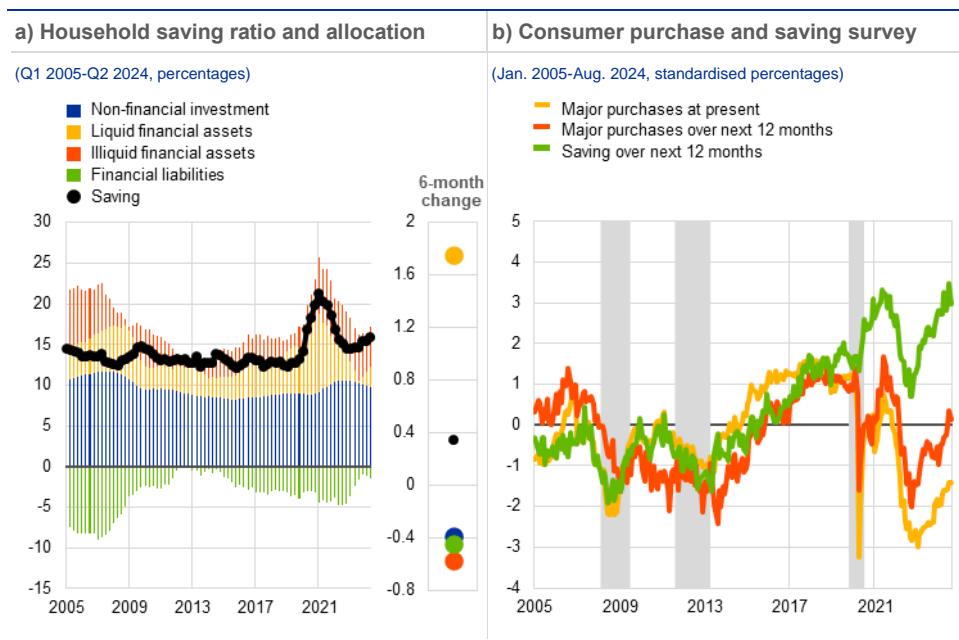
Households are continuing to repay debt. Since the end of the low interest rate period, households have steadily reduced their debt levels relative to their disposable income. Household debt-to-income ratios have now returned to levels not observed since 2005 (**Chart 1.7**, panel c). At the same time, debt service costs relative to

income continue to rise, but there is some indication that they may be reaching a turning point as the pace of increase has slowed recently. If interest rates fall further, as is currently expected in financial markets, debt service costs may stabilise.

The recent higher propensity to save has also supported euro area households' balance sheets, although it may have repercussions for the pace of the economic recovery. The saving ratio is currently at an elevated level, and consumer purchase surveys suggest that this trend could continue. Abstracting from the exceptional but temporary jump during the pandemic, the aggregate saving ratio is now at a historical high (**Chart 1.8**, panel a). The increase in savings over the past six months reflects a recent uptick in liquid financial assets, triggered by high interest rates, a low unemployment rate, subdued consumer confidence and persistent uncertainty. Survey results suggest that household saving levels will remain high over the next 12 months (**Chart 1.8**, panel b). However, the flipside of thrift is a lower propensity to make major purchases, which are currently at levels associated with a recession. On a more positive note, expectations for major purchases in the next 12 months are more upbeat. If households restrict their consumption, this could compound the current downside risks to growth, with repercussions for firms and their robustness and hence also the labour market. In turn, a weak labour market could challenge households' resilience, in particular those with low incomes and elevated levels of debt.

Chart 1.8

Higher levels of saving can signal a risk for household consumption and broader economic growth



Source: Eurostat.

Notes: Panel a: the figures shown are four-quarter trailing sums of transactions expressed as a percentage of income. Panel b: the grey areas show euro area recessions as defined by the Centre for Economic Policy Research.

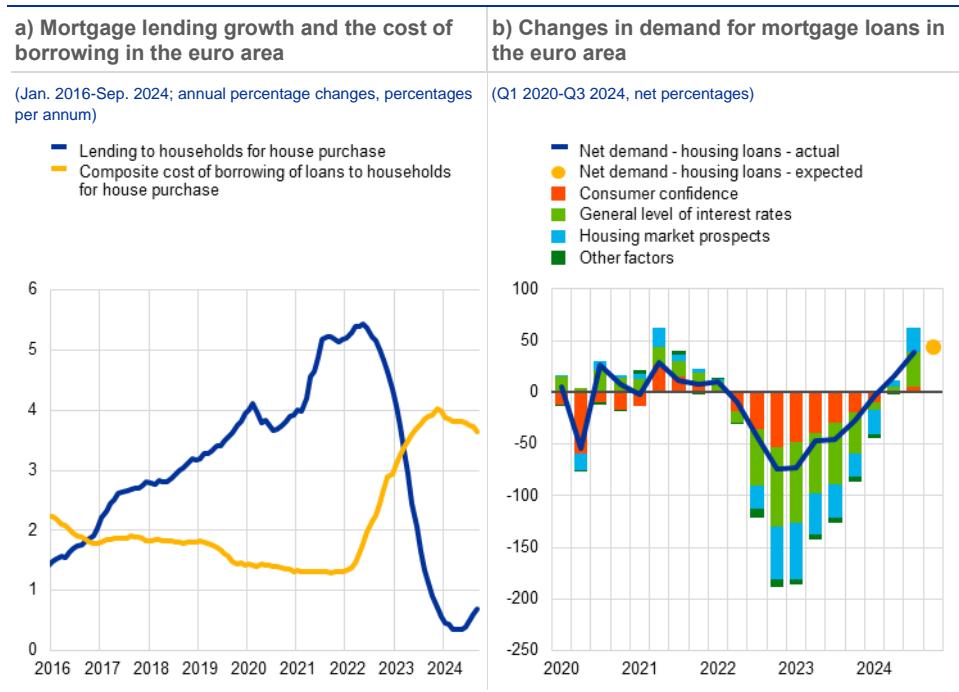
1.5

Downside risks remain in real estate markets despite an improved outlook for the sector

Mortgage lending has stabilised from its previous declines and is showing initial signs of a recovery. The downward trend in mortgage lending that followed the start of the rate-hiking cycle seems to have come to an end as the cost of borrowing has fallen slightly from its recent peak (**Chart 1.9**, panel a). In addition, euro area banks reported a moderate net easing of credit standards in the first three quarters of 2024, following several quarters of tightening credit standards over the course of the ECB's monetary policy tightening cycle. The improvement in credit conditions, together with better housing market prospects, contributed to an increase in demand for housing loans in the second and third quarters of 2024 (**Chart 1.9**, panel b). Going forward, banks expect loan demand to increase again in the fourth quarter of 2024.

Chart 1.9

The downward trend in mortgage credit growth seems to have reversed, supported by a slight decline in borrowing costs and higher demand from households



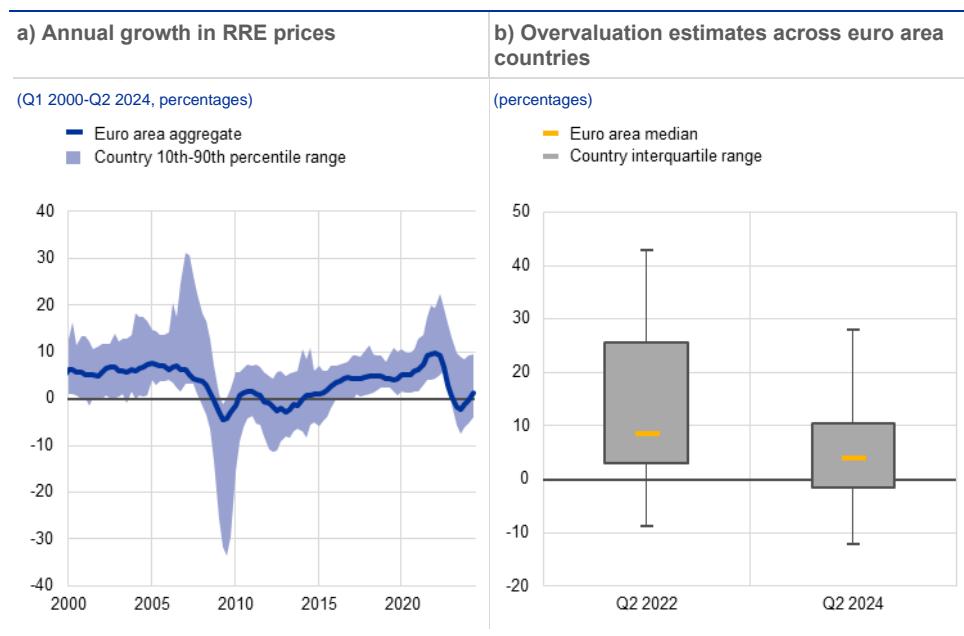
Sources: ECB (BSI, MIR, BLS) and ECB calculations.

Euro area residential real estate prices (RRE) have bottomed out, while valuation estimates are still signalling stretched valuations in some countries. Euro area RRE prices increased by 1.3% year on year in the second quarter of 2024 after falling for four consecutive quarters. The contraction in house prices was orderly and masked significant differences across euro area countries as some markets had not witnessed a decline in prices since the start of the rate-hiking cycle (**Chart 1.10**, panel a). Better credit conditions and an increase in demand for mortgage loans are likely to exert upward pressure on house prices going forward. In spite of the recent correction in house prices, several euro area markets are still showing high valuations

which could increase still further were price growth to start exceeding income growth again (**Chart 1.10**, panel b). This could lead to a renewed build-up of vulnerabilities in some markets.

Chart 1.10

Estimates of house price overvaluation across most euro area countries have declined, but valuations remain stretched in some markets



Sources: ECB and ECB calculations.

Notes: Panel b: the chart shows deviations from the long-term average for the house price/income ratio, which signal potential overvaluation in domestic housing markets. The long-term average is calculated from Q1 1996 to the respective end quarter. Overall, estimates from the valuation models are subject to considerable uncertainty and should be interpreted with caution. Alternative valuation measures can point to lower/higher estimates of overvaluation.

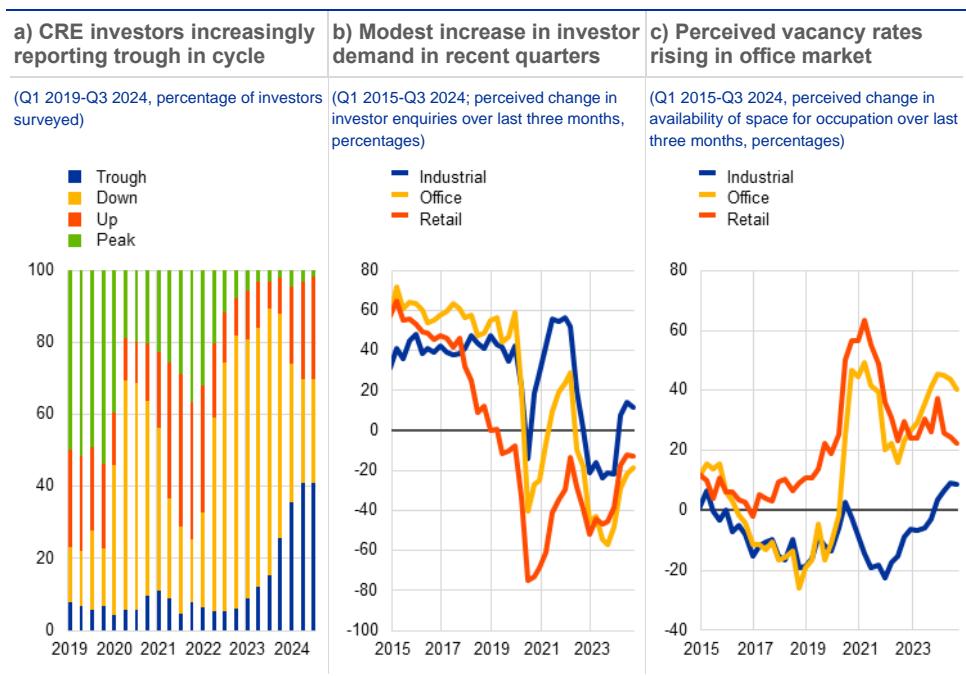
While any potential easing of monetary policy is positive news for commercial real estate (CRE) markets, downside risks remain. Sentiment indicators suggest that an increasing proportion of investors see the CRE downturn as having reached its trough (**Chart 1.11**, panel a). Despite this, downside risks remain in the form of continued geopolitical risks and monetary policy easing that may be less than expected as a result. CRE market activity remains at a low last seen during the global financial crisis. Any return to normal activity levels will likely cause prices to fall again as sellers revise their asking prices down.⁵ The easing of monetary policy will directly benefit CRE valuations via reduced discount factors, and CRE investors are starting to report a recovery in investor interest (**Chart 1.11**, panel b). Tenant demand remains weak, however, with offices in particular seeing significantly higher vacancy rates than before the COVID-19 pandemic (**Chart 1.11**, panel c). As this is driven mostly by structural factors – such as the shift towards remote working and e-commerce – the trend will likely continue to exert downward pressure on the market over the medium

⁵ The literature sets out this mechanism whereby shocks to CRE markets are followed by sharp drops in market activity and then falling prices. This occurs because buyers revise bid prices faster than sellers revise ask prices, leading to widening bid-ask spreads and driving a sharp drop in market activity. For market activity to resume, sellers must revise their asking prices down, which means that the resumption of market activity is accompanied by falling prices. See, for example, van Dijk, D.W., Geltner, D.M. and van de Minne, A.M., “[The dynamics of liquidity in commercial property markets: Revisiting supply and demand indexes in real estate](#)”, *The Journal of Real Estate Finance and Economics*, Vol. 64, 2022, pp. 327-360.

term. As flagged in previous editions of the Financial Stability Review, the outlook for the lower-quality end of the market is particularly negative.

Chart 1.11

While investor sentiment in CRE markets may be improving, there are still downside risks from rising vacancy rates



Sources: RICS and ECB calculations.

Note: Panels b) and c: a positive value is associated with improving sentiment.

Overall, euro area RRE prices have bottomed out, but stress in CRE markets is likely to continue in the coming quarters. The recent downward adjustment in RRE prices has been orderly, while better credit conditions and increasing demand for mortgage loans are expected to support price growth in the coming months. Generally, the fall in RRE prices was larger in countries where properties showed signs of greater overvaluation at the start of the rate-hiking cycle. This price correction reduced estimates of overvaluation across most countries, thus lowering the associated vulnerabilities. Nevertheless, some markets still exhibit signs of stretched valuations which could increase still further were RRE prices to start rising again. The commercial segment has seen a steeper downturn, with NPLs rising in banks' loan books (**Chapter 3**). Even if the degree of monetary policy restriction moderates further, firms will face significantly higher financing costs than in the years prior to the recent rate-hiking cycle. Coupled with weak profitability growth, this will dent firms' capacity to service outstanding debt (**Box 2**). Banks' aggregate exposures to CRE are substantially smaller than to RRE and are unlikely to be large enough at the euro area level to endanger the solvency of the banking system as a whole. These exposures are not evenly spread across the banking system, however, and stress could arise among the euro area's most exposed banks (**Chapter 3**). Additionally, an adverse outcome of such a scenario could be amplified by procyclical selling by non-banks, particularly real estate investment funds (**Chapter 4**).

Box 2

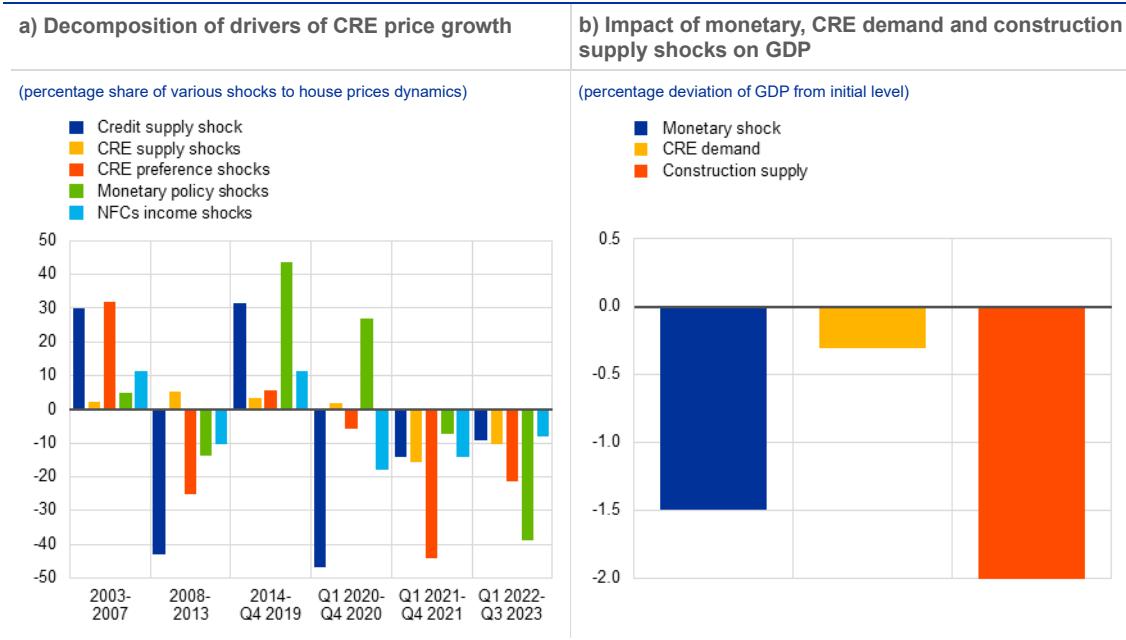
Rents or rates: what is driving the commercial real estate market?

Prepared by Alessandro Cavalleri, Giorgia de Nora and Ellen Ryan

Understanding the drivers of the current downturn in commercial real estate (CRE) can provide insights into the outlook for the market and potential spillovers to the financial system and wider economy. The CRE market is facing the simultaneous effects of higher interest rates, falling demand due to a structural shift towards remote working and rising costs from higher sustainability-linked capex requirements. Understanding the role of each factor in driving prices and firms' profits can provide some insight into how financial stability risks from CRE might evolve over the coming quarters. For example, the pressure from high interest rates could soften with a potential further easing of monetary policy, while structural factors appear unlikely to change. Moreover, spillovers to the financial system – such as deteriorating credit quality in banks' CRE loan books – and the wider economy could differ, depending on the nature of the market downturn.

Chart A

The CRE market downturn has been driven by both monetary policy and falling CRE demand, with the latter likely to persist due to structural change



Sources: ECB (SDW) and ECB calculations.

Notes: Panel a: historical decomposition from a BVAR model based on the approach taken in de Nora et al.* but adapted to examine drivers of CRE price growth. The model is a Bayesian VAR of order 2, fitted on euro area data over the period from Q1 2003 to Q3 2023. The model includes the following endogenous variables: CRE prices, real estate investments, lending to NFCs, NFC income (gross operating surplus), GDP, CPI, lending rates and the euro area shadow rate. Structural shocks are identified via zero and sign restrictions. The chart shows the response to (i) a monetary policy shock triggering an increase of 1 percentage point on the policy rate on impact, (ii) a 3 standard deviation CRE preference shock, and (iii) a 3 standard deviation CRE supply shock. NFC stands for non-financial corporation.

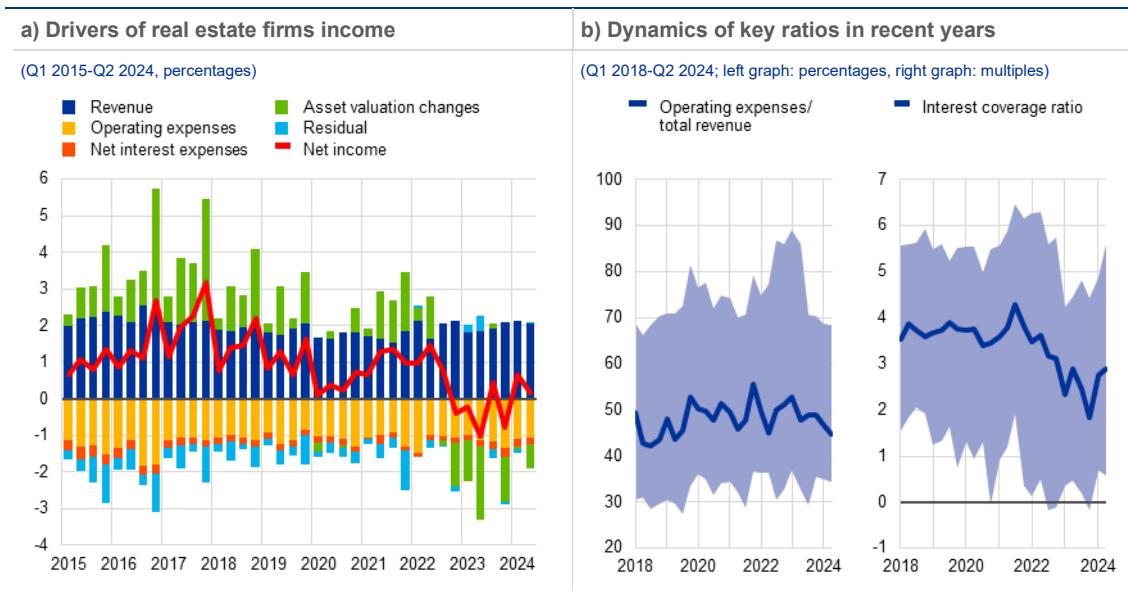
* de Nora, G., Lo Duca, M. and Rusnák, M., "Analysing drivers of residential real estate (RRE) prices and the effects of monetary policy tightening on RRE vulnerabilities", *Macropredutive Bulletin*, ECB, 2022.

Tight monetary policy and adverse CRE demand shocks have been the main factors pushing CRE prices down since the start of 2022 (Chart A, panel a). While the downward pressure exerted by tight monetary policy is expected to decline going forward, the impact of lower CRE demand will likely persist where it is driven by pandemic-induced structural changes in preferences and new remote working practices. By contrast, construction supply shocks have played a relatively less important role in recent years. Even so, falling numbers of new building permits in many

countries suggest that construction activity may start to decline in the coming quarters.⁶ This is relevant to the extent that a large negative real estate construction supply shock could have particularly severe real economy spillovers, with the BVAR model showing the biggest GDP impact from this shock (**Chart A**, panel b).

Chart B

Asset write-downs have been a primary driver of falling profits among real estate firms; the sector is also seeing falling interest coverage ratios



Sources: S&P Global Market Intelligence and ECB calculations.

Notes: Panel b: lines show median firm values and shaded areas show the cross-firm interquartile range. The sample consists of 100 of the euro area's largest real estate firms and is predominantly made up of landlord firms. The interest coverage ratio is calculated as $(\text{total revenue} - \text{operating expenses})/\text{net interest expenses}$.

With falling prices, asset write-downs have been the primary driver of the recent sharp drop in the headline profits of real estate firms. Declining profitability could affect the debt repayment capacity of real estate firms, with spillover effects on the credit quality of banks' CRE loan books. Decomposing the profits of 100 of the euro area's largest public real estate firms shows that asset write-downs have played an outsized role in driving recent declines in profits (**Chart B**, panel a). Like market price fluctuations, asset write-downs are likely caused by both monetary policy and reduced demand for CRE (**Chart A**, panel a). In light of falling CRE prices, it is important that asset write-downs are recognised to ensure that firms' balance sheets accurately reflect their financial health. Aggregate asset write-downs posted since the start of 2022 come to just -3.05% of the value of real estate owned by firms prior to monetary tightening, although there is significant variation across firms. Compared with a cumulative market price correction of -11%, this suggests that some firms may need to recognise further write-downs in the coming quarters.⁷ Asset write-downs may not immediately affect the resources available to firms to meet debt repayments, meaning that the immediate spillovers to the credit quality of banks' CRE loan books may be limited. However, this reduction in asset values – and hence collateral values – may still pose challenges to firms when they

⁶ This measure and the measure included in the BVAR include both commercial and residential construction.

⁷ This figure is calculated as the sum of asset write-downs across firms since the start of 2022 divided by the total value of real estate held by these firms at the end of 2021. Real estate holdings are estimated as total assets less current assets. Differences between dynamics in firms' write-downs and aggregate market indices may of course also arise from firms holding a disproportionate amount of certain types of asset (e.g. higher quality assets).

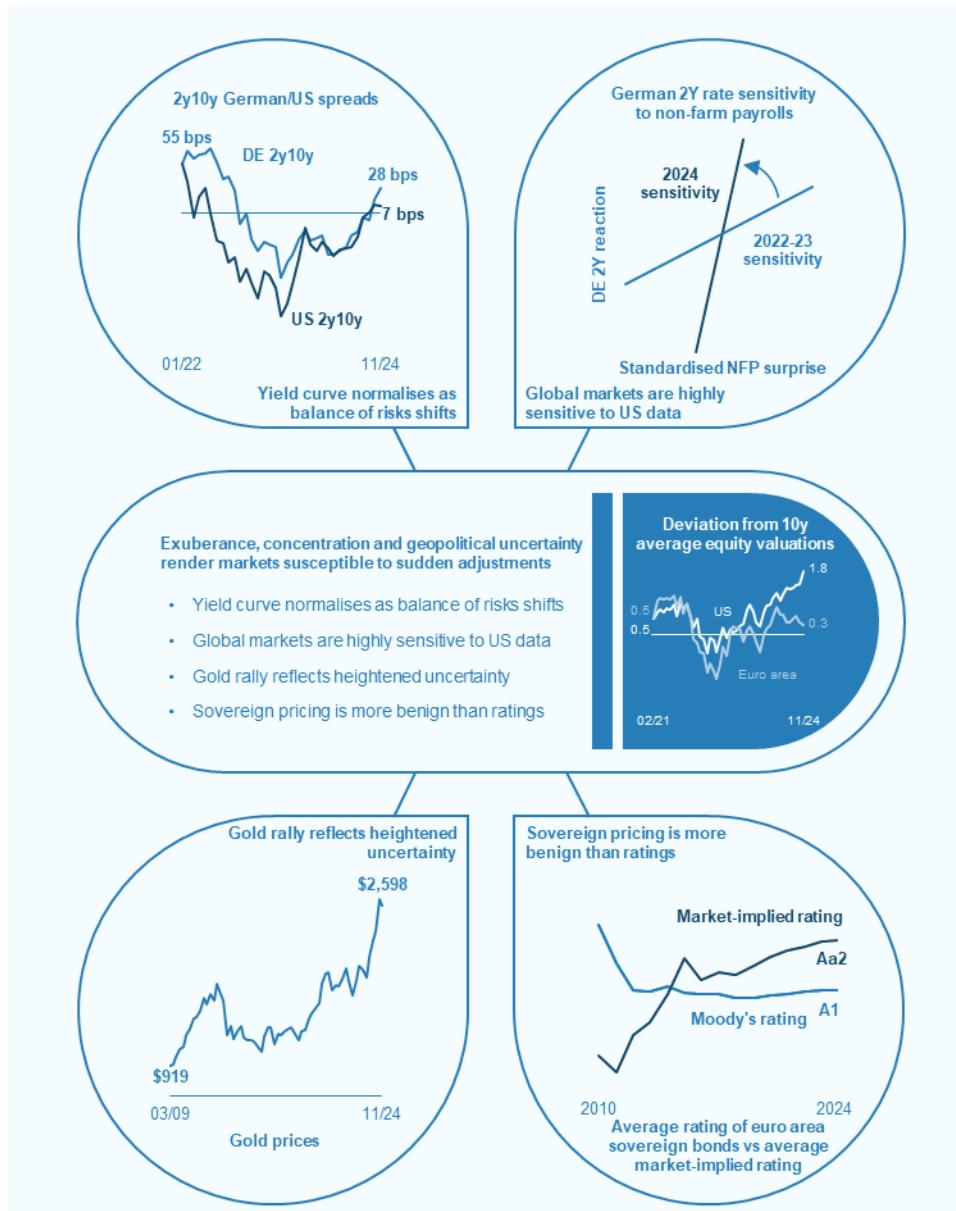
seek to refinance their debts. Reduced access to funding could force them to deleverage, thus amplifying the CRE demand shock mentioned above and further depressing market prices.

Real estate firms' revenue growth has not kept pace with their financing costs, which has potential implications for their repayment capacity. Unlike asset write-downs, falling revenues or rising costs will affect the resources available to firms to meet debt repayments. As a result, fluctuations in these factors will have immediate implications for credit quality. For the sample of firms examined, the ratio between revenue and expenses remained broadly stable over the period studied, suggesting that this sample of large firms has not seen capex costs exceeding their rental growth (**Chart B**, panel b).⁸ While rental growth has kept pace with expenses for large firms, financing costs have increased disproportionately. The median real estate firm saw its interest coverage ratio drop from 4x to 2x over the course of the monetary tightening cycle, although with some recovery since the start of 2024 (**Chart B**, panel b). This will likely have immediate implications for the capacity of firms to meet debt repayments, with clear spillovers to bank and market credit risk. While any potential further monetary easing may reduce pressure on repayment capacity in the coming quarters, firms may still see financing costs rise as the debt that originated during the period of ultra-loose monetary policy matures. Indeed, as of June 2024 20% of loans to euro area real estate firms were due to mature within two years.⁹

⁸ However, market intelligence indicates that this problem may be more pronounced in smaller firms which, unfortunately, are not captured in the sample.

⁹ The data are taken from AnaCredit.

2 Financial markets



2.1

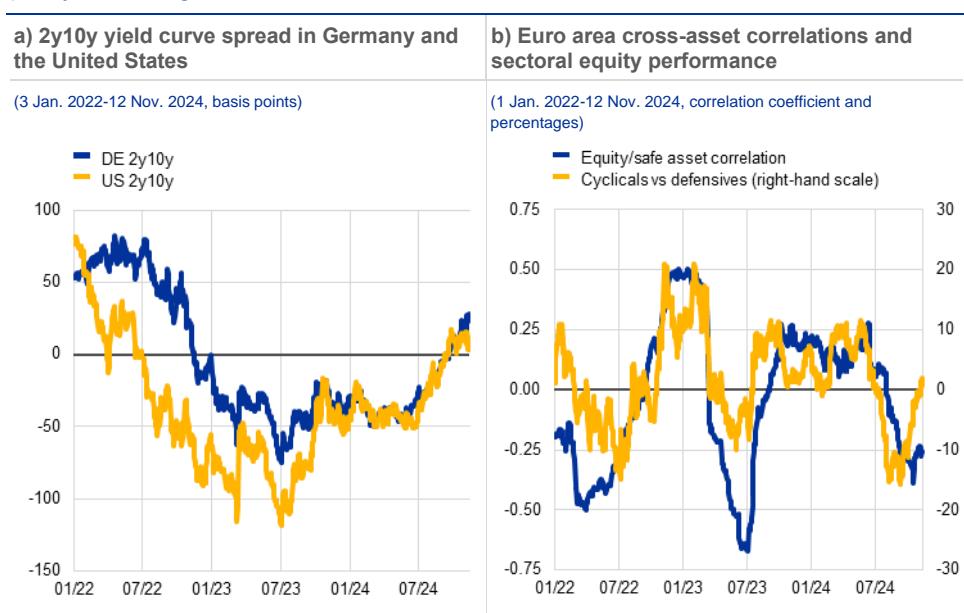
Markets respond to a shifting balance of risk

Euro area and global financial markets have experienced several sharp, albeit generally brief, episodes of volatility over the past six months. Risk appetite in financial markets has been affected by rising geopolitical tensions and expectations of more rapid and significant policy rate cuts globally following a reassessment of growth and inflation outlooks ([Chapter 1](#)). Deteriorating growth prospects, particularly in the United States in the early part of the summer, fuelled speculation about accelerated

monetary policy easing.¹⁰ Following the first moves, financial markets are still pricing in additional cuts in interest rates in both the euro area and the United States ([Overview](#)). Consequently, yield curves on both sides of the Atlantic have largely reverted to their normal positive slope following two years of inversion ([Chart 2.1](#), panel a). This shift indicates that inflation is close to objectives and that interest rates will return towards more neutral levels.¹¹ Additionally, defensive sectors in the euro area – which tend to remain stable and generate consistent returns regardless of overall economic conditions – have mostly outperformed cyclical sectors in equity markets. This suggests that equity investors are also positioning themselves for weaker growth momentum. Correlations between equities and the highest quality sovereign bonds have once again turned negative. This follows several quarters of positive correlation between these asset classes as investors rebalance their portfolios towards safer assets ([Chart 2.1](#), panel b).

Chart 2.1

Financial markets react to growth fears while inflation risks decline, with monetary policy becoming less restrictive



Sources: Bloomberg Finance L.P. and ECB calculations.

Notes: Panel a: The two time series are computed as the difference between the yield on ten-year government bonds and the yield on two-year government bonds in Germany and the United States. Panel b: the equity/safe asset correlation is the rolling 90-day correlation between EURO STOXX and ICE BofA AAA Euro Government Index returns. Relative equity performance is based on the 90-day difference between returns from Goldman Sachs EU cyclicals and defensives indices.

The early-August spike in volatility was short-lived and followed by a swift recovery. The episode was driven by a combination of factors. First, an extended period of low volatility had led to stretched, large and concentrated positions in AI stocks, classic carry trades and short volatility bets. By July, markets had already experienced some corrections, particularly in tech stocks that had previously surged in valuation ([Chart 2.2](#), panel a). Second, in early August, a disappointing US labour

¹⁰ For example, in both the August and the September Bank of America's Global Fund Manager Surveys, respondents considered the biggest tail risk to be a US recession, followed by geopolitical conflict and a resurgence of inflation.

¹¹ For more information, see the box entitled "[The inversion of the yield curve and its information content in the euro area and the United States](#)", *Economic Bulletin*, Issue 7, ECB, July 2023.

market release led to shifts in expectations regarding US monetary policy easing, prompting investors to reassess their risk exposures. The equity market correction began in the United States on Friday, 2 August, with Japan seeing turbulence the following Monday as markets inferred a hawkish stance after a surprise central bank rate increase on 31 July. The reduced US-Japan interest rate differential triggered an unwinding of yen-funded carry trades that affected the Japanese stock market and emerging market currencies in particular. Global hedge funds and other investors began liquidating concentrated positions.¹² Additionally, the reversal of short volatility positions, pockets of illiquidity in some derivatives markets and various technical factors further exacerbated market fluctuations.¹³ This culminated in sharp declines in equity prices, currency fluctuations, a broad-based retreat from riskier assets and a surge in volatility (**Chart 2.2**, panel b and **Chart 2.4**, panels a and b). The turmoil was intensified by escalating geopolitical tensions, which created a highly uncertain environment. However, financial markets rapidly recovered from the largest unwinding of positions on the back of positive US economic data, communication from the Bank of Japan and still-abundant liquidity.

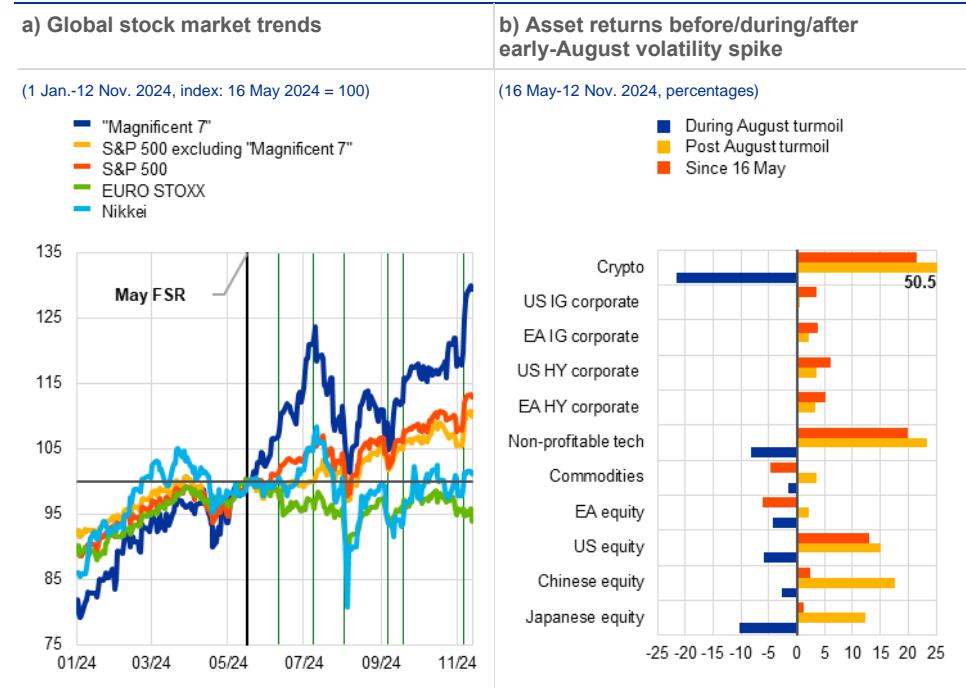
Heightened political uncertainty also impacted euro area asset prices over the last six months. The outcomes of elections, most notably to the EU Parliament and the snap poll in France, have increased political uncertainty in the EU (**Overview**, **Chart 4**, panel a), leading to brief episodes of market volatility. Market corrections were mostly temporary, and most asset classes quickly recovered from their initial losses. While the sovereign bond yield spreads of most euro area members versus German sovereign bonds have continued to fall, the French spreads are now close to or above the levels for several euro area countries with lower credit ratings. More recently, in the week following the US elections, euro area stock markets experienced modest declines. In contrast, US stock markets and certain risky assets such as Bitcoin surged (**Chart 2.2**, panels a and b), reaching new historical highs.

¹² See, for example, “[Carry off, carry on](#)”, *BIS Quarterly Review*, Bank for International Settlements, September 2024.

¹³ For more information on the short volatility strategy, see the box entitled “[Low implied equity market volatility could underestimate financial stability vulnerabilities](#)”, *Financial Stability Review*, ECB, May 2024.

Chart 2.2

Recent bouts of market volatility reflect shifts in the macroeconomic outlook and AI prospects, amid heightened political uncertainty



Sources: Bloomberg Finance L.P. and ECB calculations.

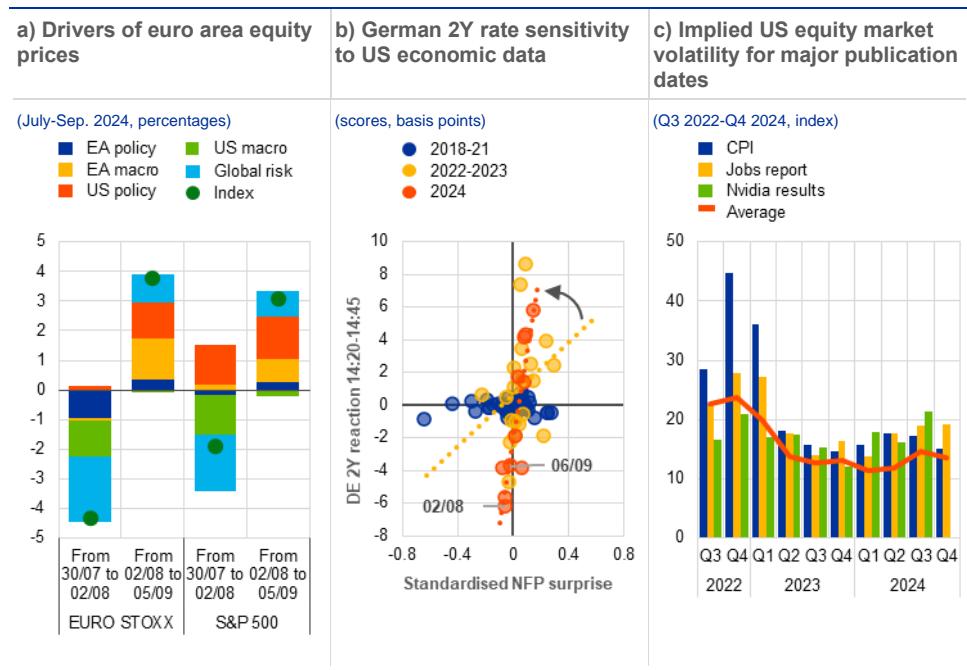
Notes: Panel a: "Magnificent 7" comprises the stocks of Alphabet, Amazon, Apple, Meta, Microsoft, Nvidia and Tesla. From left to right, event lines refer to the publication date of the previous edition of the Financial Stability Review (16 May 2024), the outcome of the European Parliament elections of 6-9 June, the outcome of the snap French elections on 7 July 2024, the 2 August and 6 September releases of US non-farm payroll data, the first Federal Reserve System interest rate cut on 18 September and the US elections on 5 November 2024. Panel b: 16 May is the publication date of the May 2024 Financial Stability Review. "During August turmoil" refers to the period between 31 July and 7 August 2024; "Post August turmoil" is the period after 7 August 2024. IG stands for investment grade; HY stands for high yield; EA stands for euro area. The GS Non-profitable Tech Basket consists of non-profitable US listed companies in innovative industries.

Markets remain sensitive to macroeconomic data and corporate earnings prospects

prospects. Growing concerns over a potential US recession increased the market's focus on incoming macro data over the summer. Since that time, greater optimism regarding US macroeconomic developments alongside monetary policy easing has moved international markets substantially and there have also been significant spillovers to euro area equities. Breaking down market developments into structural drivers of euro area equity prices (**Chart 2.3**, panel a) shows that the August sell-off was primarily driven by the deterioration in the US macroeconomic outlook and global risk sentiment. The subsequent rapid improvement came on the back of moderating growth concerns and expected monetary policy accommodation in the United States and the euro area. The growing sensitivity of global markets to US data is also evident in the increased influence of US employment data releases on euro area market rates since the start of the year. US non-farm payroll surprises have had a much stronger impact on two-year Bund yields than has historically been the case (**Chart 2.3**, panel b). Corporate earnings prospects have also come under increasing scrutiny. Notably, earnings reporting from large tech companies such as Nvidia (**Chart 2.3**, panel c) have significantly influenced equity market volatility over the last few quarters.

Chart 2.3

Markets are increasingly sensitive to growth data and AI earnings prospects



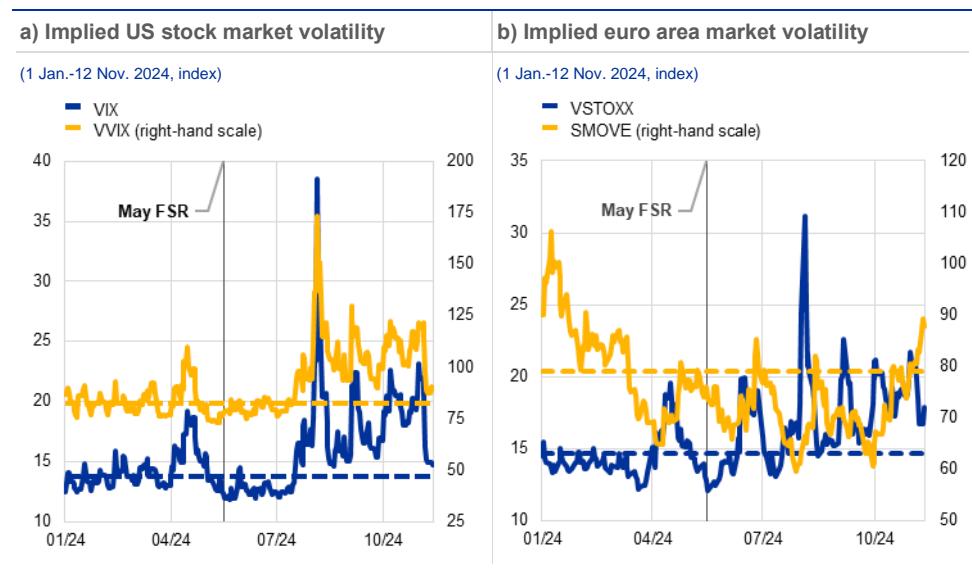
Sources: Bloomberg Finance L.P., LSEG and ECB calculations.

Notes: Panel a: the model is a two-country BVAR including the ten-year euro area overnight index swap rate, the EURO STOXX index of euro area stock prices, the EUR/USD exchange rate, the ten-year euro area overnight index swap rate/US Treasury spread and the S&P 500 index of US stock price. The two-country BVAR model is identified using sign restrictions at impact and is estimated using daily data in the period 2005-24. 30/07 is the date of the Federal Open Market Committee's July meeting; 02/08 is the date of release of the July US jobs report. 05/09 is the date before the release of the August jobs report. Panel b: the graph shows the sensitivity of two-year Bund yields between 14:20 and 14:45 CET on the days when monthly US non-farm payroll (NFP) data are released. The x-axis shows a standardised surprise effect (i.e., actual print – survey expectations, divided by standard deviation of this difference). Data exclude pandemic-related sharp NFP data variations. Panel c: based on 1D VIX; average values in each quarter. CPI stands for the consumer price index inflation rate.

Markets may be entering a new era of heightened volatility as investors navigate an increasingly uncertain environment. Since the previous edition of the Financial Stability Review was published, increased uncertainty surrounding economic growth has led to a marked rise in equity market volatility. Additionally, policy uncertainty has become a key driver of price swings across asset classes. Since mid-July the strength of the global rally in equities has waned somewhat, with “Magnificent 7” stocks in the S&P 500 oscillating between strong corrections and bouts of optimism (**Chart 2.2**, panel a), and S&P 500 small caps outperforming. Typical measures of financial market uncertainty and risk in US equities, such as VIX and the VVIX Index (which measures the expected volatility of the VIX itself and reflects investor uncertainty about future market risk), spiked dramatically during the early-August turmoil (**Chart 2.4**, panel a) and had already increased in European markets at the time of the snap elections in France (**Chart 2.4**, panel b). Although these spikes were short-lived, current equity volatility remains higher than it was during the benign market conditions seen in the first half of 2024, even after a sharp decline following the US elections.

Chart 2.4

New volatility regime amid heightened geopolitical and policy uncertainty



Sources: Bloomberg Finance L.P. and ECB calculations.

Notes: Panel a: the horizontal lines represent the H1 2024 averages; the vertical line indicates the publication date of the previous edition of the Financial Stability Review. Panel b: VSTOXX is a volatility index based on options on the EURO STOXX 50 and SMOVE is the Merrill Lynch 1M EUR Swap Volatility Estimate index.

2.2

Markets remain vulnerable to bouts of volatility amid heightened geopolitical and policy uncertainty

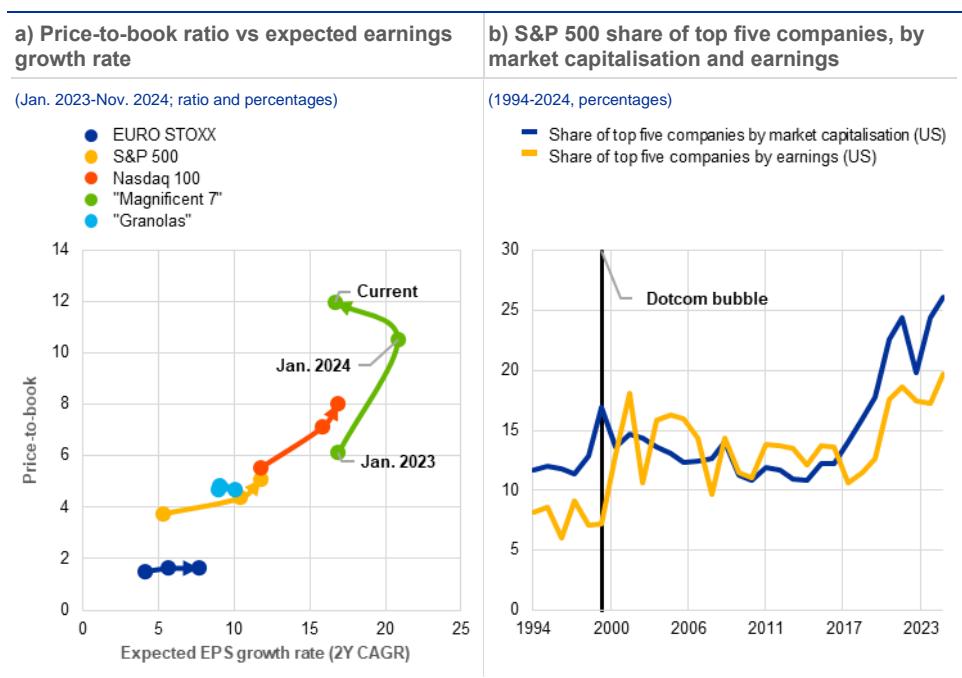
Underlying vulnerabilities in financial markets suggest that recent resilience might not endure under less benign conditions. While markets have recently absorbed tail events swiftly, vulnerabilities stemming from the interplay between the lagged effects of tighter monetary policy, the withdrawal of global central bank liquidity, weaker sovereign backstops (**Chapter 1**) and fiscal policy triggers indicate that future market resilience cannot be guaranteed. Markets remain vulnerable to sudden shifts in monetary policy expectations, especially if future economic conditions were to diverge across major economies. Additionally, these vulnerabilities could be exacerbated in times of stress by structural issues within the financial system, such as the potential adverse effects on market functioning of the rise in passive investing (**Box 3**), increased concentration and an increasing reliance on non-banks (**Chapter 4** and **Box 5**).

High valuations and concentration, particularly in equity markets, remain a primary concern, making markets susceptible to sudden corrections. Recent market corrections have not dissipated concerns over the overvaluation of equity markets (**Chart 2.5**, panel a) or the potential for an AI-related asset price bubble, given that US equity indices rose to new all-time highs already in September and have risen even further since then. While markets have proven relatively resilient thus far, high stock prices may also reflect over-optimistic expectations of firms' earnings prospects. In addition, there are significant concentration risks in several sectors and markets (**Chart 2.5**, panel b). Liquidity is concentrated among a narrow group of

companies in these sectors and markets, increasing the dispersion of stock. In equity markets, the combination of high valuations and extreme concentration in a handful of individual stocks increases the likelihood of idiosyncratic shocks becoming systemic, as market sensitivity to these companies rivals that of macroeconomic data releases (**Chart 2.3**, panel c). Valuations and risk premia are therefore vulnerable to a shift in risk appetite. This could be sparked by factors like a weakening of growth prospects, an unexpected uptick in inflation, a further escalation of geopolitical tensions or disappointing corporate earnings. Spikes in market volatility could in turn trigger forced asset sales in euro area investment funds, which could also have a significant impact on euro area bond markets, particularly given the large footprint of these funds in euro area corporate bonds (**Box 5**). For these non-banks, high and growing concentration in equity investments, particularly in US tech stocks (**Chapter 4, Chart 4.2**, panel b), increases the potential for revaluation shocks.

Chart 2.5

High valuations and extreme concentration in equity markets, as the AI rally has led to a substantial dispersion of stock returns



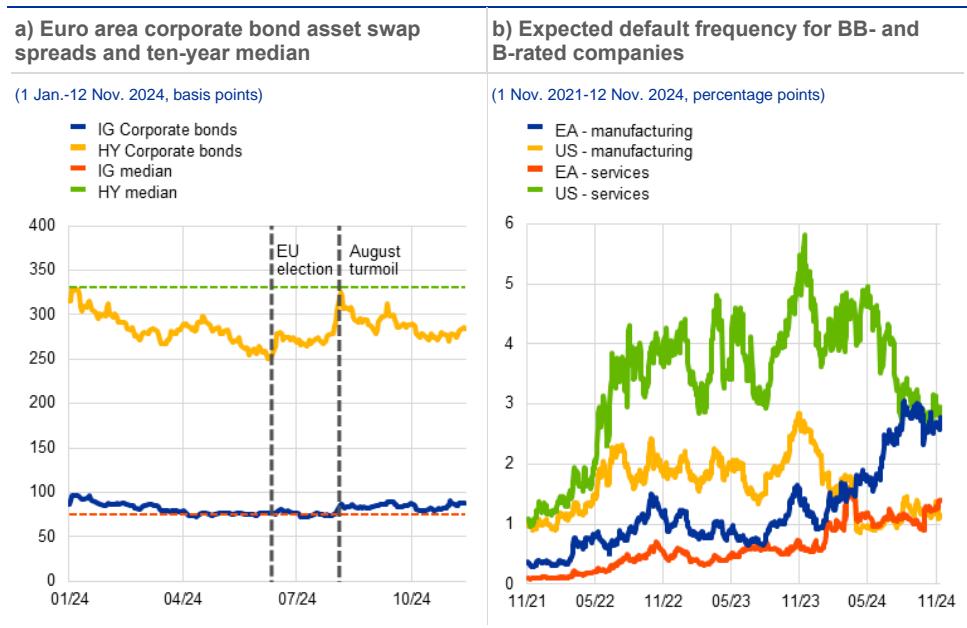
Sources: Bloomberg Finance L.P. and ECB calculations.

Notes. Panel a: "Granolas" comprises the stocks of GSK, Roche, ASML, Nestlé, Novartis, Novo Nordisk, L'Oréal, LVMH, AstraZeneca, SAP and Sanofi. Earnings per share (EPS) are based on blended 2Y-forward EPS expectations. CAGR stands for cumulative gross annual return. Panel b: the latest observations are for 12 November 2024. Measures are calculated for the S&P 500 Index (United States).

With corporate bond spreads below or around their ten-year medians, market pricing appears benign despite elevated macroeconomic uncertainty (Chart 2.6, panel a). However, corporate bond markets would be vulnerable to a reassessment of risk if macroeconomic conditions were to surprise to the downside. In particular, this is reflected by increased expected default frequencies for high-yield corporates in the euro area manufacturing sector, which is currently facing major economic challenges (**Chart 2.6**, panel b).

Chart 2.6

Corporate bond spreads appear to be benign but are vulnerable to negative surprises, particularly in the manufacturing sector



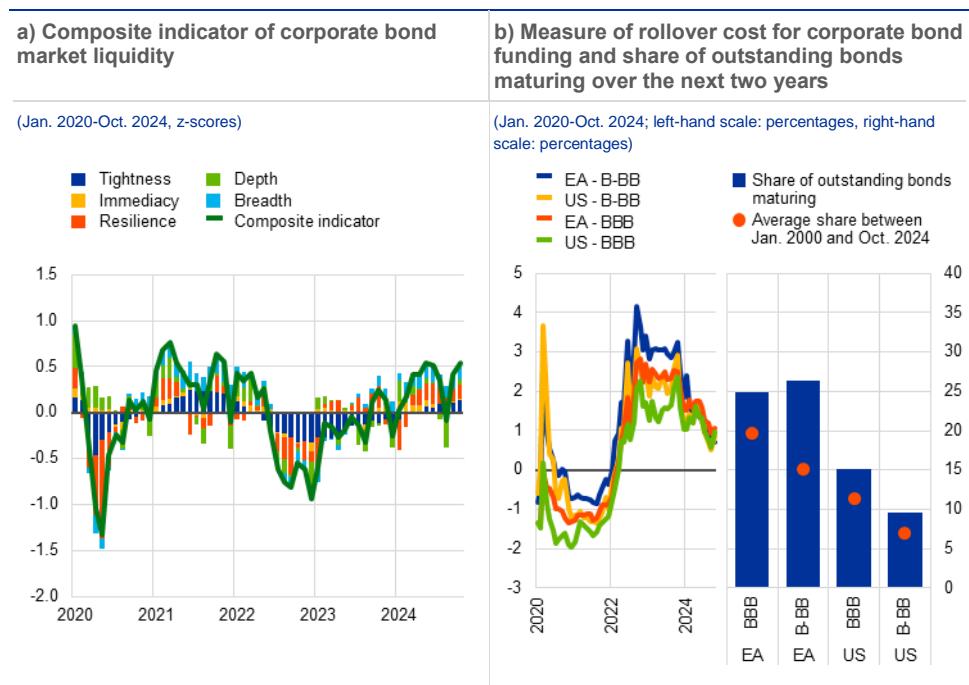
Sources: LSEG, ICE Bank of America, Moody's Analytics and ECB calculations.

Notes: Panel a: IG stands for investment grade; HY stands for high yield. ICE BofA Euro Corporate Index is used for IG corporate bonds and ICE BofA Euro High Yield Index for HY corporate bonds. Panel b: market-value weighted average of the annual expected default frequencies of bonds rated B or BB issued by companies in the manufacturing and services sectors. The individual bonds are euro-denominated constituents of the ICE BofA High Yield indices. EA stands for euro area.

Liquidity conditions in euro area corporate bond markets remain supportive, but comparatively high rollover needs could exacerbate liquidity strains for some high-yield issuers. Pricing in corporate bond markets is supported by liquidity conditions that are largely positive, except for the seasonal decline in market liquidity over the summer when market depth is typically low due to the holiday period (Chart 2.7, panel a). Although funding cost pressures are significantly lower than they were last year and might continue to fall in line with further monetary easing, the anticipated debt rollover needs of corporates point to further increases in average bond financing costs. Moreover, despite a decrease in the amount of outstanding high-yield debt in recent years, the maturity structure of the segment reveals a higher than average share of bonds that are maturing over the next two years (Chart 2.7, panel b). This is putting upward pressure on bond funding costs for these high-yield issuers.

Chart 2.7

Corporate bond market liquidity is largely supportive, but rollover costs remain comparatively high



Sources: Bloomberg Finance L.P., MarketAxess (Trax), LSEG, ICE Bank of America, Moody's Analytics, ECB and ECB calculations.
Notes: Panel a: composite liquidity indicator based on number of market-makers, share of non-quoted or non-traded securities, transaction frequency, trade size, dealer inventory, traded volume, turnover ratio, spread dispersion, volume concentration and market efficiency coefficient. Panel b: the left graph shows the rollover cost of corporate bond financing in the euro area and the United States, broken down by rating bucket. The rollover cost is the face value-weighted average difference between the yield to maturity and the coupon rate of individual bonds. The right graph shows the share of corporate bonds that are maturing within the next two years and its average between January 2000 and the latest monthly observation. EA stands for euro area.

In summary, while recent market corrections have been short-lived, markets remain susceptible to adverse dynamics if further negative shocks occur under less benign conditions. Thus far, reversals of risk premia have been short-lived, potentially fostering complacency and undue risk taking by investors, with equity indices reaching new all-time highs in September. Ongoing geopolitical tensions, heightened growth risks and upcoming elections in 2025 might serve to increase market volatility. Furthermore, signs of overvaluation and extreme concentration in financial markets are raising concerns over systemic vulnerabilities. In this context, further adverse shocks could trigger sharp adjustments in the valuations of risky assets, potentially undermining broader financial stability.

2.3

High risk of adverse global spillovers to euro area financial markets

The episode of volatility in August has once again underscored the deep interconnectedness of global financial markets. Expectations of policy shifts in one region quickly reverberate around the world across asset classes, impacting global financial conditions. Alongside the unprecedented global IT outage in July, recent market developments have demonstrated how risks to the financial system can materialise rapidly on a global scale.

Shifts in global investment flows could also challenge euro area bond markets.

In August the decisions taken by Japanese investors – who have a significant presence in global financial markets, including euro area sovereign debt – were significantly impacted by the shrinking interest rate differentials that followed the tightening of monetary policy by the Bank of Japan. Heightened exchange rate volatility (**Chart 2.8**, panel a) and a further decline in interest rate differentials, coupled with higher term premia on Japanese sovereign bonds, could stimulate the repatriation of investments.¹⁴ An abrupt withdrawal of Japanese investors from global bond markets could have a significant effect on prices. This would be particularly evident in more concentrated segments, such as euro area sovereign bonds, that could become stressed (**Box 1**). Any significant widening of spreads in euro area sovereign bond markets could shift market focus towards fiscal paths. This might be challenged by the fact that the market pricing of sovereign risk in the euro area appears to be more benign than that indicated by credit rating agencies' assessments (**Chart 2.8**, panel b).

The euro area's exposure to the US financial system has grown in recent years and financial linkages between the two regions have deepened. Cross-border listings have increased as a significant number of euro area companies have opted to list on US exchanges to gain access to deeper liquidity and more favourable valuations. In addition, the potential for spillover effects from US equity and debt markets to euro area markets remains high, given persistent US debt sustainability concerns, which might increase financial market volatility due to fiscal slippage.¹⁵ Any spike in volatility could be accentuated by a deterioration in market liquidity and an increase in volatility in the US bond market (**Chart 2.8**, panel c).¹⁶ In stressed market conditions, the growing importance of global hedge funds in European sovereign bond markets could have a potentially amplifying effect via rapid strategy reversals.¹⁷ This could lead to heightened volatility and pose challenges to the smooth functioning of euro area sovereign bond markets. Moreover, potential shocks in the United States could pose risks to euro area financial stability due to euro area non-banks' rising exposures to US issuers and big tech (**Chapter 4**).

¹⁴ By the end of July, the yen depreciation trend reversed sharply following the Bank of Japan's indication of further monetary policy tightening. The unwinding of yen carry trades at the beginning of the summer, which had put additional upward pressure on the currency, was one key amplifying factor for the sharp movement in the yen exchange rate.

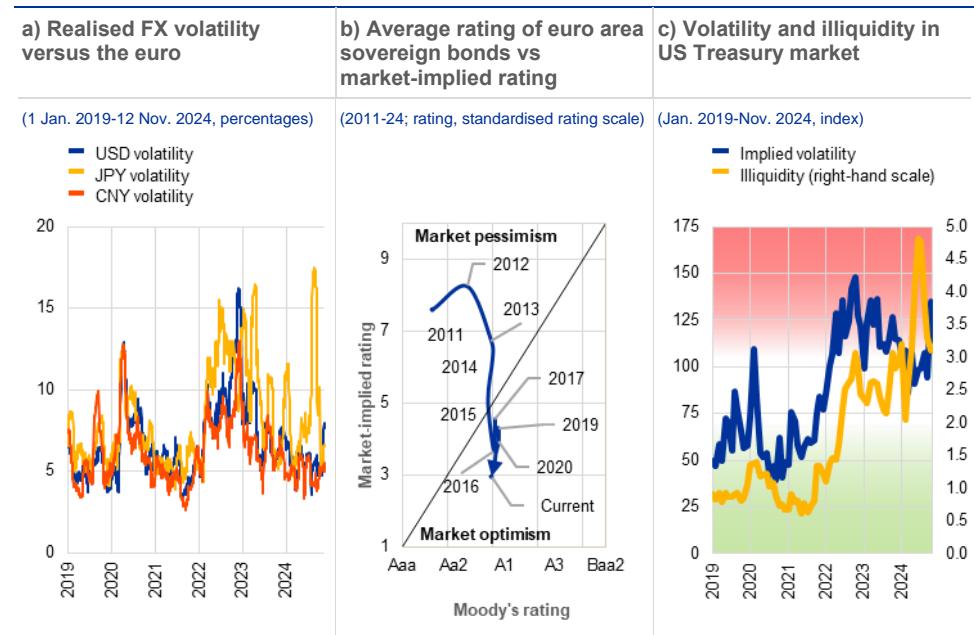
¹⁵ See the section entitled "[Exogenous risks could add to volatility in euro area markets](#)", *Financial Stability Review*, ECB, May 2024. See also see the box entitled "[Financial stability risks from basis trades in the US Treasury and euro area government bond markets](#)", *Financial Stability Review*, ECB, May 2024.

¹⁶ See the box entitled "[US Treasury market conditions and global market reactions to US monetary policy](#)", *Economic Bulletin*, Issue 8, ECB, August 2023.

¹⁷ See Ferrara, F.M. et al., "[Hedge funds: good or bad for market functioning?](#)", *The ECB Blog*, ECB, 23 September 2024.

Chart 2.8

Interconnected global financial markets render euro area sovereign bond markets vulnerable to external factors



Sources: Bloomberg Finance L.P., Moody's Analytics and ECB calculations.

Notes: Panel a: the y-axis is computed as the 30-day standard deviation of daily changes. Panel b: the current value is as at 12 November 2024. Each data point shows an average of market-implied ratings from bond and credit default swap pricing, based on Moody's MIR methodology*. Panel c: the latest observations are for 12 November 2024. "Implied volatility" is proxied by the MOVE Index and "illiquidity" by the Bloomberg US Govt. Securities Liquidity Index. The MOVE Index measures US bond market volatility by tracking a basket of OTC options on US interest rate swaps.

* See Dwyer, D.W., Moore, D. and Wang, Y., "Moody's Market Implied Ratings: Description and Methodology", Moody's Analytics.

Vulnerabilities in China may also be having an adverse effect on market sentiment, with direct and indirect spillovers to euro area markets. Any potential for negative surprises in the Chinese economy remains a key external risk to the euro area's medium-term economic outlook (**Chapter 1**). While direct securities exposure to Chinese companies remains limited overall, several euro area firms in more cyclical sectors have considerable exposure to the ongoing slowdown in China. Also, China-sensitive EU companies have risen in importance in broad euro area equity indices. For this reason, further negative surprises in China may have adverse effects on financial conditions in the euro area as well. In addition, while shocks originating in China have a modest impact on core financial markets, the impact on commodity markets can be larger.¹⁸

Geopolitical risks and heightened policy uncertainty continue to exert significant pressure on global financial markets and commodity prices.

Geopolitical risks are increasingly influencing investor behaviour and have the potential to significantly disrupt markets.¹⁹ It remains challenging for markets and financial institutions to price and manage these risks due to their often unquantifiable and binary nature. The more enduring effects of geopolitical risks on financial stability are likely to stem from the real economy. These are already having a noticeably

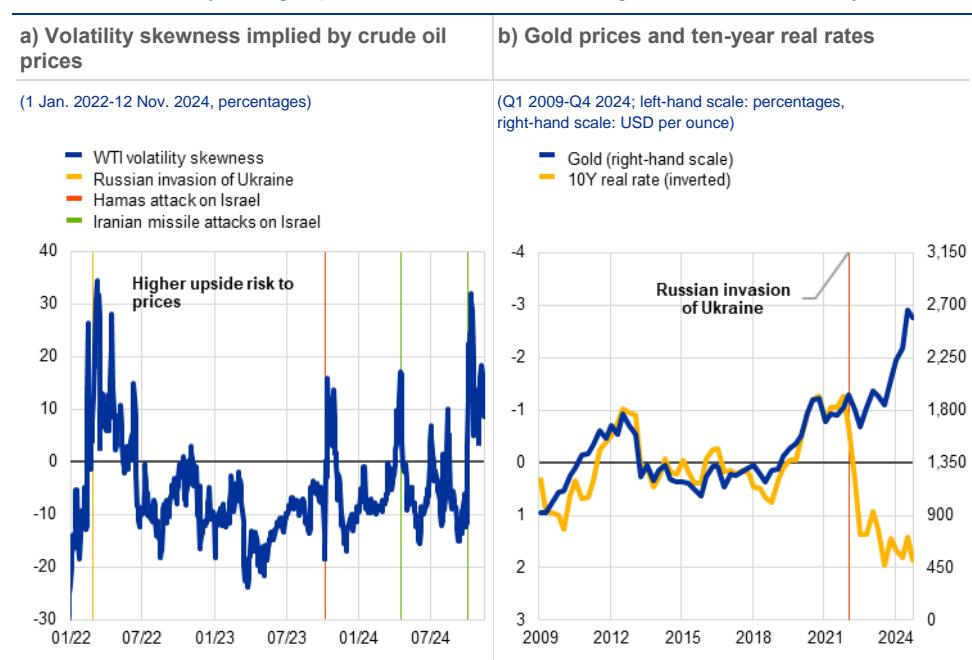
¹⁸ See the box entitled "The impact of Chinese macro risk shocks on global financial markets", *Financial Stability Review*, ECB, May 2022.

¹⁹ See the special feature entitled "Turbulent times: geopolitical risk and its impact on euro area financial stability", *Financial Stability Review*, ECB, May 2024.

adverse effect on the already-challenging fiscal trajectories in the United States and the euro area. In addition, political fragmentation in the euro area is raising concerns about fiscal policy paths and the implementation of key structural reforms. These uncertainties are elevating market volatility risks, and geopolitical and policy-driven shocks are seen as persistent threats. Any escalation of geopolitical conflicts, particularly in Ukraine and the Middle East, might not only generate financial market volatility but could also have a further impact on energy prices (**Chart 2.9**, panel a). This could potentially affect inflation dynamics and monetary policy in advanced economies where markets expect policy rates to decline. In this environment, gold has regained momentum as a global hedge against uncertainty (**Chart 2.9**, panel b). This trend might also reflect a stronger appetite for real assets from some major central banks in emerging economies following the Russian invasion of Ukraine. Since then, the negative correlation between long-term real rates and the gold price has markedly reversed.

Chart 2.9

Global uncertainty and geopolitical tensions are driving trends in commodity markets



Sources: Bloomberg Finance L.P. and ECB staff calculations.

Notes: Panel a: West Texas Intermediate (WTI) volatility skewness is calculated as the difference between implied volatility in 1M 5DC and 5DP options on WTI crude oil. Panel b: Data for Q4 2024 are as of 12 November 2024. Real rates are calculated as US ten-year government bond yields less ten-year inflation swap rates.

Box 3

Passive investing and its impact on return co-movement, market concentration and liquidity in euro area equity markets

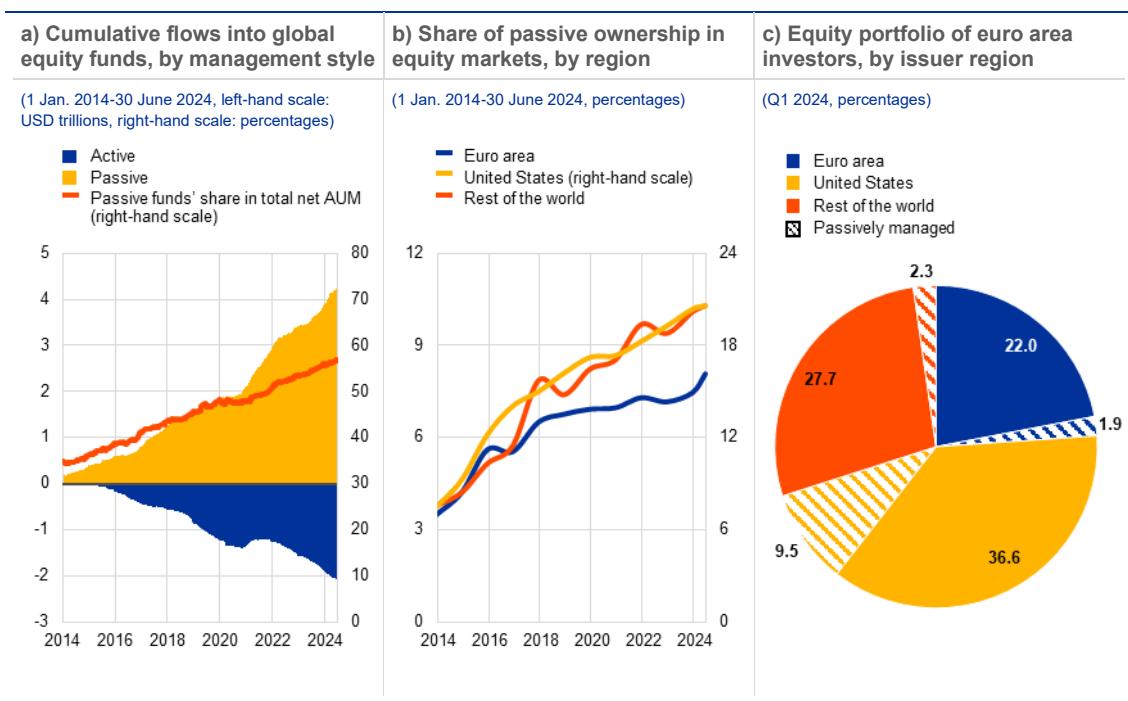
Prepared by Daniel Dieckelmann, Emilio Siciliano and Andrzej Sowiński

There has been a continuing shift from active to passive investing in equity markets over the past decade, raising questions over the implications for financial stability. Passive investing aims to deliver a return which mirrors that of the overall market, often proxied by a broad index. Passive funds try to achieve this by replicating the benchmark portfolio fully, partially (by buying a

subset of stocks in the index) or synthetically (by using derivatives on the broad indices). By contrast, active investing aims to outperform the market. The appeal of passive investing is based, among other things, on the assumption that, after fees, the average return on actively managed investments will be lower than that on passively managed investments. On the basis of empirical evidence supporting this assumption, investors have continued to reap these cost benefits by moving their funds from active to passive investment structures (**Chart A**, panel a).²⁰ While the euro area equity market continues to lag behind the US market in terms of passive ownership, it does share the same upward trend (**Chart A**, panel b). That said, euro area investors are more exposed to the impact of passive investing through their large US stock holdings (**Chart A**, panel c). Although it provides clear benefits to individual investors, passive investing might be associated with risks that, on a system-wide level, may undermine financial stability via multiple channels.²¹ This box focuses on three such channels, namely the impact that passive investing can have on stock return co-movement in the euro area, on equity market concentration and on market liquidity clustering.

Chart A

While the global trend towards passive equity investment continues, euro area investors are exposed to the potential side effects of passive investing mainly through the US market



Sources: Bloomberg Finance L.P., EPFR Global and ECB calculations.

Notes: Panel a: AUM stands for assets under management. Panel b: calculated as the average for the members of the EURO STOXX (euro area), the S&P 500 (United States) and the S&P Global 1200 excluding euro area and US companies (rest of the world), weighted by market capitalisation. Panel c: shaded areas are the approximated share of passively managed exposures based on the average passive share for individual markets. A very recent study has found that the actual passive ownership share might be considerably higher than that reported because of “other kinds of passive investors, such as institutional investors with internally managed index portfolios and active managers who are closet indexing”. See Chinco, A. and Sammon, M., “[The passive ownership share is double what you think it is](#)”, *Journal of Financial Economics*, Vol. 157, July 2024.

²⁰ See, for example, Sharpe, W.F., “[The Arithmetic of Active Management](#)”, *Financial Analysts Journal*, Vol. 47, No 1, Jan.-Feb. 1991, pp. 7-9, on the theoretical argument and Sushko, V. and Turner, G., “[The implications of passive investing for securities markets](#)”, *BIS Quarterly Review*, Bank for International Settlements, March 2018, on empirics.

²¹ These channels include, among others, reduced market liquidity, lower market efficiency, elevated stock price volatility, stronger stock return co-movement, as well as reduced redemption risks and increased concentration in the asset management industry. See, for example, Anadu, K., Krutli, M., McCabe, P. and Osambela, E., “[The Shift from Active to Passive Investing: Potential Risks to Financial Stability?](#)”, *Finance and Economics Discussion Series*, No 2018-060R1, Board of Governors of the Federal Reserve System, August 2018, revised June 2020.

Passive investing may increase co-movement among stock returns, making markets more volatile. As passive investment strategies aim to achieve a benchmark return, their trading activity is not driven by stock fundamentals. To minimise tracking error, passive managers buy the whole basket of index constituents in response to fund inflows (selling in the case of outflows) and adjust their portfolios in line with changes to the index composition. This basket trading may result in increased trading commonalities among stocks in broad equity markets and thus stronger return co-movement. The simultaneous buying (selling) of stocks within a specific index causes constituent stocks to co-move throughout the trading day, increasing correlation.²² At the portfolio level, this increased return co-movement of constituent stocks results in higher return volatility for the portfolio as there are fewer diverging stock price movements to offset each other. For the euro area, empirical findings suggest that an increase in the share of passive investors in a stock's ownership structure is associated with a higher correlation of that stock with the broad market (**Chart B**, panel a). Between the first quarter of 2010 and the first quarter of 2024, a 1 percentage point increase in the passive ownership share of a euro area stock was associated with an increase of around 0.005 in the correlation coefficient with the EURO STOXX index.²³ Therefore, a continued shift towards passive investing is likely to undermine the benefits of diversification for investors, making the performance of their portfolios more volatile.

Passive funds may increase equity market concentration, potentially exposing investors to heightened idiosyncratic risks from the largest companies. Since growing equity market concentration has raised some financial stability concerns recently, it is worth investigating the potential role of passive funds in this trend.²⁴ Partially replicating funds, for example, consistently overweight larger companies for the sake of operational simplicity, while keeping tracking error contained. Counterparties to derivative trades with funds that replicate synthetically are also likely to overweight the largest companies as part of their hedging strategy. However, most passive funds fully replicate their benchmarks, suggesting that replication style has a contained impact on concentration overall. That said, even if the demand from passive funds for individual stocks is proportionate to their index share, the impact on price might diverge across companies, depending on market liquidity. For the largest companies, market liquidity is typically higher in nominal terms but does not scale in proportion to their much larger capitalisation and index weights. Consequently, passive fund flows have greater potential to affect the prices of larger companies than the prices of smaller ones (**Chart B**, panel b).²⁵ As a result, continued inflows may increase the market capitalisation of the biggest entities, taking their index weights even higher and ensuring a larger share of demand from passive funds going forward.²⁶ This, in turn, might increase the concentration of market capitalisation and make equity markets more susceptible to idiosyncratic risks from the largest companies.

²² See, for example, Barberis, N., Shleifer, A. and Wurgler, J., “Comovement”, *Journal of Financial Economics*, Vol. 75, Issue 2, February 2005, pp. 283-317, and Da, Z. and Shive, S., “Exchange traded funds and asset return correlations”, *European Financial Management*, Vol. 24, Issue 1, January 2018, pp. 136-168.

²³ For reference, the average return correlation coefficient of a euro area stock with the EURO STOXX index between the first quarter of 2010 and the first quarter of 2024 is 0.50.

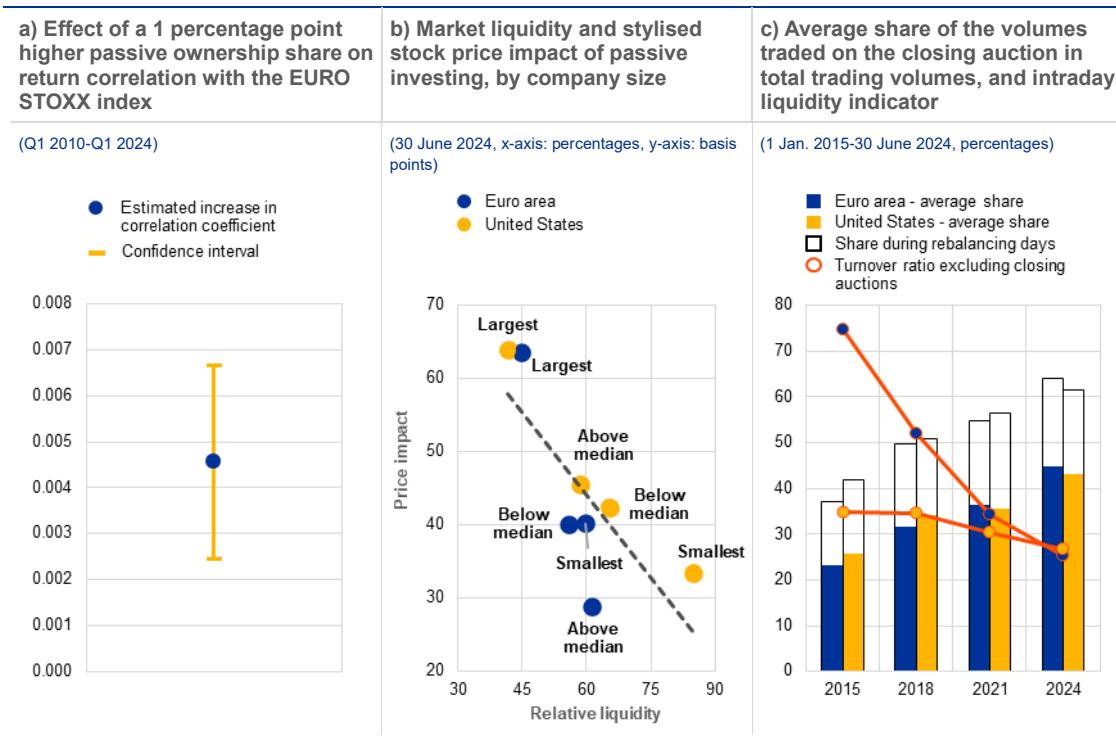
²⁴ See the section entitled “Benign pricing of risk keeps asset prices vulnerable to shocks”, *Financial Stability Review*, ECB, May 2024.

²⁵ The effect might be limited if the inflow into passive funds is funded by the outflow from active funds present in the same market. In such a scenario, the net price impact is also dependent on the structure of active-fund holdings.

²⁶ Such an amplification loop stemming from price impact can persist longer when the prices of larger companies exhibit a strong upward trend. In such cases, risk-return considerations make active investors less likely to align prices with fundamentals by underweighting or short selling the relevant stocks. See, for example, Jiang, H., Vayanos, D. and Zheng, L., “Passive Investing and the Rise of Mega-Firms”, SSRN, June 2024.

Chart B

Passive investing increases the return co-movement of stocks with the broad market and may result in higher market concentration and lower intraday liquidity



Sources: Bloomberg Finance L.P. and ECB calculations.

Notes: Panel a: The estimate is based on a panel regression with stock and time fixed effects that regress correlation with the EURO STOXX index on the passive ownership share of constituent stocks, controlling for market capitalisation, liquidity, valuation and 1 autoregressive lag of the correlation coefficient. The interval is set at 95% confidence. The EURO STOXX index captures 90% of euro area free-float market capitalisation. The results also hold in a two-step regression set-up, using index inclusion as an instrumental variable for passive ownership share. Panel b: average price impact on the stocks included in the EURO STOXX (euro area) and the S&P 500 (United States), assuming that the demand from passive funds is equal to 0.1% of the index free float over the period of one month, proxied by the Bloomberg Liquidity Assessment model. Purchases by passive funds are assumed to be proportionate to index weights. Relative liquidity is proxied by the average turnover ratios, calculated as the value of transactions executed in the last 12 months divided by average capitalisation. Averages are weighted by index share. Panel c: closing auction occurs at the end of the trading session. This is when all new orders are no longer matched in real time, but first aggregated, and then the final closing price is determined through an auction process. Average share for the stocks included in the EURO STOXX (euro area) and the S&P 500 (United States). Average turnover ratio is calculated as the value of transactions executed outside closing auctions divided by average capitalisation. For 2024 the turnover was annualised proportionately to the number of trading days remaining. Averages are weighted by market capitalisation.

The ability of equity markets to absorb shocks may be inhibited by the growing concentration of liquidity at closing auctions impacted by passive investing. Passive funds avoid trading during a continuous trading session, preferring to trade at closing auctions where the final closing price is determined, to reduce the tracking error against their benchmark. This is evidenced by a significantly larger share of closing auction volumes on index rebalancing days, when activity by passive funds is higher (**Chart B**, panel c). On other days, passive funds trade at closing auctions to manage their flows. A structural preference of this kind may attract other market participants, in line with a “liquidity begets liquidity” mechanism.²⁷ This concentration of liquidity might feed into the deterioration of intraday liquidity observed over the last decade. While the impact of such a structural

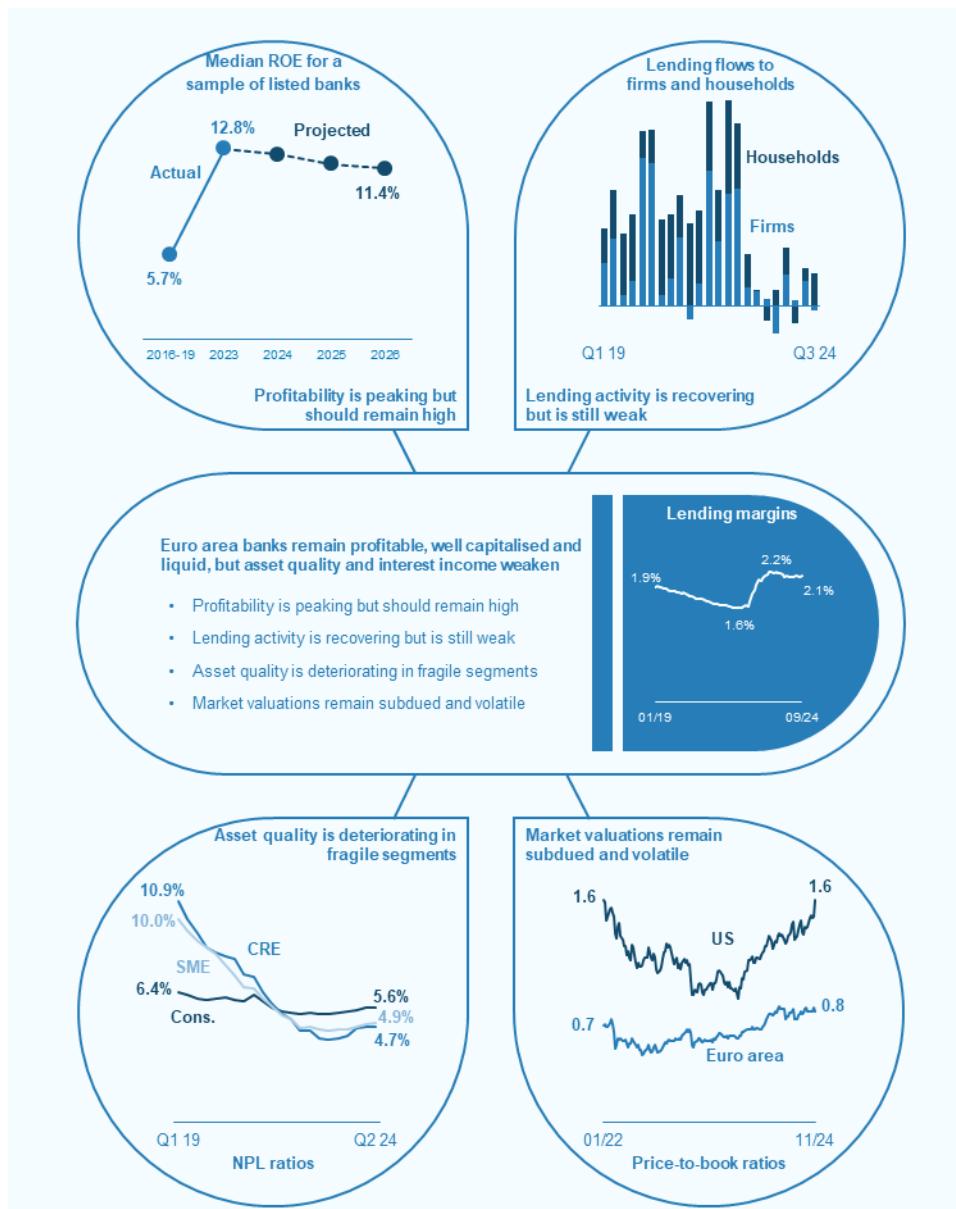
²⁷ See, for example, Bogousslavsky, V. and Muravyev, D., “Who trades at the close? Implications for price discovery and liquidity”, *Journal of Financial Markets*, Vol. 66, November 2023. A high share of the volumes traded during the closing auction in the euro area may also result from the activities of US investors, for whom the trading session starts shortly beforehand.

change on market efficiency is debatable,²⁸ it might reduce the ability of markets to absorb shocks during continuous trading sessions, making them less resilient overall.

Passive investing continues to provide investor benefits but might also adversely affect market functioning, thus highlighting the importance of investor heterogeneity. Elevated fees in actively managed funds are continuing to push investors towards less costly passively managed structures. As this box shows, while at present the passive ownership share of euro area stocks is still only half that of the United States, there is an upward trajectory in both regions, and euro area investors are increasingly exposed to the impact of passive investing through their US stock exposures. In aggregate, empirical evidence suggests that rising passive ownership is associated with an increase in the correlation of stocks with the broad market, a heightened concentration of market capitalisation and a “lumping” of liquidity around the closing auction. These relationships could undermine the benefits of diversification for investors and reduce the ability of markets to absorb shocks, potentially leading to larger price volatility in the end. Higher volatility could, in turn, inhibit the role played by markets in funding the real economy if price uncertainty caused corporations to put off decisions to raise capital. Overall, the findings in this box imply that active investors play an important role in improving the efficiency of price formation. This should be taken into consideration when designing policies, such as leverage limits, which affect their trading capacity. Such investors might be better off aligning stock prices with their fundamentals and supporting market liquidity in times of stress, thus partly mitigating spillovers from the rise in passive investing.

²⁸ See, for example, Comerton-Forde, C. and Rindi, B., “[Trading @ The Close](#)”, SSRN, 28 September 2022, and Bender, M., Clapham, B. and Schwemmlein, B., “[Shifting Volumes to the Close: Consequences for Price Discovery and Market Quality](#)”, SSRN, 20 March 2024.

3 Euro area banking sector



3.1

Banks' overall funding costs are set to decline

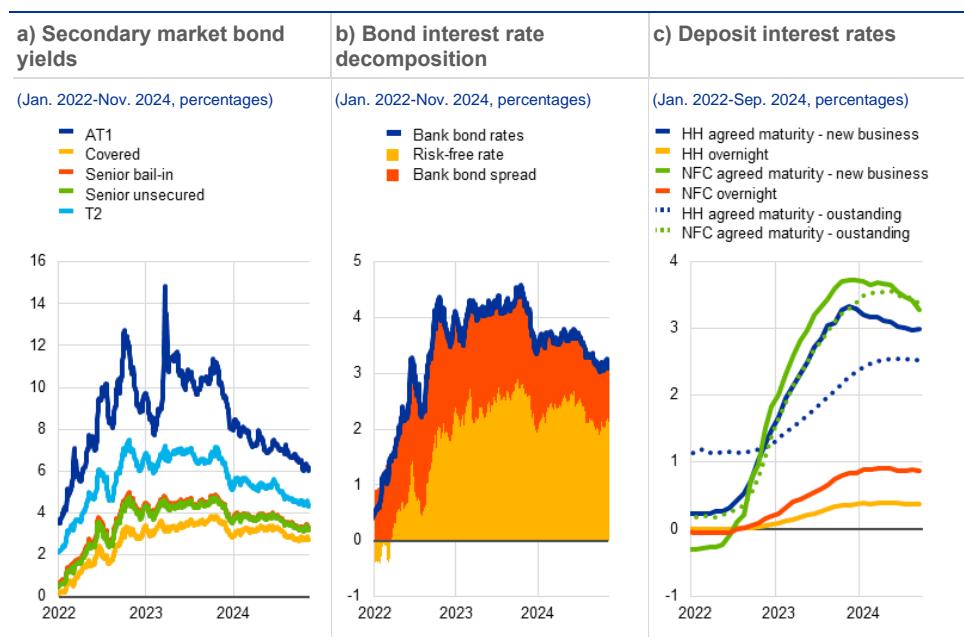
Marginal funding costs are declining as the ECB eases its monetary policy stance.

This easing has been characterised by cuts to policy rates and expectations of further cuts ahead. This has led to a decline in the yield curve (first in the long end and then in the short end) and, in turn, a decrease in banks' marginal funding costs. Euro area bank bond yields had already fallen from their peak in the second half of 2023, thanks to the compression of risk premia and lower risk-free rates on the back of

a lower long end on the yield curve. After that, they fell again last summer due to a further decline in risk-free rates (**Chart 3.1**, panel a). Overall, bank bond spreads have remained consistently at their lowest levels since the start of the hiking cycle, notwithstanding a brief period of volatility in French security prices following the announcement of snap elections in June (**Chart 3.1**, panel b). Term deposit rates for new business started to decline around the end of 2023 for both households and firms (**Chart 3.1**, panel c) as the middle and short end of the yield curve declined. Finally, overnight deposit rates, which typically react more sluggishly to changes in the yield curve, have stopped increasing and have started to decline somewhat for corporate deposits.

Chart 3.1

Marginal funding costs are declining while the cost of banks' outstanding liabilities is peaking



Sources: S&P Dow Jones Indices LLC and/or its affiliates, ECB (MIR) and ECB calculations

Notes: Panel b: covers the senior unsecured, senior bail-in, covered, AT1 and T2 bond segments. The weighted average risk-free reference rate is calculated as the difference in the yield to maturity and the z-spread of the respective bond, weighted by the notional amount. Panel c: HH stands for household; NFC stands for non-financial corporation.

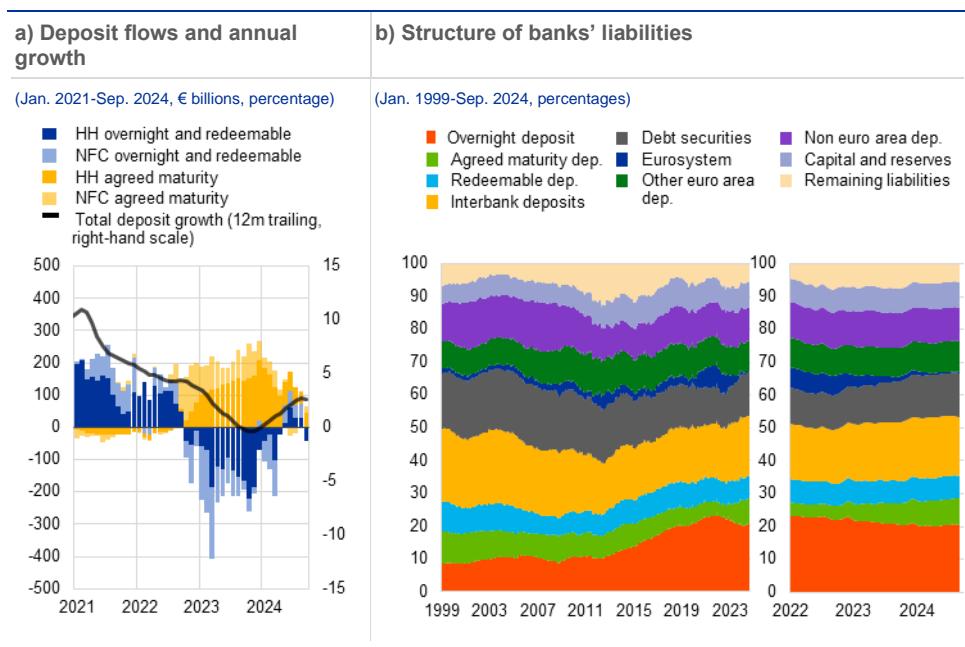
The composition of bank funding is stabilising, with a lower share of overnight deposits and Eurosystem funding than during the COVID-19 pandemic period.

The substantial shift towards term deposits and market-based instruments triggered by the interest rate hiking cycle has come to an end. The reallocation from overnight to agreed maturity deposits (**Chart 3.2**, panel a) came to an end in March 2024 and the issuance of bank bonds, still material in the first quarter of 2024, has stalled since then, while the repayment of TLTRO III funds is nearly complete. As a consequence, the liability structure of banks has stabilised, in a partial reversion from the change in composition seen in the decade of negative interest rates from 2012 to 2022 (**Chart 3.2**, panel b). There has been an increase in deposits with agreed maturity, bonds and interbank deposits as well as a decline in overnight deposits and borrowing from the Eurosystem compared to the pandemic period.

This shift toward more bond issuance and interbank funding has a mixed impact on risk. On the one hand, bonds contribute to the stock of “bail-inable” liabilities, thereby mitigating moral hazard. Also, greater use of bonds broadens the investor base, making funding less sensitive to sectoral shocks. However, the costs associated with bonds are typically more volatile than those for household and corporate deposits, and market access can quickly evaporate in times of stress. Credit risk premia on bank bonds could widen if financial markets reassess sovereign risk in the euro area or adverse geopolitical events materialise (**Chapter 2 and Box 1**). Moreover, the net issuance of bank bonds has increasingly been absorbed by foreign investors, households, firms and investment funds (**Chart 3.3**, panel a). While this constitutes a broadening of the investor base, it also poses risks. Foreign investors and investment funds tend to be volatile investors (due to the home bias of the former and the greater sophistication and risk sensitivity of the latter) while households and firms, currently attracted by the high returns available by historical standards, could have less appetite as yields decline.

Chart 3.2

The shift from overnight to term deposit stops while banks' liability structure stabilises



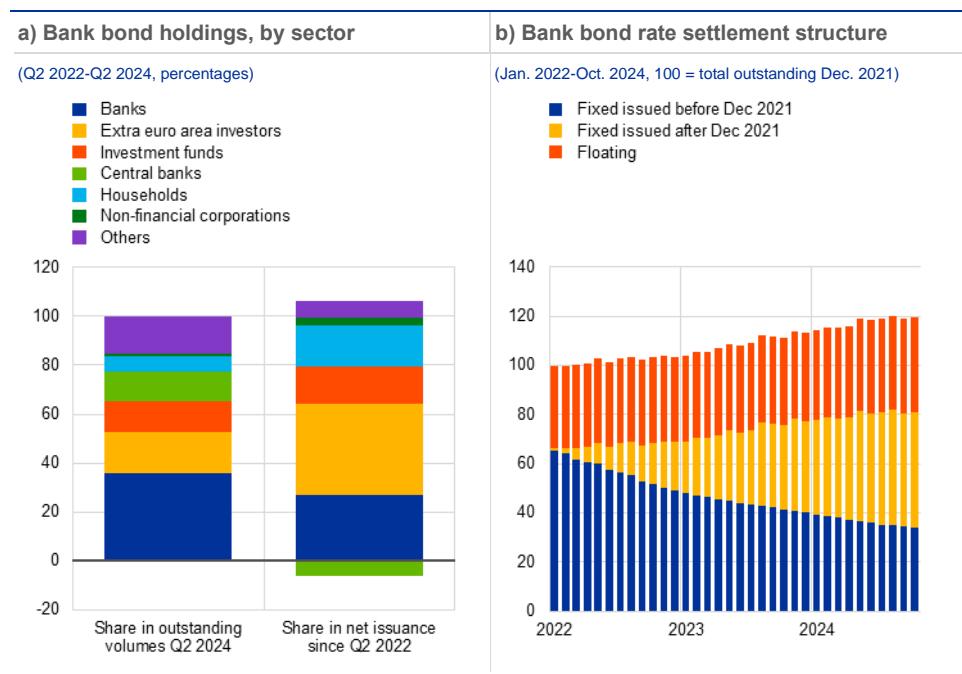
Sources: ECB (BSI) and ECB calculations.

Notes: Panel a: three-month cumulated flows and growth defined as annual deposit flow over one-year lagged outstanding volume; Panel b: unconsolidated data. Interbank funding includes intragroup funding.

Banks' outstanding funding costs are peaking and are set to decline. The upward pressure on average funding costs from the rollover of liabilities issued before the hiking cycle has lost a significant amount of steam. With regard to deposits, the gap between new business and outstanding term interest rates is narrowing, indicating that there is low upward pressure on average funding costs from the rollover (**Chart 3.1**, panel c). For bonds, floating rates are mechanically repricing to declining risk-free rates, while fixed-rate bonds have been progressively refinanced since the start of the hiking cycle (**Chart 3.3**, panel b). In this context, banks' overall funding costs are expected to decline in the coming months, although this will be partially attenuated by interest rate hedging.

Chart 3.3

Foreign investors, households, firms and investment funds have absorbed an increased share of recent net bond issuance, while the volume of bonds to be rolled over at higher rates is declining



Sources: ECB (BSI, SHS), Eurostat and ECB (QSA), Bloomberg and ECB calculations.

Notes: Panel a: shares of market value of debt securities with initial maturity above one year. Panel b: percentages show the euro amount outstanding of euro area bank bonds issued before and after 31 December 2021 relative to the total euro amount outstanding on 31 December 2021. Fixed outstanding bonds capture fixed coupon, zero coupon and step-up bonds while floating outstanding bonds capture variable and floating coupon bonds.

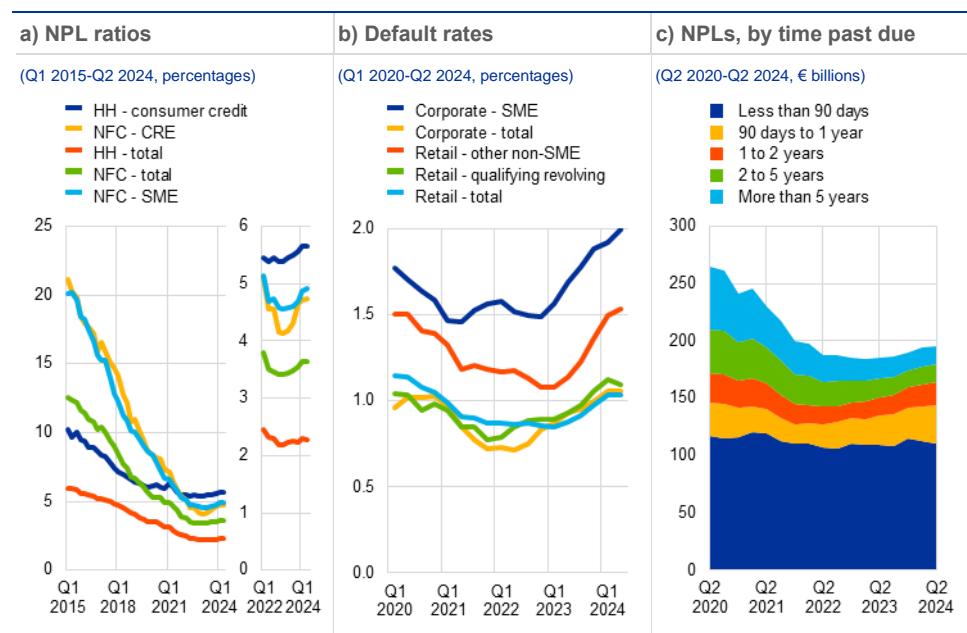
3.2

Asset quality is deteriorating slowly and provisioning needs are likely to increase

Aggregate asset quality is continuing to deteriorate slowly from the historically low levels of non-performing loan (NPL) ratios, driven by the most fragile credit segments. NPL ratios for loans to households and firms remain close to their historical lows (2.3% and 3.6% respectively in the second quarter of 2024), despite a slight increase since the fourth quarter of 2022 (**Chart 3.4**, panel a). The mild increase in headline NPL ratios conceals a stronger deterioration of default rates (**Chart 3.4**, panel b). This has been partly offset by the continued disposal of legacy NPLs (**Chart 3.4**, panel c) which are still material in those countries most affected by the European sovereign debt crisis. The deterioration remains modest and is concentrated in the most fragile credit segments: commercial real estate (CRE), small and medium-sized enterprises (SMEs) and consumer credit.

Chart 3.4

NPL ratios have deteriorated as defaulting loans offset the disposal of legacy NPLs



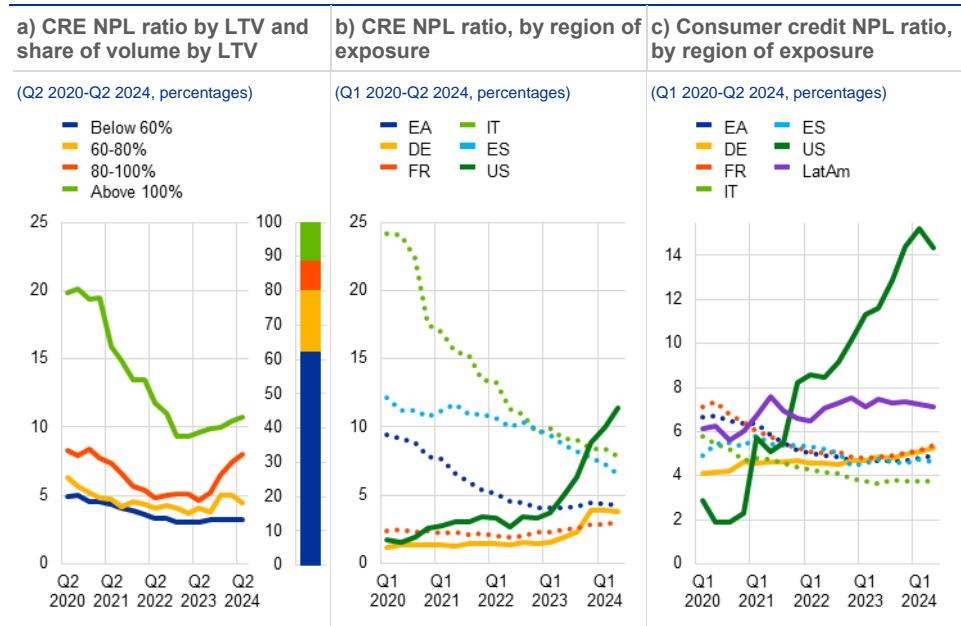
Sources: ECB (supervisory data) and ECB calculations.

Notes: Based on a balanced sample of 80 euro area significant institutions. Panel b: IRB-reporting significant institutions, four-quarter trailing figures, euro area exposures only.

CRE and consumer credit continue to be the primary drivers of asset quality deterioration, although the volumes are manageable overall and are concentrated in a few banks. CRE NPL ratios are rising, in a CRE context of low prices, rising vacancy rates and low activity ([Chapter 1](#)). High and rising NPL ratios are concentrated in the loan-to-value (LTV) buckets above 80%, where the loss given default (LGD) for the lender is largest ([Chart 3.5](#), panel a), while further declines in collateral valuations would push up both the LTV and the LGD. However, the deterioration remains concentrated geographically, as US (and to a lesser extent a few euro area economies) CRE loans appear to be particularly affected ([Chart 3.5](#), panel b). Moreover, these deteriorating exposures are concentrated in a few, mostly German, banks. While aggregate bank exposures to CRE are manageable, at 13% of their total loans to households and firms, and are not expected to cause systemic distress in the banking sector by themselves, this deterioration in the CRE segment could prove challenging for those banks that are particularly exposed to this market. Similarly, the consumer credit segment shows a combination of rising NPL ratios, particularly for non-euro area exposures relating mostly to the United States and Latin America ([Chart 3.5](#), panel c), and contained total exposure for the euro area banking sector (8% of total loans to households and firms in the second quarter of 2024).

Chart 3.5

CRE and consumer credit segments have deteriorated, but exposures are contained in aggregate



Sources: ECB (supervisory data) and ECB calculations.

Notes: Based on a balanced sample of 80 significant institutions. Panel a, right column: shares as of Q2 2024. Panel c: LatAm stands for Latin America. EA also includes the four major economies shown individually.

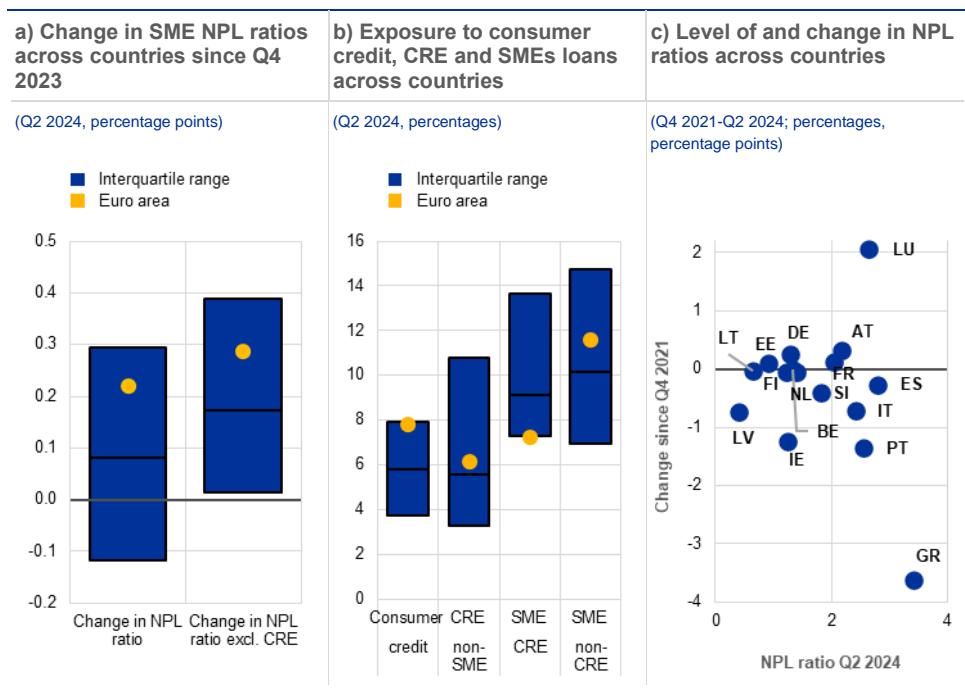
Although the deterioration in SME exposures remains contained, it is widespread and could be amplified by a weakening of the euro area economy.

Banking sectors have been reporting an increase in their SME NPL ratios in most euro area countries since the fourth quarter of 2023 ([Chart 3.6](#), panel a). Moreover, this deterioration has been driven by non-CRE loans to SMEs, the quality of which has worsened faster than the quality of CRE loans to SMEs in most countries. While the NPL ratios of SMEs are still low by historical standards, the weakening of asset quality in the SME segment, which accounts for 19% of bank loans to households and firms, is directly linked to macroeconomic conditions, particularly employment, in a context of rising insolvencies and falling corporate confidence ([Chapter 1](#)). Moreover, SME loans can entail higher LGD when less collateralised than other loans (like RRE and CRE loans). This is reinforced by the fact that in recent years banks have tended to tilt their credit towards less-productive firms, which are more likely to face financial difficulties ([Special Feature B](#)).

The size of fragile credit segments and the dynamics of NPL ratios differ across countries. Different banking systems have differing exposure to the most fragile credit segments. Several segments demonstrate large exposures ([Chart 3.6](#), panel b), although these are not necessarily associated with a material deterioration at the present time. The dynamics of NPL ratios also differ, the result being convergence towards the euro area average ([Chart 3.6](#), panel c). NPL ratios are still falling in most countries where they are above the euro area average, on the back of the ongoing disposal of legacy NPLs. However, they are rising slightly in some countries, such as Austria and Germany, where they had initially been low.

Chart 3.6

The deterioration in SME NPL ratios is small but widespread in the euro area, while the exposure to fragile credit segments and the dynamics of NPLs vary across countries



Sources: ECB (supervisory data) and ECB calculations.

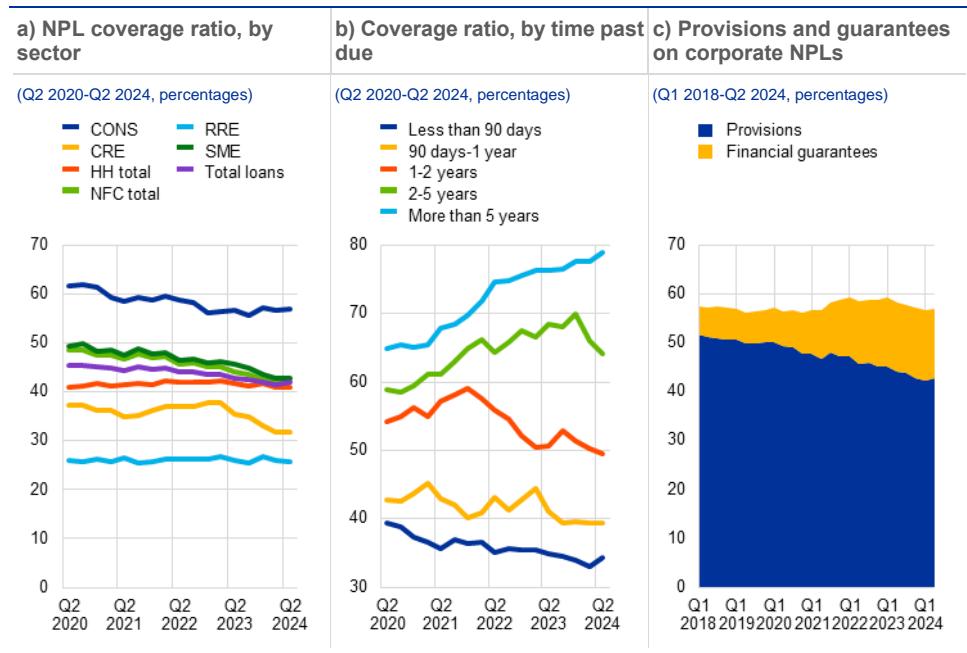
Notes: Panels a) and b) are based on a balanced sample of 80 euro area significant institutions. Panel b) exposures as a share of total loans and advances to firms and households. Panel c) is based on all significant institutions and considers all loans (excluding cash balances at central banks and other demand deposits). In panels a) and b), the black horizontal lines in the interquartile ranges report the median.

Provision coverage for corporate loans has declined due to the disposal of well-provisioned legacy NPLs and pandemic-era credit guarantees, but provisioning needs will rise again as new NPLs age and guarantees are phased out. Corporate coverage ratios have declined over the last few years, in particular for the CRE segment (**Chart 3.7**, panel a). There were two factors behind this decline. First, the disposal of legacy NPLs drove the average coverage ratio down. This can be attributed to a composition effect by which banks typically adjust provisions progressively after a loan defaults, as expected recoveries decrease with NPL age; this means that older NPLs are better provisioned than more recent NPLs (**Chart 3.7**, panel b). As a result, the continued decline in the share of legacy NPLs (**Chart 3.4**, panel c) has contributed to a decline in the aggregate coverage ratio. Second, this decline in the coverage ratio was accelerated by the introduction of substantial public credit guarantees during the pandemic. Thanks to this additional protection, guaranteed loans require a lower increase in provisions when they default, driving the coverage ratio down. By the second quarter of 2024, more than 14.3% of the total NPL volume was covered by guarantees, up from 6.7% in the fourth quarter of 2019 (**Chart 3.7**, panel c), which has helped to lower coverage ratios. Both of these factors will fade going forward, resulting in higher provisioning needs. First, new NPLs will age and, unless banks take action to resolve them (which could incur other costs such as discounted selling prices), will require higher provisions. While the stock of remaining legacy NPLs is low, the impact of further disposals will be limited. Second, pandemic-related credit guarantees will expire in the coming years and loans without

guarantees will default. In line with this, the coverage ratio for firms ticked up to 42.7% in the second quarter of 2024 from its all-time low of 42.1% in the first quarter.

Chart 3.7

The decline in coverage ratios, driven by the rising share of new NPLs and guarantees from the pandemic period, is coming to an end as these factors fade



Sources: ECB (supervisory data) and ECB calculations.

Notes: Based on a balanced sample of 80 euro area significant institutions. NPL stands for non-performing loan; CONS stands for consumer credit; CRE stands for commercial real estate; HH stands for household; NFC stands for non-financial corporation; RRE stands for residential real estate; SME stands for small and medium-sized enterprises. The coverage ratio is defined as the ratio of provisions on NPLs to the gross carrying amount of NPLs.

3.3 Bank profitability is set to moderate from multi-year highs

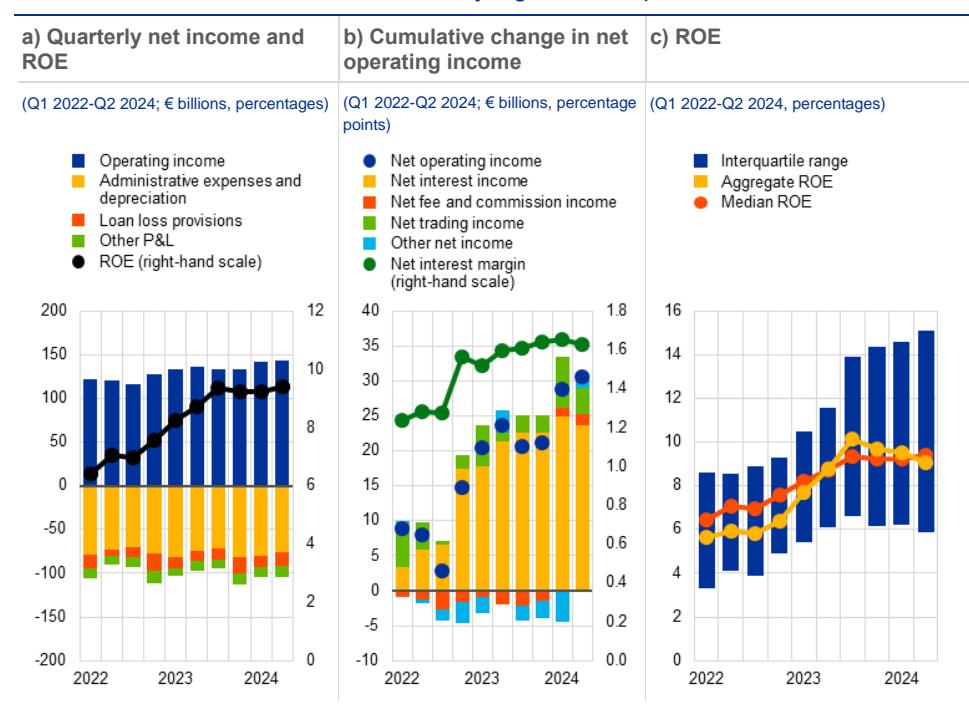
While profitability has remained historically high in 2024 in aggregate terms, most banks have seen it decline slightly as net interest income weakens. Banks' return on equity (ROE) reached 9.4% in the second quarter of 2024 in annual terms (**Chart 3.8**, panel a). However, this increase was mostly driven by a decline in administrative expenses and depreciations. The slight increase in net operating income was driven by ancillary factors, in particular higher dividend income. Meanwhile, net interest income has peaked, indicating that the main driver of rising bank profits is losing momentum (**Chart 3.8**, panel b). Indeed, net interest margins are probably past their peak, while loan volumes remain weak. Consequently, ROE has declined slightly for a majority of banks, with the first quartile and median ROE showing a decrease since the peak in the third quarter of 2023 (**Chart 3.8**, panel c).

ROE is continuing to improve for the most profitable banks, but it is unlikely that they will continue to outperform the rest of the sector. The dispersion of bank profitability has reached a historical high, driven by the continued good performance of the top 25% of euro area significant institutions. Going forward, this dispersion is likely to decline, as the factors that induced a stronger recovery in profitability are starting to

go into reverse. Funding from household deposits and lending at floating rates was a recipe for higher profitability during the hiking cycle, as banks were able to leverage the difference in pass-through between assets and liabilities as rates rose.²⁹ Now that rates are declining again, however, the opposite effect is in evidence: while household deposit rates are falling more slowly than other liability costs, floating lending rates are declining in lockstep with the risk-free yield curve.

Chart 3.8

Profitability remains high but has peaked for many banks due to weakening net interest income, in a context of historically high ROE dispersion



Sources: ECB (supervisory data) and ECB calculations.

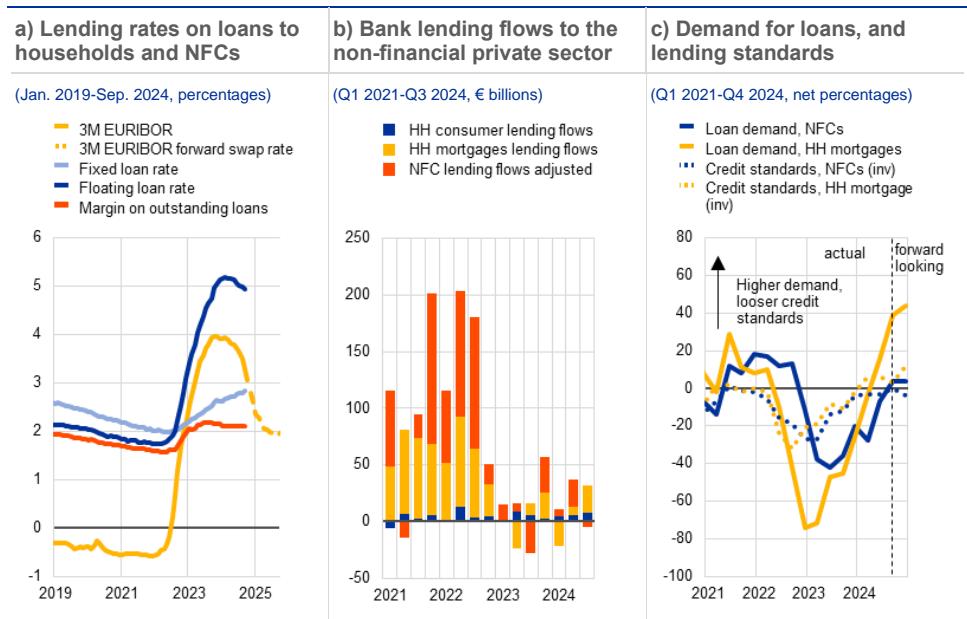
Notes: Based on a balanced sample of 80 euro area significant institutions. Panels a) and c) are based on four-quarter trailing values. Panel b is based on quarterly annualised values.

Looking ahead, the decline in net interest income is set to continue amid margin compression and a progressive recovery in lending volumes. Floating lending rates have already started to decline, tracking falling market reference rates. They are expected to decrease still further, while the increase in lending rates on outstanding fixed-rate loans is slowing (**Chart 3.9**, panel a). As a result, lending margins are declining progressively, which is weighing on profitability. Bank lending flows remain subdued by historical standards but are on a recovering trajectory (**Chart 3.9**, panel b). Banks expect loan demand to recover further across all loan segments, especially for housing loans, mainly on the back of declining interest rates (**Chart 3.9**, panel c). They also expect lending standards to ease for housing loans but to tighten slightly for firms, suggesting slower credit recovery for firms than for households.

²⁹ See the chapter entitled “Euro area banking sector”, *Financial Stability Review*, ECB, November 2023.

Chart 3.9

Lending margins to decline and volumes are expected to remain weak in the next quarters



Sources: ECB (supervisory data, MIR, BSI, BLS) and ECB calculations.

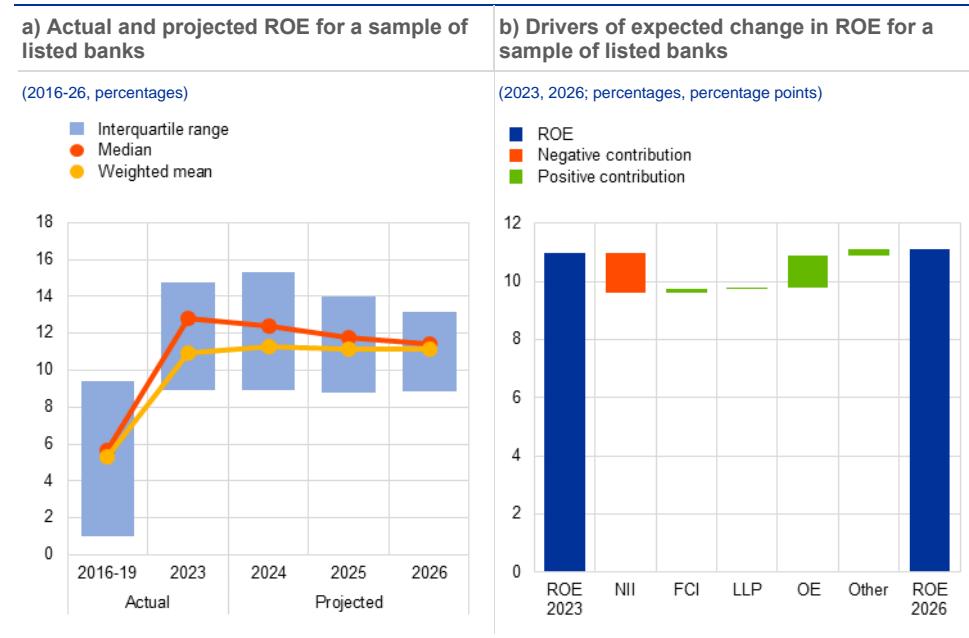
Notes: Panels a) and b) are based on all euro area banks. Panel c: "actual" values are changes that have occurred, while "forward-looking" values are changes anticipated by banks. For credit standards, net percentages are defined as the difference between the sum of the shares of banks responding "tightened considerably" and "tightened somewhat" and the sum of the shares of banks responding "eased somewhat" and "eased considerably" in the ECB's bank lending survey (BLS). Net percentages for the questions on demand for loans are defined as the difference between the sum of the shares of banks responding "increased considerably" and "increased somewhat" and the sum of the shares of banks responding "decreased somewhat" and "decreased considerably". HH stands for household; NFC stands for non-financial corporation.

Profitability is expected to decline slightly for most banks but to remain well above the levels of the last decade.

Market analysts expect median bank profitability to fall by 1.4 percentage points by 2026 but to remain comfortably above its pre-hiking cycle level for a sample of listed banks (**Chart 3.10**, panel a). At the same time, it is likely that aggregate profitability will be supported by a few large banks rebounding. The contribution from net interest income should decline on the back of lower policy rates, as a fall in lending margins more than offsets the positive volume effect (**Chart 3.10**, panel b). However, the overall decline in net interest income is likely to remain contained, as markets expect interest rates to remain well above the level seen prior to the hiking cycle, which would support lending margins. In addition, banks are expected to continue their efforts to control costs, which has already led to a reduction in their cost/income ratios over the last few years (**Chart 3.8**, panel a). This has mitigated the negative impact of falling net interest income on ROE. The decline in net interest income will likely mostly affect banks that benefited strongly from the hiking cycle and are currently the most profitable. This would lead to a compression of the high ROE dispersion (see above, **Chart 3.8**, panel c). Less profitable banks are expected to reinforce their efforts to contain operating expenses and maintain their profitability, also resulting in lower profitability dispersion across banks and alleviating financial stability concerns.

Chart 3.10

Despite a slight decline due to lower net interest income, profitability is expected to remain high thanks to continued efforts to control costs



Sources: LSEG and ECB calculations.

Notes: Based on market analyst projections of ROE for a sample of 32 listed euro area banks. Panel b: NII stands for net interest income; FCI stands for fee and commission income; LLP stands for loan loss provisions; OE stands for operating expenses.

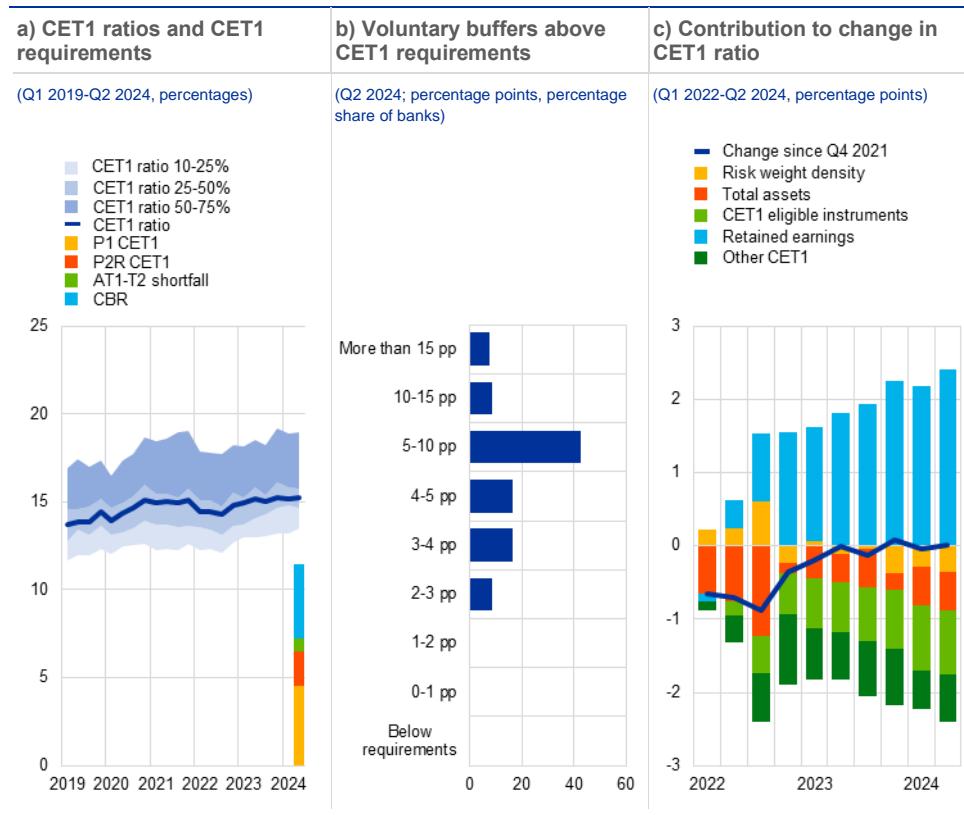
3.4

Capital and liquidity buffers remain robust, but banks' market valuations are still subdued

Euro area banks' resilience is underpinned by strong capital ratios built on high levels of retained earnings, with sizeable voluntary buffers that are well above requirements. Euro area banks have maintained broadly stable CET1 ratios of around 15% since early 2023 (**Chart 3.11**, panel a) and sizeable voluntary capital buffers above CET1 requirements (**Chart 3.11**, panel b). The strong recovery in net income has allowed them to accumulate retained earnings, offsetting the increase in total assets and risk weight density (**Chart 3.11**, panel c), while making sizeable distributions to shareholders (both dividends and share buybacks). Looking ahead, such levels of capital provide a buffer which will allow banks to absorb some increase in provisioning needs. Moreover, as most banks communicate their dividend strategy by setting a target payout ratio (the ratio of distributed capital to earnings), the expected slight decline in profitability would result in lower distributions, allowing banks to maintain a robust capital position.

Chart 3.11

Banks maintain robust capital ratios which are well above requirements, thanks to retained earnings



Sources: ECB (supervisory data) and ECB calculations.

Notes: Based on a balanced sample of 80 euro area significant institutions. Panel a: P1 stands for Pillar 1; P2R stands for Pillar 2 Requirement; AT1 stands for Additional Tier 1; T2 stands for Tier 2. CBR stands for combined buffer requirement.

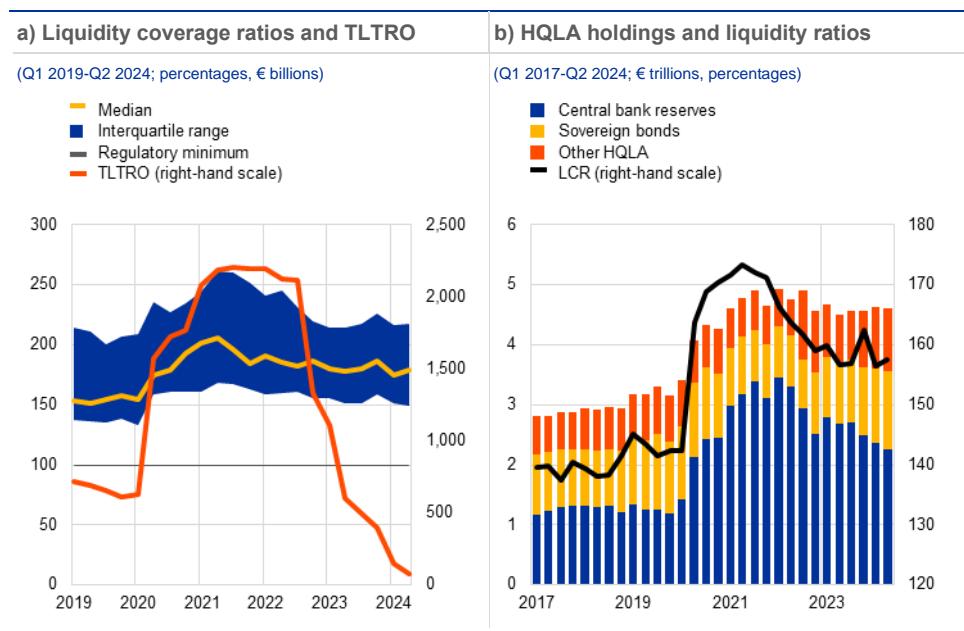
Banks have maintained high liquidity ratios despite repaying TLTRO III funds.

The decline in banks' liquidity coverage ratios has been modest despite the large volume of TLTRO repayments made since the fourth quarter of 2022. This decline can be attributed to an inflow of non-retail deposits that pushed up the numerator of the liquidity coverage ratio and which occurred mostly before the bulk of the repayments had been made (**Chart 3.12**, panel a). Two elements explain the resilience of liquidity ratios (**Chart 3.12**, panel b). First, excess liquidity did not fall in lockstep with TLTRO III repayments, as various autonomous factors caused liquidity to be released into the euro area banking system. This was mainly due to the decrease in government and non-euro area resident deposits at the Eurosystem (the money being directed towards agents that deposit it in banks). Second, banks actively increased their holdings of other high-quality liquid assets, in particular sovereign bonds and, to a lesser extent, covered bonds. As these securities have to be marked to market (to be ready for liquidation if required), this shift could result in a lower counterbalancing capacity during episodes of stress. Moreover, the increase in banks' holdings of sovereign debt securities could reignite concerns over the sovereign-bank nexus. However, there are three factors which limit such concerns at the current juncture: (i) the current levels of sovereign debt holdings are still relatively limited by historical standards; (ii) banks have increased their holdings of non-domestic rather than domestic sovereign bonds; and (iii) adopting a demand-driven operational framework for monetary policy ensures

that banks can obtain the central bank reserves they require, as long as they can provide enough adequate collateral.³⁰

Chart 3.12

Banks have maintained robust liquidity buffers despite TLTRO III repayments



Sources: ECB (supervisory data) and ECB calculations.

Note: Based on a balanced sample of 80 euro area significant institutions. HQLA stands for high-quality liquid assets; LCR stands for liquidity coverage ratio.

Banks' market valuations remain subdued and volatile, suggesting concerns about the sustainability of bank profits and economic growth in Europe. The stock prices of euro area banks recovered substantially during the monetary tightening cycle, on the back of increasing profitability. Euro area banks outperformed the market and absorbed the market turmoil of March 2023 well, but since March 2024 they have entered a more volatile phase (Chart 3.13, panel a). Share prices have suffered from the more unstable geopolitical environment and recent political uncertainty in several countries. Moreover, euro area banks' valuations remain subdued, with their price-to-book ratios still under 0.8 (i.e. well below 1) and below those of their US and Scandinavian peers, in a context of country dispersion (Chart 3.13, panel b). These weak price-to-book ratios might reflect investor concerns over both economic growth in Europe and structural challenges.³¹ The weak valuations pose a challenge to increasing capital in the event of a sudden need (such as unforeseen losses), as this would require a substantial dilution of existing shareholders.

Cyber risks remain an important operational risk and is an area in which banks can further improve their resilience. Cyber risks remain an important structural risk for banks and are heightened in a time of high geopolitical uncertainty.³² The recent

³⁰ Main refinancing operations will play a central role in meeting banks' liquidity needs and will continue to be conducted through fixed-rate tenders with full allotment against broad collateral.

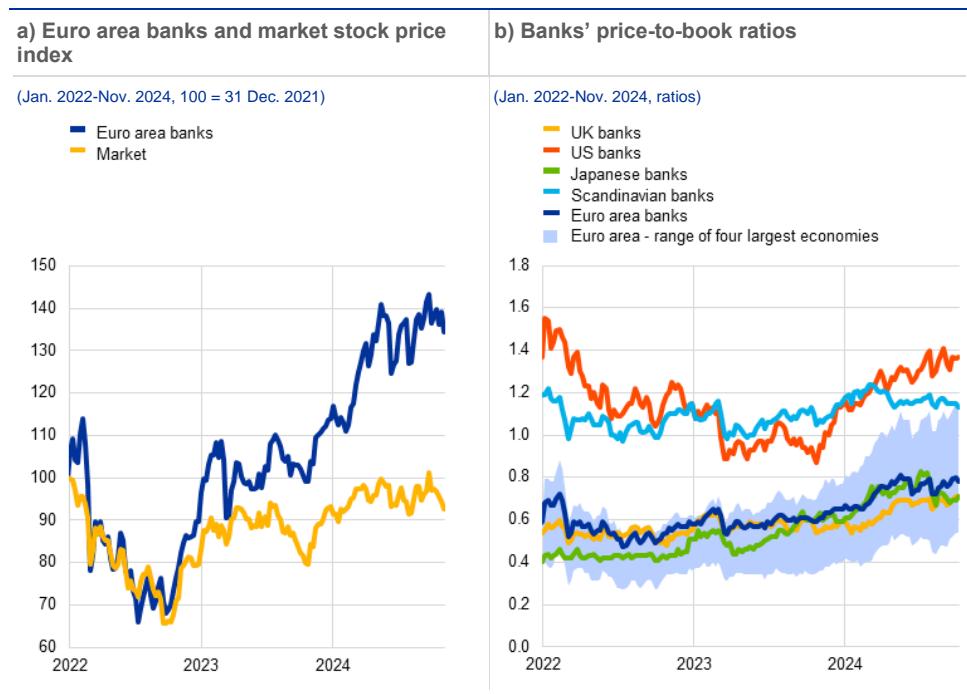
³¹ See the box entitled “Euro area bank fundamentals, valuations and cost of equity”, *Financial Stability Review*, ECB, November 2023.

³² See the special feature entitled “Towards a framework for assessing systemic cyber risk”, *Financial Stability Review*, ECB, November 2022.

ECB cyber resilience stress test gauged banks' ability to cope with severe security incidents and showed that although banks have response and recovery frameworks in place, areas for improvement remain.³³ As such, euro area banks need to continue their digital transformation to further address those risks and the challenges and opportunities associated with the progress of artificial intelligence.³⁴

Chart 3.13

Despite recovering significantly, the valuation of euro area banks remains subdued and has entered a more volatile phase



Sources: LSEG, Bloomberg Finance L.P., ECB (supervisory data) and ECB calculations.

Notes: Panel b: price-to-book ratios for Datastream banking sector indices. The four largest euro area economies are Germany, Spain, France and Italy.

Box 4

Euro area banks as intermediaries of US dollar liquidity via repo and FX swap markets

Prepared by Benjamin Klaus and Luca Mingarelli

US dollar funding of euro area banks may be a contingent source of vulnerability. 23% of euro area banks' funding is denominated in foreign currency, with the US dollar providing the largest contribution (17%). The bulk of this US dollar funding is obtained via wholesale markets (96%), with unsecured funding from financials (31%) via commercial paper, for instance, and repos (28%) accounting for more than half of the total (**Chart A**, panel a). The short-term wholesale nature of US dollar funding can expose banks to liquidity stress, as this funding has often dried up in times of heightened market volatility. US dollar liquidity coverage is usually lower than total liquidity coverage, which suggests that maturity mismatches may contribute to liquidity risk. There is wide variation

³³ See the press release “[ECB concludes cyber resilience stress test](#)”, 26 July 2024.

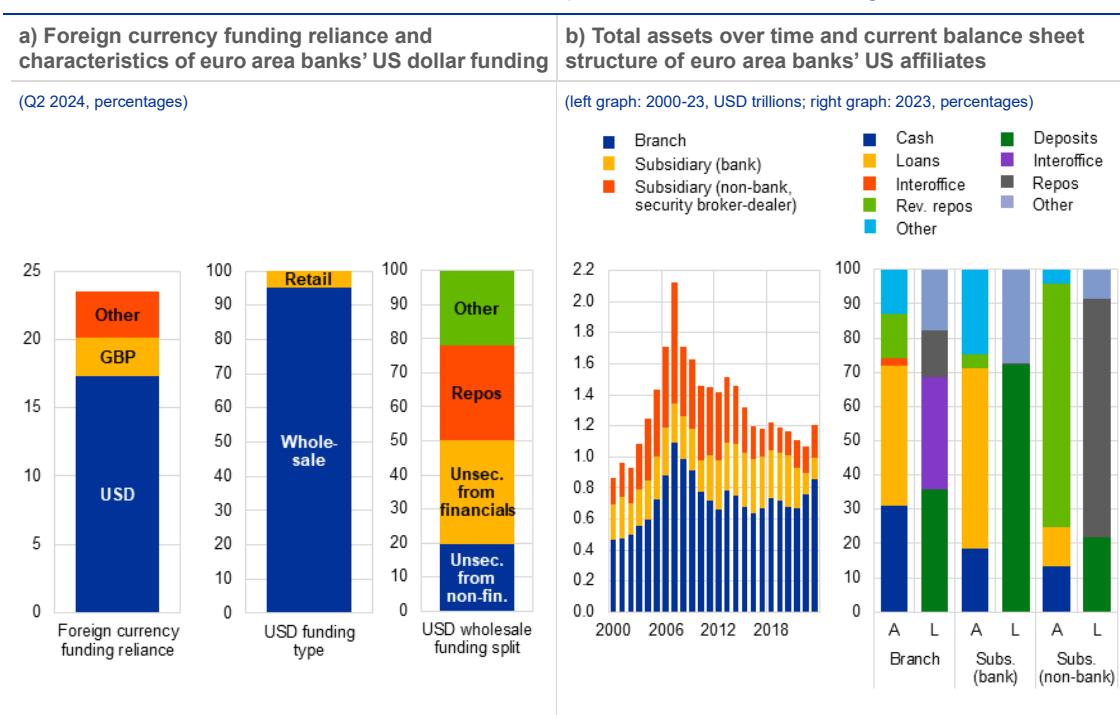
³⁴ See the box entitled “[The implications of artificial intelligence for cyber risk: a blessing and a curse](#)”, *Financial Stability Review*, ECB, May 2024.

across banks, and the most internationally active financial institutions rely on dollar-denominated instruments for up to a third of their funding.

Euro area banks' sizeable use of US dollar funding largely reflects the role played by their US affiliates as intermediaries in repo markets. Examining the activities of euro area banks in the United States allows us to better understand the prevailing business models and their role in intermediating US dollars. After a decade in which their presence in the United States declined, euro area banks have recently expanded the balance sheets of their branches and broker-dealer subsidiaries (**Chart A**, panel b, left graph). The business models of the US affiliates differ markedly: while bank subsidiaries engage in traditional deposit-taking and lending operations, broker-dealer subsidiaries focus more on capital market activities and are heavily involved in repo markets as intermediaries. Bank branches appear to follow a hybrid business model of capital market activities alongside lending to larger clients on aggregate (**Chart A**, panel b, right graph). There are notable differences across jurisdictions however, with branches of French banks the most active in repo markets. By contrast, branches of German banks focus more on lending and rely to a larger extent on headquarter funding.

Chart A

Euro area banks' US dollar funding is sizeable, especially for G-SIBs; banks source from wholesale markets, which is linked to some extent to their capital market activities through their US affiliates



Sources: ECB (supervisory data), FFIEC, S&P Dow Jones Indices LLC and/or its affiliates and ECB calculations.

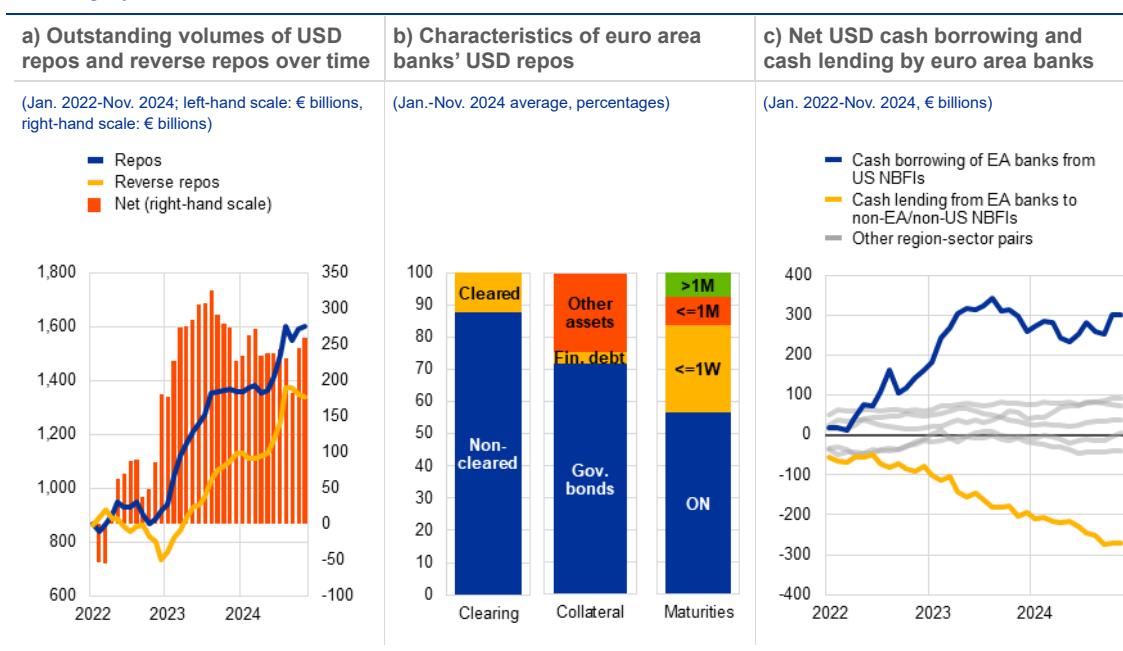
Notes: Panel a: the numbers refer to euro area banks on aggregate. The "Other" category in the right bar includes debt securities issued by banks. Panel b: total assets and the balance sheet decomposition refer to US bank branches, US bank subsidiaries and the US non-bank (i.e. security broker-dealer) subsidiaries of euro area-headquartered banks. A stands for assets; L stands for liabilities. In the case of the security broker-dealer subsidiaries, repos might include also security lending activities. G-SIBs stands for global systemically important banks.

Euro area banks became more active in US dollar repo markets when interest rates started rising, with banks intermediating US dollar liquidity between their US affiliates and non-banks. Since the monetary policy tightening cycle began in 2022, total outstanding amounts of euro area banks' US dollar repos have almost doubled, reaching €1.6 trillion in November 2024. Euro area banks' activity in the US dollar repo market is facilitated by differences in regulatory reporting

requirements.³⁵ The volume of repos exceeds that of reverse repos by around €250 billion, implying that euro area banks are net US dollar borrowers (**Chart B**, panel a). This compares with euro-denominated repos (in the euro area repo market), whose volumes have remained more or less unchanged since the beginning of 2023. US dollar repos are largely (70%) collateralised by government bonds (of which 95% are Treasuries). The bulk of this is not centrally cleared (87%), implying a higher counterparty risk than is the case for centrally cleared transactions.³⁶ The vast majority of repos are short-term, with 85% having a maturity of one week or less (**Chart B**, panel b). Euro area banks play a key role in intermediating US dollar liquidity. They do so by receiving cash largely from their US-affiliated security broker-dealers and lending the dollars to non-banks, the majority of which are offshore investment funds (**Chart B**, panel c). As cash borrowing exceeds cash lending, euro area banks have excess US dollars at their disposal, which they can sell in the FX swap market.

Chart B

US dollar repo market activities have expanded strongly since end-2022 and are rather short-term and largely bilateral; euro area banks intermediate US dollars to non-banks outside the euro area



Sources: ECB (SFTDS) and ECB calculations.

Notes: Panel b: the maturities shown refer to transactions. ON includes overnight, tomorrow next and spot next. Panel c: other region-sector pairs include euro area banks, US banks, European non-euro area banks, US non-financial corporations and European non-euro area non-banks. EA stands for euro area.

The EUR/USD FX swap market is large, and its short maturities and high degree of market concentration pose rollover risks. With a daily trading volume of €250 billion and €3 trillion of gross outstanding amounts, the euro area FX swap market is another major source of US dollars. Global recession fears, higher interest rates and the growing profitability of carry trades increased demand for US dollars via FX swaps sharply in 2022, before it started to gradually revert towards previous levels and then picked up again in autumn (**Chart C**, panel a). The FX swap market is highly

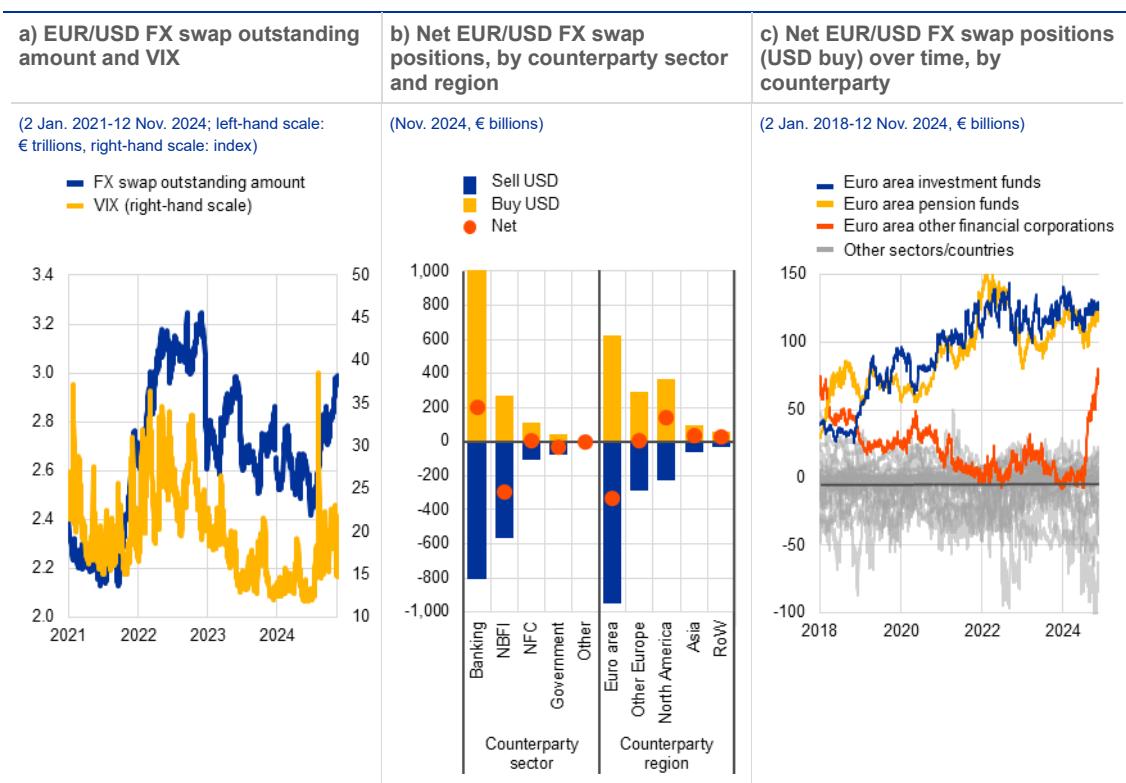
³⁵ In US dollar repo markets, euro area banks benefit from different leverage ratio reporting requirements. While US banks report daily averages on a quarterly basis, euro area banks report quarter-end figures. This creates an incentive to indulge in “window dressing” by reducing volumes at reporting dates. See the special feature entitled “Recent developments in euro area repo markets, regulatory reforms and their impact on repo market functioning”, *Financial Stability Review*, ECB, November 2017.

³⁶ After June 2026, mandatory clearing for US Treasury-collateralised transactions may reduce repo volumes on the back of higher clearing costs and netting-induced balance sheet cuts by US competitors.

concentrated, with the top four euro area dealers accounting for about 60% of the market, up from 50% five years ago. Similar to repos, the bulk of FX swap trading volumes are short-term. In the second quarter of 2024, 55% of transactions had a maturity of one day. The short-term nature of this market, combined with high market concentration, implies that liquidity can dry up quickly for counterparties without direct access to sources of US dollar funding. Moreover, as the payment obligations are recorded off-balance-sheet, it is more challenging for policymakers to anticipate the scale of US dollar rollover needs.

Chart C

Demand for EUR/USD FX swaps rose amid higher risk aversion and the start of the hiking cycle; euro area banks are net US dollar lenders to non-banks, especially investment and pension funds



Sources: ECB (MMSR), Bloomberg Finance L.P. and ECB calculations.

Notes: Panel a: the outstanding amounts of FX swaps refer to EUR/USD FX swaps and are the sum of buying and selling US dollars at a point in time. VIX is the Chicago Board Options Exchange's CBOE Volatility Index. Panel b: positive (negative) values refer to outstanding amounts of buying (selling) US dollars, net amounts are computed as the difference between selling US dollars and buying US dollars. NFC stands for non-financial corporation; RoW stands for rest of the world.

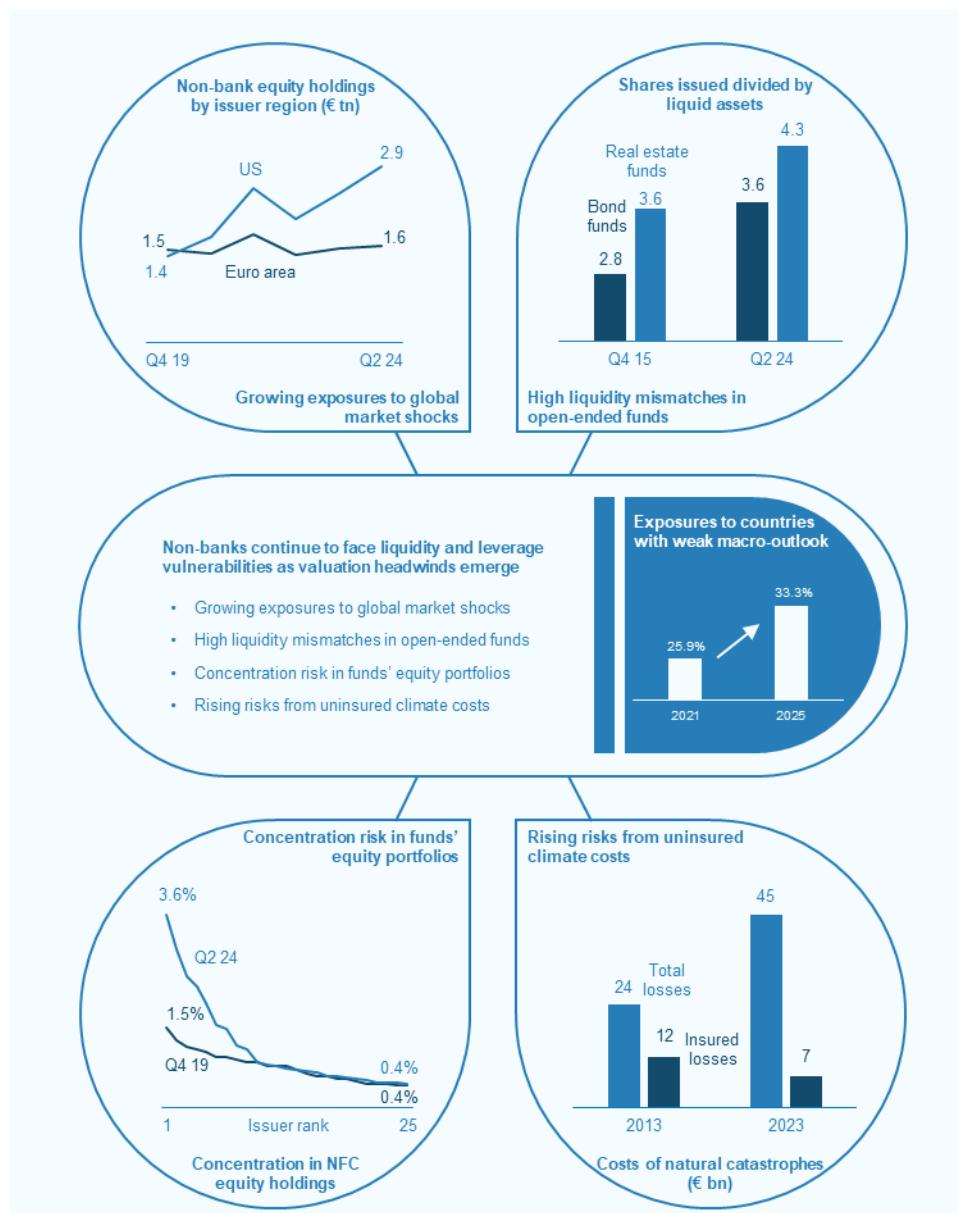
Euro area banks have substantially expanded their role as net providers of dollar liquidity to euro area non-banks in recent years. In terms of their main counterparty sectors and regions, euro area banks have been net US dollar buyers from US banks and net US dollar sellers to euro area non-banks in recent years (**Chart C, panel b**). Whereas net positions to most counterparty sectors have remained more or less unchanged over time, those with euro area non-banks have tripled in size over the last five years. This has been driven by growth relating to investment funds and pension funds, for which net positions have increased up to fivefold and threefold respectively since 2018, while net positions towards other financial corporations increased since summer this year (**Chart C, panel c**). Moreover, the mean tenor of FX swaps of euro area banks vis-à-vis their non-bank counterparties is substantially higher than the average, particularly for investment and money market funds, highlighting the maturity transformation role of banks. These elements reveal the strong

interlinkages between banks and non-banks and hence the potential for shocks to propagate more easily through the financial system.

The intermediation of US dollar liquidity by euro area banks represents an important source of funding for non-banks but also poses financial stability risks. In repo markets, in which transactions are short-term and not centrally cleared, borrowers face both rollover and counterparty risks. The off-balance-sheet nature of FX swap markets makes it more difficult for central banks to assess the degree of potential US dollar liquidity shortages. Euro area banks may be vulnerable to dollar supply shocks emanating from the United States, as repo and FX swap markets would be correlated and would not serve as substitutes. Both markets are highly concentrated, implying that very few institutions have intermediation capacity, and as the US dollar liquidity provided by euro area banks to non-banks in particular includes maturity transformation this contributes to the interlinkages between the two sectors. During times of stress this increases the potential for liquidity problems to become systemic, especially where stress may be transmitted to non-banks with strong links to banks across different market segments. Such an environment might compromise the ability of financial institutions to fund their foreign currency investments, potentially leading to forced sales of dollar-denominated assets, which would serve to amplify market shocks. Central bank swap lines can mitigate these risks by providing necessary dollar liquidity during periods of financial stress.

4

Non-bank financial sector



4.1

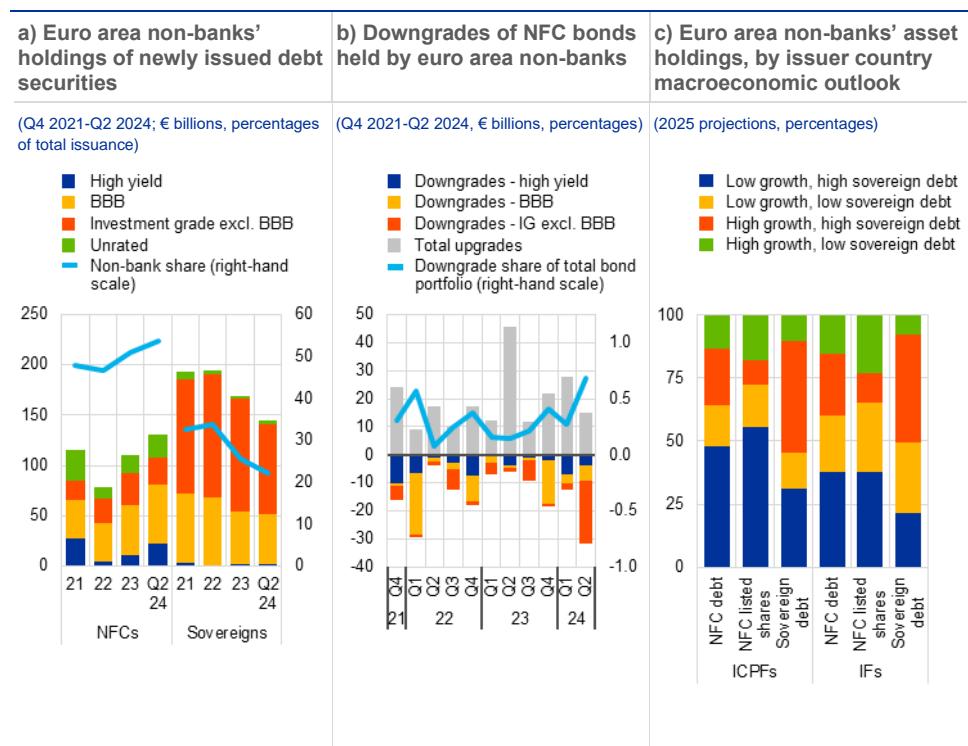
Non-bank portfolios may face valuation headwinds

Non-banks' investments in corporate and sovereign debt have continued to support market-based finance in the euro area across all credit risk categories. The euro area non-bank financial intermediation (NBFI) sector remains an important source of funding for corporates and sovereigns. It has played a significant role in absorbing newly issued debt securities, allowing issuers to smoothly refinance maturing debt. While the uptake of sovereign bonds in the first half of 2024 was slightly

lower than in 2023, purchases of non-financial corporation (NFC) debt increased to around 55% of long-term corporate bonds issued (**Chart 4.1**, panel a). This partially reflects the return of investors to comparatively lower-rated issuers, following a period of portfolio de-risking as interest rates rose.

Chart 4.1

Credit risk headwinds may challenge increasingly exposed non-banks



Sources: ECB (CSDB, SHS), European Commission and ECB calculations.

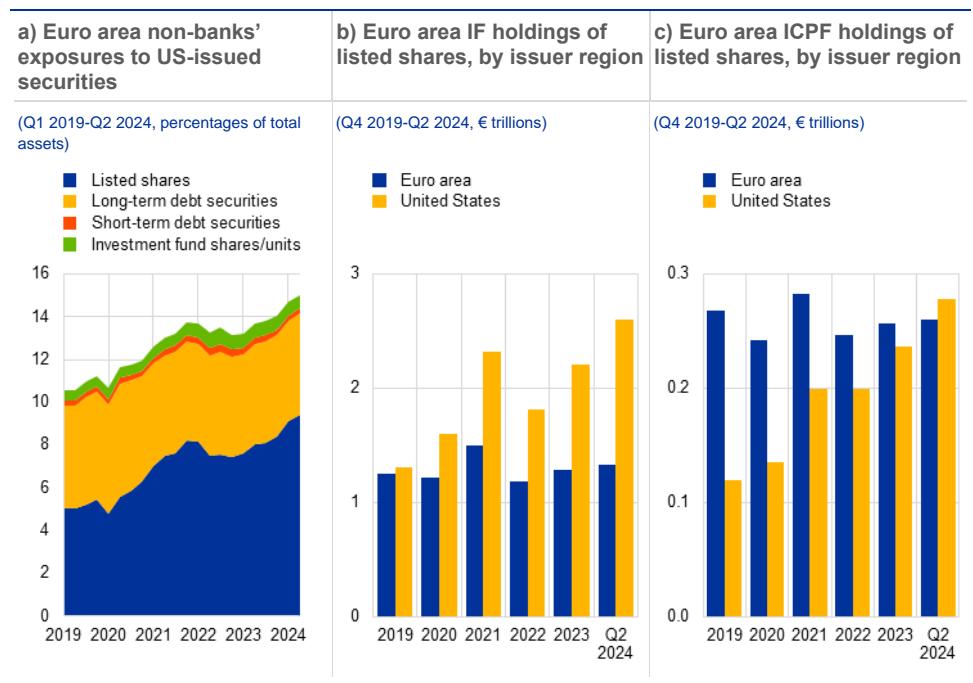
Notes: Panel a: newly issued debt includes all euro area long-term debt securities issued over the past four quarters to allow for comparable length of periods and to account for potential seasonality in issuances or purchases. Panel b: IG stands for investment grade. Panel c: high (low) growth refers to a potential GDP growth outlook for 2025 of above (below) 1%. High (low) sovereign debt refers to debt-to-GDP ratios of above (below) 100%. ICPFs stands for insurance corporations and pension funds; IFs stands for investment funds.

Slowing economic growth in the euro area may weigh on asset quality in non-bank portfolios.

A subdued outlook for economic growth in the euro area and external funding costs that are still high compared with historical averages are likely to increase pressure on corporate balance sheets in the near term. Rating downgrades in non-bank NFC portfolios increased sharply in the second quarter of 2024 (**Chart 4.1**, panel b). Although default rates have picked up across nearly all economic sectors (**Chapter 1**), the majority of downgrades have so far concerned higher-rated issuers. A significant share of non-banks' NFC bond and equity holdings is currently allocated to issuers from countries which are projected to experience low economic growth and high fiscal debt in 2025 (**Chart 4.1**, panel c). Valuations of these investments may be particularly vulnerable, as a potential reassessment of sovereign risks by financial markets (**Chapter 2**) could spill over to the corporate sector. At the same time, several euro area governments have limited fiscal space to counteract a contraction in economic activity.

Chart 4.2

A higher share of US investments exposes euro area non-banks to global spillovers



Sources: ECB (SHS, IVF, ICB, PFBR) and ECB calculations.

Note: Panel a): at market value; includes securities issued by corporates and sovereigns. Panels b) and c): the values shown in the chart represent the amounts at the end of the reference periods.

A rising share of US exposures renders euro area non-banks vulnerable to spillovers from shocks and volatility in global financial markets. Euro area non-banks have continued to increase their holdings of US-issued assets, with the value of total US securities held approaching 15% of total assets as of the second quarter of 2024 (**Chart 4.2**, panel a). These rising US investments are concentrated in listed shares, for which both purchase amounts and valuation gains have outpaced euro area equity investments. As a result, the amount of US equities held by euro area investment funds has grown to double the size of euro area equities (**Chart 4.2**, panel b), with insurers and pension funds holding more US listed shares than euro area listed shares for the first time (**Chart 4.2**, panel c). While higher shares of non-euro area investments can bring diversification benefits to investment portfolios, they also expose non-banks to shocks originating in global and, especially, US markets. In addition, recent episodes of volatility spikes have led to sharp, albeit short-lived, valuation losses (**Chapter 2**). In particular, the activities of global, leveraged hedge funds may have acted as amplifiers during the early-August market sell-off, and some funds also suffered losses.³⁷ Although the episode has not led to wider spillovers in the euro area NBFI sector, it highlights the potential risks emerging from global shocks. For non-banks, such events increase their liquidity risk related to sudden margin calls on derivative exposures or redemptions of investment fund shares. Against this background, global market shocks can translate into forced asset sales with the potential to amplify adverse market developments (**Section 4.2**).

³⁷ See also the box entitled “Summertime Blues: The Carry Trade Unwind and VIX Surge of August 2024”, published as part of “[Steadying the Course: Uncertainty, Artificial Intelligence, and Financial Stability](#)”, *Global Financial Stability Report*, IMF, Washington D.C., October 2024.

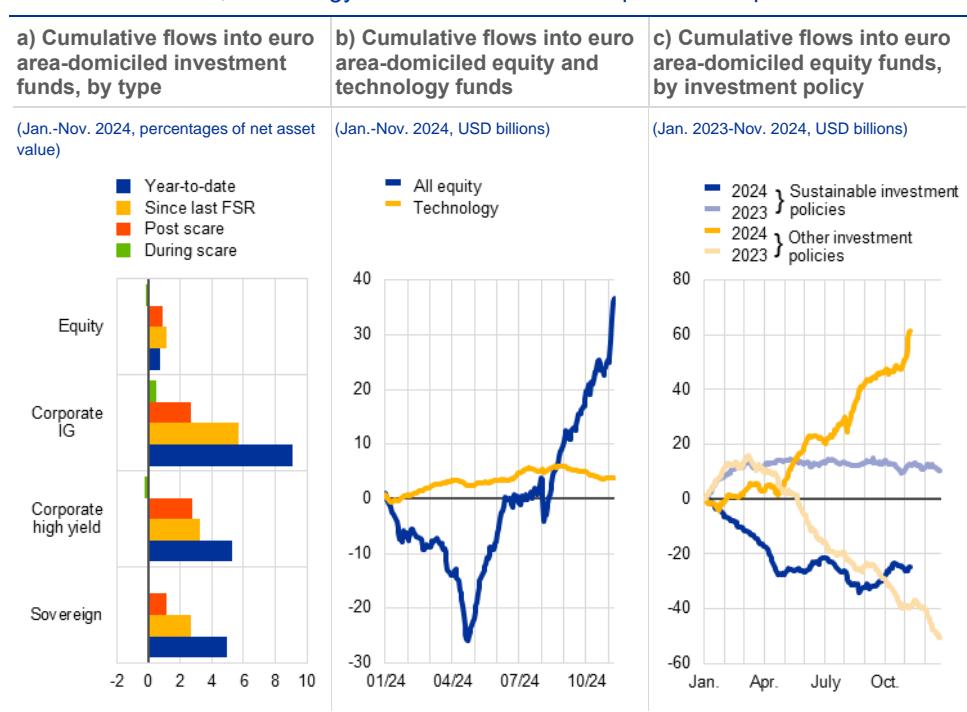
4.2

A growing investment fund sector remains vulnerable to liquidity, leverage and concentration risks

Inflows into a wide range of euro area investment funds have further increased the sector's size as well as its relevance. In the context of the post-low interest rate environment and an uncertain macroeconomic outlook, investors have continued to prefer bond investments, which has supported the absorption of debt issued in the euro area (**Chart 4.3**, panel a, **Section 4.1**). While flows into equity funds have been more volatile this year, strong valuations, in particular for technology-related firms, have resulted in sizeable inflows (**Chart 4.3**, panel b). Outflows from comparatively riskier fund types during the global volatility spike in early August were short-lived and small compared with the strong inflows that followed. Since the end of 2023, the euro area investment fund sector has seen an increase in total assets under management of around 8%, to €18.6 trillion. The continuing growth of investment funds highlights not only their increasing importance for financial intermediation but also the need to ensure the sector's resilience in the interests of wider financial stability.

Chart 4.3

Demand for bonds, technology stocks and non-ESG equities has spurred fund inflows



Sources: EPFR Global and ECB calculations.

Note: Panel a: "During scare" refers to the period between 31 July and 7 August 2024. IG stands for investment grade. Panel c: sustainable investment policies include funds with socially responsible investment (SRI) or environmental, social and governance (ESG) investment criteria.

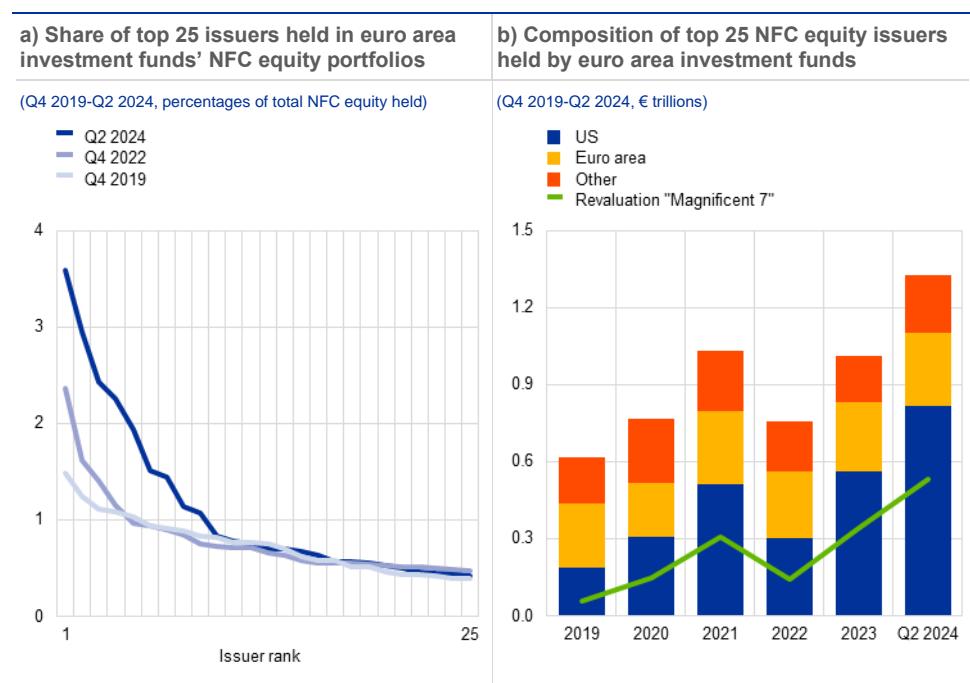
Shifts in equity fund investments away from ESG and active investment

strategies may give rise to new financial stability risks. Following a phase of decelerating inflows in 2023, equity funds which have focused on SRI and ESG criteria have seen outflows that have intensified in the course of 2024 (**Chart 4.3**, panel c). This decline in investor demand reflects a combination of different factors, including below-average fund performance and a lack of transparency in the definition of these

investment policies. To the extent that this indicates a shift towards more carbon-intensive investments, equity fund valuations may become exposed to comparatively higher transition risk.³⁸ Additionally, a significant shift from active to passive equity funds has further increased the share of passively managed portfolios. These benchmark-linked funds can be associated with higher co-movement among stock returns and equity concentration, with potentially adverse impacts on underlying equity markets (**Box 3**).

Chart 4.4

High concentration in equity holdings increases risk of valuation shocks



Sources: ECB (CSDB, SHS) and ECB calculations.

Notes: The top 25 issuers are the 25 largest NFCs held by portfolio value, aggregating equity exposures for corporates that issue more than one type of share for the respective quarters shown. Panel a: x-axis ranks issuers from the largest (1) to the 25th largest (25) issuer held. Panel b: "Magnificent 7" comprises the stocks of Amazon, Apple, Alphabet, Nvidia, Meta, Microsoft and Tesla. The revaluation of "Magnificent 7" stocks is computed as the cumulated variation in holdings since the beginning of 2019 not attributable to transactions. The values shown in the chart represent the amounts at the end of the reference periods. NFC stands for non-financial corporation.

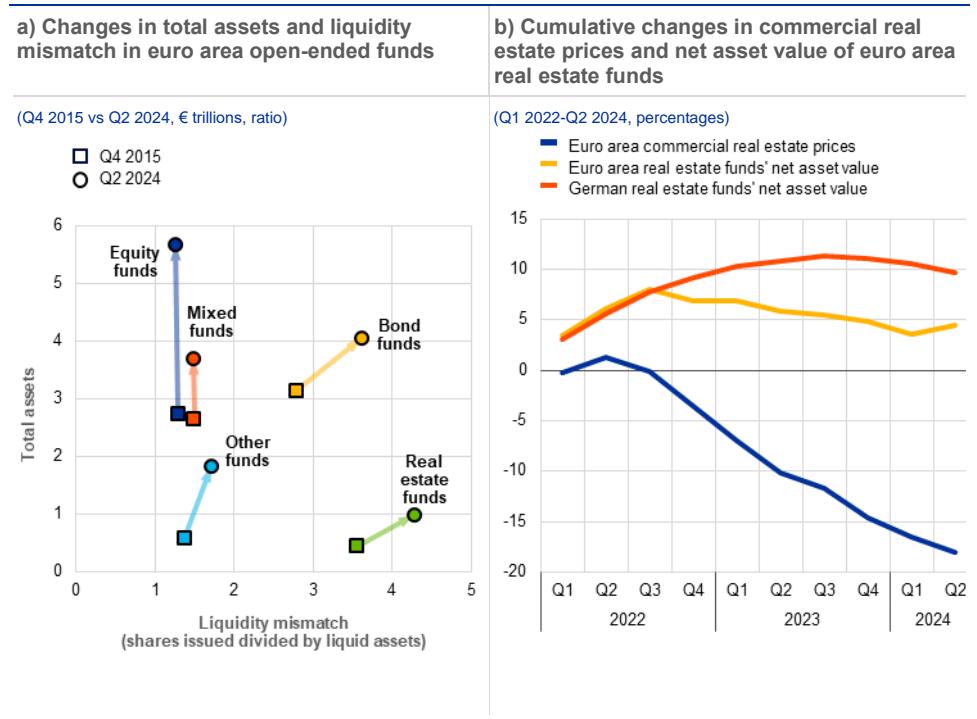
Equity holdings have continued to become more concentrated, exposing equity funds to volatility and price corrections in a few large US companies. In the course of 2024, investments in the listed shares of NFCs have become substantially more concentrated (**Chart 4.4**, panel a). As of the second quarter of 2024, the 25 largest issuers in the NFC equity portfolios of euro area investment funds accounted for around 28% of total investments. This increase in concentration can be almost fully attributed to larger holdings in US issuers, primarily within the technology sector (**Chart 4.4**, panel b). While increased investor demand has also led to additional investment in these firms, the rise in concentration is largely due to significant valuation gains in a few large US companies. In a context of high equity market concentration overall, potential overvaluation concerns and elevated volatility risk (**Chapter 2**), shocks to individual companies or to the US technology sector could lead

³⁸ For an analysis of the potential impact of transition risk shocks on the investment fund sector see also “One-off ‘Fit for 55’ climate scenario analysis”, European Supervisory Authorities and ECB, November 2024.

to sudden drops in fund returns and subsequent sharp outflows, further amplifying market dynamics.

Chart 4.5

Liquidity mismatches mean investment funds are vulnerable to forced asset sale dynamics



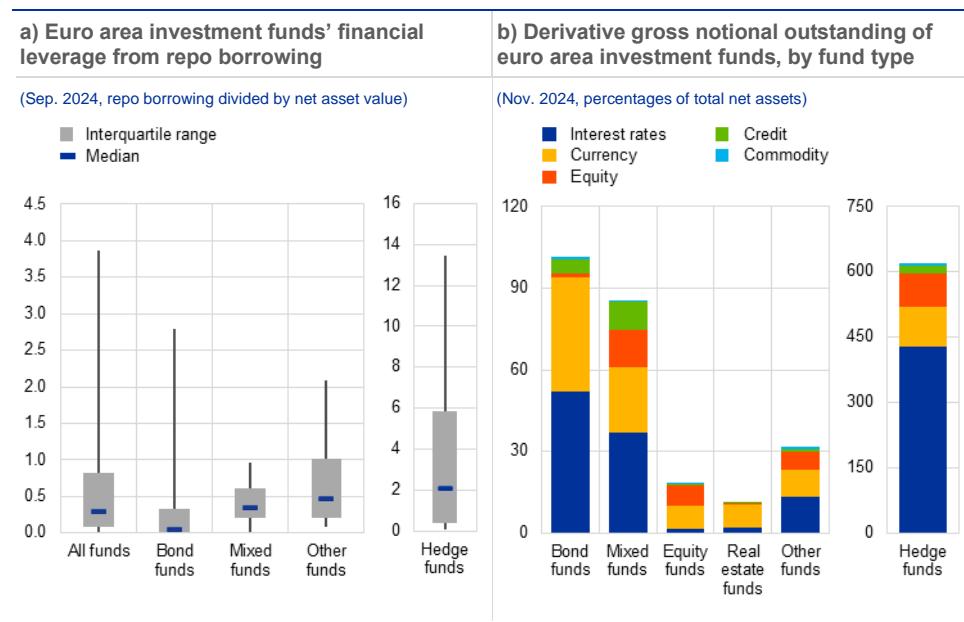
Sources: ECB (RESC, IVF) and ECB calculations.

Notes: Panel a): liquidity mismatch is defined as the ratio of investment fund shares issued to liquid assets (deposits and debt securities with a maturity of less than one year, euro area sovereign bonds, investment and money market fund shares, and advanced economy listed shares). This measure of liquidity mismatch does not take into account the availability of liquidity management tools.

Forced asset sale dynamics arising from high liquidity mismatches remain a concern in various types of open-ended investment funds. Several types of open-ended investment funds in the euro area feature significant liquidity mismatches, as these allow their investors to redeem at short notice while being invested in illiquid assets. As the investment fund sector has grown over the past ten years, liquidity mismatches have increased in bond and real estate funds in particular (Chart 4.5, panel a). Declining liquidity buffers (Overview, Chart 3, panel c) increase the risk of forced asset sales in funds, which can amplify adverse price dynamics in underlying markets (Box 5). Real estate funds remain particularly exposed, given the illiquid nature of their assets and the persistently uncertain outlook for the commercial real estate market (Chapter 1). Risks from liquidity mismatches in real estate funds may be partially limited by lower redemption frequencies and longer notice periods in several jurisdictions. However, the steep decline in commercial real estate prices may not yet be fully reflected in fund valuations in several euro area countries, notably Germany (Chart 4.5, panel b), implying that the risk of price corrections and subsequent fund outflows remains elevated.

Chart 4.6

Pockets of elevated leverage can amplify market corrections and spillovers



Sources: ECB (CSDB, EMIR, IVF, SFTDS), LSEG Lipper and ECB calculations.

Notes: Panel a: equity and real estate funds omitted due to low repo borrowing in these fund types. Box plot whiskers refer to the 5th and 95th percentiles of the distributions. Panel b: total net assets as of August 2024.

Pockets of vulnerability related to increasing financial and synthetic leverage persist in the investment fund sector, most notably in hedge funds.

While financial leverage in most investment fund types has remained limited in aggregate, some funds – especially hedge funds – tend to take on considerable levels of leverage in the form of repo borrowing, for instance (**Chart 4.6**, panel a). These leveraged positions can amplify return volatility, increase the risk of fund outflows and lead to spillovers to banks and other financial institutions which provide such funding. Also, investment funds make use of synthetic leverage in the form of derivative exposures on different types of underlying asset class. This exposes investment funds to the risk of sizeable margin calls during periods of high market volatility. Although margining serves to reduce counterparty risk in derivative positions, a significant rise in margin calls can also lead to liquidity stress and the need for forced asset sales. Hedge funds may be particularly exposed to such scenarios, given their high outstanding gross notional positions in derivatives contracts (**Chart 4.6**, panel b). Pockets of leverage, especially in combination with liquidity mismatches, have the potential to cause spillover effects from the investment fund sector to the wider financial system. Strengthening the resilience of the sector, including from a macroprudential perspective, is therefore crucial for euro area financial stability (**Chapter 5**).

Box 5

The potential impact on the euro area bond market of forced asset sales by euro area investment funds

Prepared by Andrzej Sowiński

Structural liquidity mismatches in investment funds might be both a source and an amplifier of systemic risk. Investment funds typically offer more generous redemption terms than the liquidity

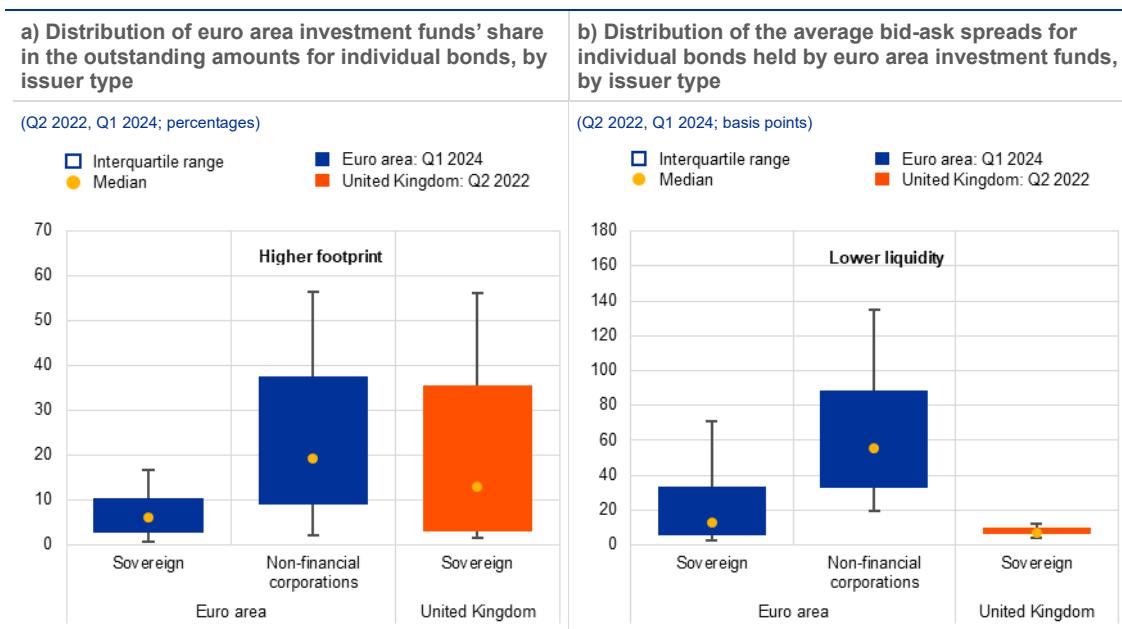
of their holdings justify. This kind of liquidity transformation might be beneficial to investors and the economy, but can also give rise to financial stability risks.³⁹ Rapid shifts in investor sentiment in response to negative shocks can lead to large outflows from funds, forcing significant asset sales. This, in turn, can put substantial pressure on asset prices, causing losses to investment funds and other market participants. Rising volatility and related risk management considerations can lead to further outflows, creating asset sale spirals, fuelling contagion and increasing the risk of disorderly corrections.

The factors influencing the price impact of forced asset sales warrant careful consideration.

The price impact of forced asset sales is largely dependent on the market footprint of the seller, as illustrated by the liability-driven investment (LDI) crisis and the UK gilt turmoil in September 2022.⁴⁰ A large footprint increases the likelihood that a sizeable liquidation of holdings will put additional pressure on their prices. The price impact stemming from outsized supply is also more material if the liquidity of the assets held by the fund is low. Hence, both the size of the funds' share in individual markets and the liquidity profile of their holdings are critical in gauging the potential financial stability repercussions.

Chart A

Euro area investment funds have a substantially larger footprint in less liquid euro area corporate bonds than in more liquid euro area sovereign bonds



Sources: Bloomberg Finance L.P., ECB (SHS, CSDB), S&P Dow Jones Indices LLC and/or its affiliates, MarketAxess (Trax) and ECB calculations.

Notes: Investment funds' share and average bid-ask spreads are calculated at individual ISIN level. Whiskers denote the 10th and 90th percentiles of the distribution.

The large footprint of investment funds in the euro area corporate bond market makes this segment more vulnerable to disruption. The distribution of the euro area investment funds' share

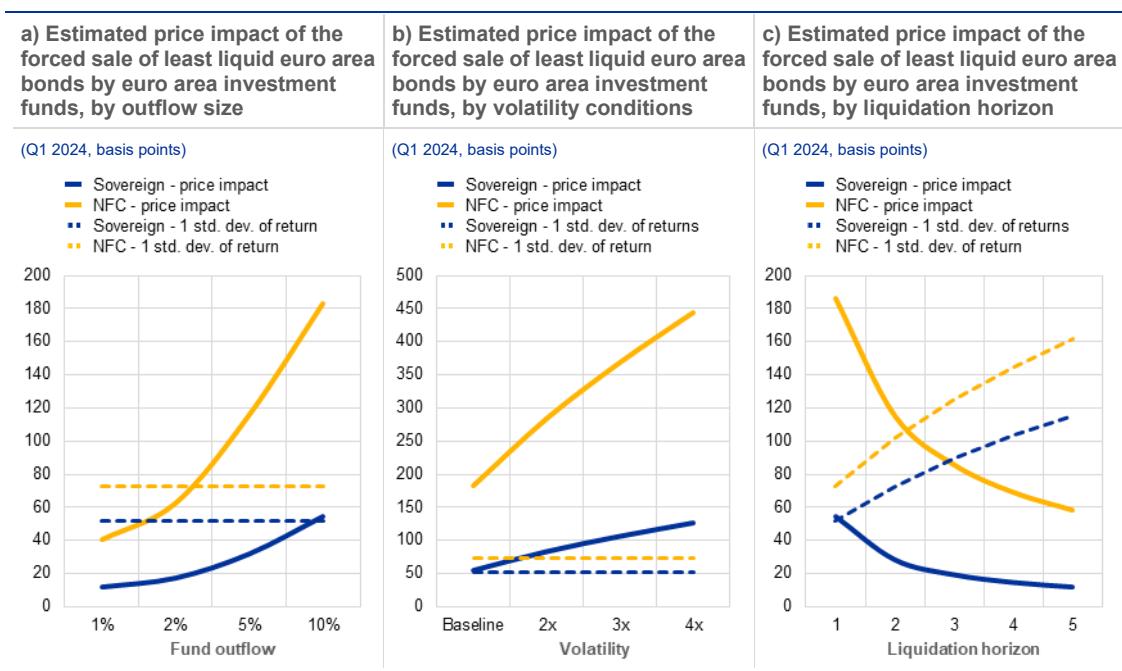
³⁹ See, for example, Chernenko, S. and Sunderam, A., “[Liquidity transformation in asset management: Evidence from the cash holdings of mutual funds](#)”, *Working Paper Series*, No 23, ESRB, September 2016.

⁴⁰ See, for example, the special feature entitled “[Stress associated with liability-driven investment strategies](#)”, *EU Non-bank Financial Intermediation Risk Monitor 2023*, No 8, ESRB, June 2023, and “[Risks from leverage: how did a small corner of the pensions industry threaten financial stability?](#)”, speech given by Sarah Breeden at ISDA & AIMA, Bank of England, 7 November 2022.

in the outstanding amounts for individual securities suggests that the sector has a moderate footprint in the euro area sovereign bond market (**Chart A**, panel a). With a well-diversified investor structure showing differing sensitivity to global and euro area risk events,⁴¹ these bonds appear less susceptible to outflows of specific types of investor. By contrast, investment funds have a much larger footprint in the euro area corporate bond market. In the event of a shock leading to forced asset sales, this market would be more likely to become one-sided. The lack of potential buyers might then result in outsized price adjustments.⁴² In addition, euro area corporate bonds held by investment funds are substantially less liquid than sovereign bonds (**Chart A**, panel b), suggesting that forced sales would have a much bigger impact on prices.

Chart B

Forced sales of less liquid corporate bonds by euro area investment funds are much more likely to result in abnormal price adjustments than is the case for sovereign bonds



Sources: Bloomberg Finance L.P., ECB (SHS, CSDB) and ECB calculations.

Notes: The estimates show an average price impact for the 10% of bond holdings with the lowest Bloomberg Liquidity Score in each issuer segment, proxied by the Bloomberg Liquidity Assessment (LQA) model. The model is based on the empirical observation that market impact is concave on large order sizes. The model leverages pre- and post-trade data by modelling the available volume as a Gamma process, growing in cost and horizon dimensions. The standard deviation of returns shows an average standard deviation for the holdings analysed and the assumed liquidation horizon, based on the Bloomberg LQA Price Volatility. Averages are weighted by the value of the funds' holdings. Securities are assumed to be liquidated on a pro-rata basis in response to the outflows and leverage ratio assumed to stay constant. NFC stands for non-financial corporations. Panel a: a one-day liquidation horizon and a baseline volatility regime are assumed. Fund outflow is relative to the net asset value (NAV). Panel b: a one-day liquidation horizon and fund outflow of 10% of NAV are assumed. Panel c: the liquidation horizon is expressed in days. A baseline volatility regime and a fund outflow of 10% of NAV are assumed.

⁴¹ See, for example, the box entitled “Do global investment funds have a stabilising effect on euro area government bond markets?”, *Financial Stability Review*, ECB, May 2023.

⁴² Similar dynamics were observed during the UK gilt turmoil, where GBP-denominated LDI funds, including those domiciled in the EU, were the key investors in several long-term and inflation-linked bonds subject to forced selling. See also, for example, Dunne, P., Ghiselli, A., Ledoux, F. and McCarthy, B., “Irish-Resident LDI Funds and the 2022 Gilt Market Crisis”, *Financial Stability Notes*, Vol. 2023, No 7, Central Bank of Ireland, September 2023, and Alexander, P., Fakhouri, R., Horn, T., Panjwani, W. and Roberts-Sklar, M., “Financial stability buy/sell tools: a gilt market case study”, *Quarterly Bulletin* 2023, Bank of England, November 2023.

A forced asset sale scenario analysis highlights vulnerabilities in the corporate bond space.⁴³

The price impact of forced asset sales on less liquid corporate bonds could be material in comparison with normal price volatility (proxied by 1 standard deviation of returns), especially in the event of large and sudden redemptions (**Chart B**, panel a) and during times of high market volatility (**Chart B**, panel b). This increases the likelihood of second-round effects, as substantial fund losses could induce another wave of redemptions in funds investing in corporate bonds. By contrast, the estimated price impact of euro area investment funds in sovereign bond markets is relatively small, even in the less liquid segments of this market. Importantly, the sensitivity analysis suggests that the adverse price impact resulting from forced asset sales could even be mitigated by small extensions of the liquidation horizon (**Chart B**, panel c). This underscores the importance of appropriate fund structures, including redemption terms and notice periods for investing in less liquid markets.⁴⁴

Policy adjustments are warranted to better safeguard financial stability. Stress events, where forced asset sales by non-banks have had a significant impact on asset prices, have stimulated a broader discussion on non-banks' liquidity fragilities. The forced asset sale scenario analysis suggests that regulatory fine-tuning is necessary for funds investing in less liquid assets such as corporate bonds. The extension of notice periods is a liquidity management tool whose use is already envisaged in the EU regulatory framework for investment funds.⁴⁵ However, individual asset managers may be hesitant to use the tool because of reputational concerns and stigma effects.⁴⁶ Therefore, from a financial stability perspective, additional steps are needed to ensure that minimum notice periods are in place ex ante and that their length aligns with the liquidity profile of fund holdings in both normal and stressed market conditions.

4.3 Strong solvency and improving profitability for insurers

The euro area insurance sector remains resilient as a whole, with underwriting profitability improving for life insurers in particular. Insurers' Solvency Capital Requirement (SCR) coverage ratios have remained well above the regulatory minimum of 100% (**Chart 4.7**, panel a).⁴⁷ Underwriting profitability – as measured by the ratio of premiums written to the sum of net claims incurred and expenses – continues to rise for non-life business lines as a whole, although there have also been signs of improvement for life activities since the beginning of 2024 (**Chart 4.7**, panel b). This follows the decline in underwriting profitability experienced by life

⁴³ Similar results can also be found, for example, in Mirza, H., Moccero, D., Palligkinis, S. and Pancaro, C., “Fire sales by euro area banks and funds: what is their asset price impact?”, *Working Paper Series*, No 2491, ECB, November 2020, and Lô, S. and Carpantier, J.-F., “Liquidity Stress Test for Luxembourg Investment Funds: the Time to Liquidation Approach”, *CSSF Working Paper*, CSSF, March 2023.

⁴⁴ See, for example, “Revised Policy Recommendations to Address Structural Vulnerabilities from Liquidity Mismatch in Open-Ended Funds”, FSB, December 2023.

⁴⁵ Directive (EU) 2024/927 of the European Parliament and of the Council of 13 March 2024 amending Directives 2011/61/EU and 2009/65/EC as regards delegation arrangements, liquidity risk management, supervisory reporting, the provision of depositary and custody services and loan origination by alternative investment funds (OJ L, 2024/927, 26.3.2024).

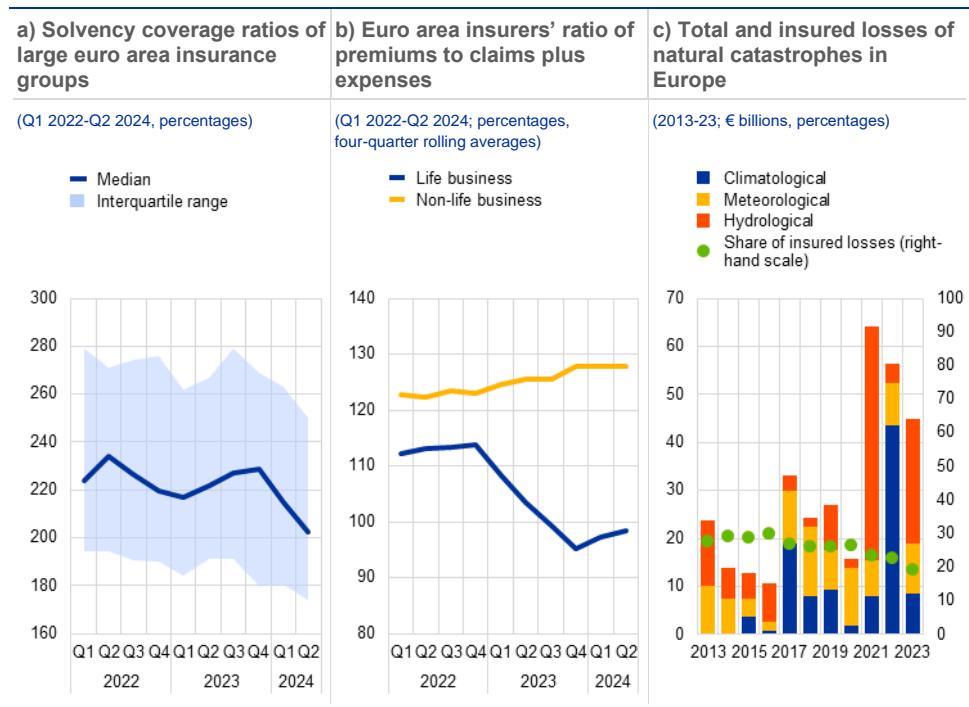
⁴⁶ See, for example, Morbee, K., “Liquidity management tools in open-ended investment funds: the right tools in the right hands?”, *Capital Markets Law Journal*, Vol. 18, Issue 2, April 2023, pp. 233–258.

⁴⁷ Where insurers employ transitional measures, the reported solvency ratios are higher in crisis periods due to higher discount rates to calculate the market values of liabilities. The SCR does not account for potential unrealised losses in insurers' asset portfolios. For further discussion, see the “Report on Long-Term Guarantee Measures and Equity Risk 2020”, EIOPA, December 2020.

insurers in 2023, which was driven by an increase in claims compared with previous years and limited growth in new policies. Looking ahead, however, the materialisation of downside risks to growth could negatively affect underwriting performance.

Chart 4.7

Insurers' solvency remains strong with underwriting performance improving, but the sector faces longer-term risks related to climate change



Sources: ECB (LIG), European Environment Agency Climate-ADAPT – RiskLayer CATDAT and ECB calculations.

Note: Panel a: the solvency coverage ratio is defined as eligible own funds divided by the Solvency Capital Requirement (SCR). Panel b: the four-quarter rolling average ratio of net premiums written to the sum of net claims incurred plus total expenses for large euro area insurance groups' life business and non-life business (e.g. the ratio for Q1 2022 is an average for the period Q2 2021-Q1 2022). Panel c: climatological events relate to extreme temperatures, drought and wildfires; meteorological events relate to storms; and hydrological events relate to floods and mass movements of soil. The share of insured losses is presented in terms of rolling ten-year averages (e.g. 2013 values reflect the average for the period 2004-13).

In the medium term, higher interest rates than in the recent past may help insurance corporations and pension funds (ICPFs) become more resilient, but CRE exposures continue to pose risks. ICPFs generally benefit from higher interest rates on account of their negative duration gaps.⁴⁸ In addition, higher interest rates than during the period of low interest rates that prevailed until 2022 imply that they can profit from higher returns as they gradually roll over their portfolios. This includes investments in higher quality bonds which, in turn, can reduce credit risk and increase overall portfolio liquidity. However, ICPFs still have significant holdings of illiquid assets, especially in real estate, that were accumulated prior to 2022.⁴⁹ While real estate exposures are primarily indirect via holdings of euro area real estate investment fund (REIF) and real estate company shares, the ongoing downturn in the commercial

⁴⁸ The duration gap refers to the difference between the duration (average weighted maturity) of assets and liabilities. When the duration of assets is larger (smaller) than that of liabilities, the insurer has a positive (negative) duration gap. Insurers and pension funds typically have a negative duration gap, implying that they benefit from rising interest rates, whereas banks have a positive duration gap.

⁴⁹ See the special feature entitled “[Private markets, public risk? Financial stability implications of alternative funding sources](#)”, *Financial Stability Review*, ECB, May 2024.

real estate market could affect these sectors and result in losses for ICPFs.⁵⁰ In particular, potential stress in open-ended REIFs (**Section 4.2**) could lead to losses for their investors (which include ICPFs). More generally, the share of liquid assets in ICPF portfolios has continued to decline (**Overview**).⁵¹ Thus, they remain vulnerable to potential liquidity pressures from large margin calls, which could arise from sharp changes in financial market volatility or interest rates. Previous stress events, such as the March 2020 market turmoil, show that liquidity pressures faced by ICPFs can also propagate stress across the wider financial system. It is therefore important that ICPFs strengthen their liquidity preparedness to meet margin calls.

Insurers also face challenges from climate-related natural catastrophes, which are of growing macroeconomic and financial stability importance. The rise in the frequency and severity of natural catastrophes due to climate change means that the magnitude of economic losses has grown in the past decade (**Chart 4.7**, panel c). In Europe, severe storms and flooding in the first half of 2024 – especially in France, Germany and the United Kingdom – generated economic losses of USD 6.4 billion and insured losses of USD 2.8 billion.⁵² The severe and tragic flooding events that occurred in central and eastern Europe in September and Spain in November are collectively expected to result in economic losses of over USD 20 billion.⁵³ Going forward, the increasing scale of losses could have an impact on insurers via rising claims. At present, however, less than a quarter of climate-related catastrophe losses in the EU are insured (**Chart 4.7**, panel c). The insurance protection gap – the proportion of economic losses not covered by insurance – could even widen going forward as insurers raise the price of policies in response to rising insured losses. Higher prices for policies may in turn lead to such insurance becoming unaffordable. That could increase burdens on governments, in terms of both macroeconomic risks and the fiscal spending required to cover uninsured losses. A widening insurance protection gap could also be a source of systemic risk, as physical damage can result in falling asset values as well as the repricing of the loans and securities of financial institutions exposed to higher-risk areas. This highlights the importance of taking policy action to reduce the climate insurance protection gap.⁵⁴

⁵⁰ See “[Mapping the maze: a system-wide analysis of commercial real estate exposures and risks](#)”, *Macroprudential Bulletin*, No 25, ECB, November 2024.

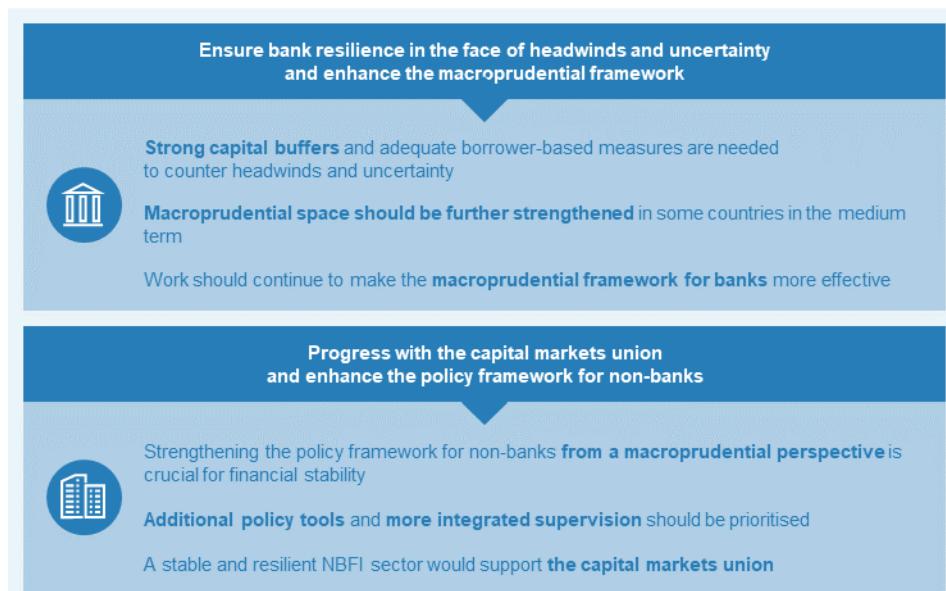
⁵¹ The decline in the share of liquid assets has been partly driven by the fall in the value of longer-dated – and typically highly liquid – bonds held by ICPFs since mid-2022, following the rise in interest rates.

⁵² See “[Natural disasters in the first half of 2024](#)”, Munich Re, July 2024.

⁵³ See “[Deadly floods add to fiscal strains in central Europe](#)”, Reuters, September 2024 and “[Economic impact of floods in Spain could rise to over 10 bln euros](#)”, Reuters, November 2024.

⁵⁴ See “[Policy options to reduce the climate insurance protection gap](#)”, *Discussion Paper*, EIOPA-ECB, April 2023.

5 Macroprudential policy issues



5.1 Ensuring resilience in times of headwinds and uncertainty remains essential

The macroprudential authorities have continued to implement new (or adjust existing) macroprudential measures to strengthen bank resilience. This includes increasing releasable capital buffer requirements such as the countercyclical capital buffer (CCyB) and the (sectoral) systemic risk buffer (SyRB), with the aim of addressing existing vulnerabilities and further enhancing macroprudential space. These policy actions have resulted in a noticeable increase in macroprudential space (from 0.29% of risk weighted assets in December 2019 to 0.82% in October 2024)⁵⁵ and, as things stand, all euro area countries have implemented or announced some form of releasable capital buffer requirements.⁵⁶ These measures have complemented existing borrower-based measures that have been effective in bolstering borrowers' resilience and have helped prevent a deterioration in mortgage credit quality.⁵⁷ This comprehensive set of policies has helped make the banking

⁵⁵ The figure for October 2024 refers to all releasable buffers (the CCyB and the SyRB) announced by national authorities until that date. The increase in the CCyB in Portugal is not included in the figure, as Banco de Portugal is implementing a public consultation until 19 November 2024.

⁵⁶ Since the publication of the May 2024 Financial Stability Review, three additional jurisdictions that previously lacked releasable capital buffers have announced the introduction of a positive neutral CCyB rate (Spain, Greece and Portugal). The economic costs associated with the increases in buffer requirements since the pandemic have been low, as banks' robust profitability and existing capital headroom (in a context of economic recovery after the pandemic) have prevented procyclical effects (see, for example, Behn, M., Forletta, M. and Reghezza, A., "[Buying insurance at low economic cost – the effects of bank capital buffer increases since the pandemic](#)", *Working Paper Series*, No 2951, ECB, 2024).

⁵⁷ A number of authorities have applied targeted adjustments to some of the design elements of borrower-based measures. This is to avoid excessive procyclicality in the supply of mortgages to specific borrowers.

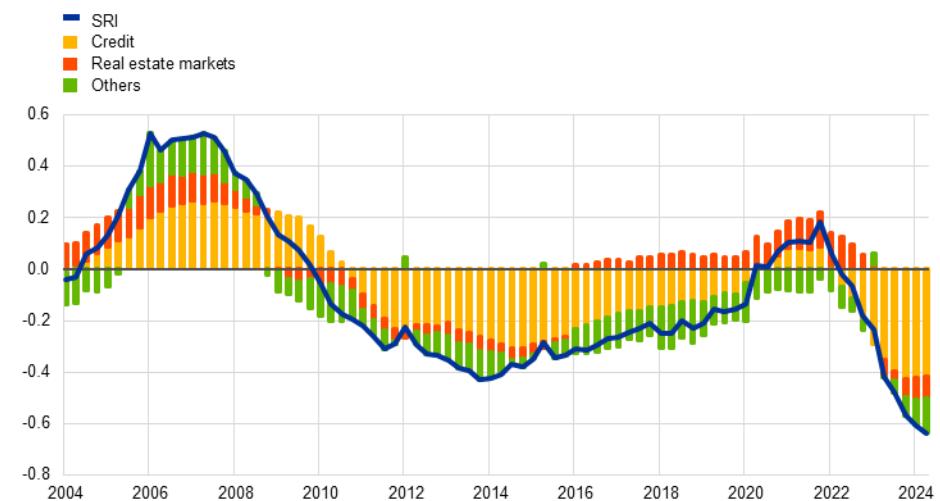
sector more resilient to the series of adverse shocks that have affected the euro area (e.g. the shocks triggered by Russia's full-scale invasion of Ukraine and the banking turmoil that originated in the United States and Switzerland in the spring of 2023).

Chart 5.1

The financial cycle continues its orderly downturn

Decomposition of the euro area systemic risk indicator

(Q1 2004-Q2 2024, deviations from the median)



Sources: Eurostat, ECB and ECB calculations.

Notes: The systemic risk indicator (SRI) measures the build-up of risks from credit developments, real estate markets, asset prices and external imbalances. The indicator's early warning properties for financial crises in European countries are better than those of the Basel credit-to-GDP gap. "Credit" includes the contributions of the two-year change in the bank credit-to-GDP ratio and the two-year growth rate of real total credit; "Real estate markets" denotes the contribution of the three-year change in the price/income ratio for residential real estate; "Others" includes the contributions of the current account-to-GDP ratio, the three-year change of real equity prices and the two-year change in the debt/service ratio. The SRI is based on Lang, J.H., Izzo, C., Fahr, S. and Ruzicka, J., "Anticipating the bust: a new cyclical systemic risk indicator to assess the likelihood and severity of financial crises", Occasional Paper Series, No 219, ECB, 2019.

Maintaining existing releasable capital buffer requirements and ensuring that

adequate borrower-based measures are in place remain key priorities for

macroprudential policy in a context of headwinds and uncertainty. The euro area financial cycle has turned in an orderly manner so far, with growth in credit and property prices decelerating or turning negative in some countries (**Chart 5.1**), while non-performing loans continue to rise slowly, albeit from historical lows (**Chapter 3**). There are no signs of widespread loss materialisation or credit supply constraints arising from banks' capital positions, as banks remain profitable and are well capitalised (**Chapter 3**).⁵⁸ However, headwinds to bank profitability may increase while vulnerabilities remain, particularly in the form of deteriorating corporate fundamentals, debt service challenges faced by pockets of vulnerable households and firms, weak cyclical conditions and overvaluation in some real estate and financial markets (**Chapters 1 and 2**). Against this background, it is essential to maintain existing buffer requirements in order to preserve resilience in the event of a deterioration in banking sector or macro-financial conditions. At the same time, existing borrower-based measures should be maintained to serve as structural backstops and ensure that lending standards are sound and sustainable throughout

⁵⁸ Balance sheet constraints and the cost of funds have had a broadly neutral impact on credit standards for loans or credit lines to enterprises and households in the last few quarters. See the October 2024 euro area [Bank Lending Survey](#) covering the third quarter of 2024.

all phases of the financial cycle. This is particularly important, given that the downward trends seen in some mortgage lending markets might be coming to an end as demand for housing loans starts to pick up again ([Chapter 1](#)).⁵⁹

Increasing macroprudential space further in the form of releasable capital buffer requirements remains desirable in some countries.⁶⁰ Acknowledging the improvement in macroprudential space mentioned above, a further increase in some countries would enhance macroprudential authorities' capacity to respond countercyclically to possible future shocks, including those relating to heightened geopolitical and macro-financial uncertainty.⁶¹ Enhancing macroprudential space could be achieved, for example, by implementing a positive neutral rate for the CCyB or the (sectoral) SyRB.⁶² In an environment of robust bank profitability and comfortable capital headroom, this could be achieved without procyclical effects (i.e. without curtailing lending). Lastly, in a context in which uncertainty remains elevated, ensuring that banks have sufficient capacity to absorb losses comes with the additional significant benefit of allowing monetary policy to pursue its objective more efficiently without risking unintended side effects on financial stability that could impair the transmission of monetary policy.⁶³ In general, by pre-emptively increasing the loss absorption capacity of the financial sector (via adequate capital buffers) and promoting the financial soundness of borrowers (via borrower-based measures), macroprudential policy could build up the resilience required to mitigate the potential side effects associated with the changes in monetary policy stance needed to achieve price stability.

The ECB strongly supports regulatory initiatives aimed at creating macroprudential space while maintaining existing requirements and improving the efficiency and effectiveness of the EU macroprudential framework for banks. In this regard, the ECB welcomes recent changes to the Capital Requirements Directive (CRD VI) aimed at simplifying the coordination mechanism used to set various capital requirements. Looking ahead, the ECB will continue to contribute to discussions on the review of the EU's macroprudential framework. Several elements are under discussion, including (i) facilitating a more flexible use of the CCyB, (ii) enhancing the usability of releasable buffers, and (iii) providing regulatory guidance on the calibration of buffer settings for other systemically important institutions (O-SIIs). Regarding the implementation of capital-based measures, it is important to assess the interactions between the final targets for the minimum requirements for own funds and

⁵⁹ Banks in several countries have loosened lending standards for mortgage loans. They have also reported a strong increase in mortgage demand driven by lower lending rates and improved prospects for the sector. See the October 2024 euro area [Bank Lending Survey](#) covering the third quarter of 2024.

⁶⁰ See the [Governing Council statement on macroprudential policies](#) of the ECB following the meeting of its Macroprudential Forum on 19 June 2024.

⁶¹ On the effectiveness of countercyclical macroprudential action, see the [Financial Stability Review](#), ECB, May 2024.

⁶² Ten euro area countries have introduced frameworks for a positive neutral CCyB and have implemented or announced the relevant CCyB rates. The countries are Estonia, Ireland, Greece, Spain, Cyprus, Latvia, Lithuania, the Netherlands, Portugal and Slovenia.

⁶³ See Hempell, H. et al., “[Implications of higher inflation and interest rates for macroprudential policy stance](#)”, *Occasional Paper Series*, No 358, ECB, 2024.

eligible liabilities and the macroprudential framework.⁶⁴ For systemically important institutions in the banking union, the calibration of capital buffers should be better aligned to avoid unwarranted heterogeneity. This would improve the overall resilience of systemically important banks in the banking union.⁶⁵ It would also contribute to a more level playing field, thus supporting financial integration. The ECB also reiterates its call for a more consistent use of the (sectoral) SyRB to promote the coherent treatment of systemic risk across countries.⁶⁶

The ECB strongly welcomes the fact that the final elements of Basel III were implemented in EU law in June 2024. The new Capital Requirements Regulation (CRR III)⁶⁷, which includes the bulk of the Basel III elements, will generally be applicable from 1 January 2025 and will be fully phased in by 1 January 2030. The new Capital Requirements Directive (CRD VI)⁶⁸, which implements additional elements, is expected to be transposed in all Member States by 10 January 2026. Moreover, the Basel Committee on Banking Supervision is continuing its work on the disclosure of climate-related risks that complements the standards of the International Sustainability Standards Board. This provides a common disclosure baseline which enables internationally active banks to support market discipline and reduce information asymmetries among market participants in the area of climate risks.

5.2

Progress on the capital markets union will be key to supporting EU-wide productivity and growth

Making progress on the capital markets union (CMU) should form part of a renewed strategy to enhance Europe's productivity and economic growth, thereby contributing to financial resilience. Recent high-level reports have emphasised the importance of mobilising capital markets in order to deepen the EU's Single Market and provide adequate financing to innovative and productive firms in Europe.⁶⁹ It will be a big challenge to translate this ambition into concrete policies supporting the development of capital markets. It will imply a greater role for non-bank

⁶⁴ To ensure the effectiveness of both frameworks it is important to examine the interactions relating to the usability of buffers. This guarantees conceptual consistency between the methodologies applied by different authorities. See, for instance, "[Report of the Analytical Task Force on the overlap between capital buffers and minimum requirements](#)", European Systemic Risk Board, December 2021, and Leitner, G. et al., "[How usable are capital buffers?](#)", *Occasional Paper Series*, No 329, ECB, 2023.

⁶⁵ See the "[Governing Council statement on macroprudential policies](#)", ECB, December 2022. For other references to heterogeneity in buffer settings for O-SIIs, see also the "[EBA report on the appropriate methodology to calibrate O-SII buffer rates](#)", EBA, December 2020, and the "[ECB response to the European Commission's call for advice on the review of the EU macroprudential framework](#)", ECB, March 2022.

⁶⁶ See Behn, M. et al., "[The sectoral systemic risk buffer: general issues and application to residential real estate-related risks](#)", *Occasional Paper Series*, No 352, ECB, 2024.

⁶⁷ See Regulation (EU) 2024/1623 of the European Parliament and of the Council of 31 May 2024 amending Regulation (EU) No 575/2013 as regards requirements for credit risk, credit valuation adjustment risk, operational risk, market risk and the output floor (OJ L, 2024/1623, 19.6.2024). Some transitional provisions will remain in place until 31 December 2032.

⁶⁸ See Directive (EU) 2024/1619 of the European Parliament and of the Council of 31 May 2024 amending Directive 2013/36/EU as regards supervisory powers, sanctions, third-country branches, and environmental, social and governance risks (OJ L, 2024/1619, 19.6.2024).

⁶⁹ See, for example, "[The Future of European competitiveness](#)", a report compiled by Mario Draghi in September 2024 at the request of the European Commission and "[Much more than a market](#)", a report compiled by Enrico Letta in April 2024 at the request of the European Council.

financial intermediation (NBFI), together with an enhanced macroprudential framework which will safeguard resilience and financial stability in general.

Several factors are contributing to the inefficient allocation of capital in the EU, reducing the productive capacity of the economy and in turn leading to subdued growth and lower financial resilience. The reliance on bank lending (as outlined in **Special Feature B**), the fragmentation of the EU's equity markets, the lack of a developed venture capital environment in the EU⁷⁰ and the variation in capital market development across national markets are all leading to higher financing costs and greater inefficiencies in the allocation of capital. In addition, euro area households keep a third of their financial assets in cash and bank deposits on average, while retail participation in capital markets remains limited.⁷¹ Furthermore, around 40% of assets from the euro area investment fund sector are invested outside the euro area.⁷² These observations point to a lack of opportunities for investors in domestic markets and difficulties for firms in the EU when they seek to obtain adequate funding, especially in innovative, high-potential sectors.

Deepening Europe's equity markets and encouraging the allocation of savings to the most productive areas of the EU economy are priorities for a sound CMU. Increased retail participation in capital markets could be supported through a new EU savings product associated with coordinated tax incentives across Member States. The aim would be to redirect savings to capital markets while also deepening financial integration and cross-border risk sharing. Reducing the debt-equity bias in taxation frameworks could further contribute to promoting equity financing. Finally, continued efforts to achieve further harmonisation of company law and securities law at the EU level would support the work done by the Eurosystem to integrate the trading and post-trading landscapes and would support a possible consolidation of national infrastructures. This would ultimately make it more attractive and efficient to list and trade in the EU. Public-private partnerships could step up their investment in innovative firms and contribute to the development of capital markets. In this regard, the activities of the European Investment Fund provide blueprints that could be promoted, together with the creation of innovation hubs which would bring together academia, industry and investors to ensure that new ideas, entrepreneurship and funding could come together to boost productivity and innovation in Europe.⁷³

A coherent regulatory architecture for a single market for capital requires further harmonisation in key areas. Shortcomings in matters like insolvency regimes, accounting rules and securities law continue to hamper the cross-border functioning of Europe's capital markets and deny companies access to the full benefits

⁷⁰ Venture capital investments in the EU have averaged 0.3% of GDP per year over the last decade. This is less than a third of the US average, with US venture capital funds raising USD 800 billion more than EU venture capital funds to invest in innovative startups. See Arnold, N., Claveres, G. and Frie, J., "Stepping Up Venture Capital to Finance Innovation in Europe", *IMF Working Papers*, No 24/146, IMF, July 2024.

⁷¹ The share of currency and deposits in household financial assets reached its highest point in 2022. See Chapter 4 of "Financial Integration and Structure in the Euro Area", ECB, June 2024.

⁷² ibid.

⁷³ For instance, the European Tech Champion Initiative is one of the tools deployed by the European Investment Bank, in collaboration with Member States, to support the emergence of megafunds investing in technological innovation. They do this by providing growth finance to European tech champions in their late-stage growth phase. The European Investment Bank also provides venture investments to individual companies in the form of venture debt and equity co-investments.

of the Single Market. In addition, the supervisory ecosystem is key to supporting the development and integration of capital markets and limiting potential financial stability risks. Better integrated supervision of EU capital markets could be an important element of the CMU. It would ensure that the European supervisory authorities, especially the European Securities and Markets Authority (ESMA) and the European Insurance and Occupational Pensions Authority (EIOPA), have the resources they need to perform their tasks and the kind of governance that supports decision-making that is in the interests of the EU.⁷⁴

5.3 Enhancing the policy framework for NBFI from a macroprudential perspective

Enhancing the resilience of non-bank financial intermediation (NBFI) is intended to ensure that the provision of finance to the real economy is more stable, minimising the need for extraordinary central bank interventions.

Previous stress episodes highlighted vulnerabilities in the NBFI sector, which contributed to and amplified market disruptions. In some cases, extraordinary central bank interventions were required to restore market functioning and safeguard financial stability.⁷⁵ To realise the benefits of the capital markets union (CMU), it is vital that capital markets are a resilient and sustainable source of financing, especially in times of stress. In the long run, the CMU can only be successful if it is accompanied by a more integrated supervision and policies that ensure stability in the NBFI sector. Against this background, the ECB welcomes the European Commission's consultation on macroprudential policies for NBFI.⁷⁶ In order to tackle systemic vulnerabilities and build a more resilient financial system, several key principles should underpin the design of such an approach to NBFI (see the table below).

It is critical for the EU to proceed with money market fund (MMF) reforms to ensure the stability of short-term money markets and reduce the risk of cross-border regulatory arbitrage. In its latest peer review of MMFs, the Financial Stability Board (FSB) noted that its 2021 proposals to enhance MMF resilience had been implemented unevenly across jurisdictions.⁷⁷ In contrast to the EU, the United States and the United Kingdom have either reformed – or consulted on reforms of – their respective regulatory frameworks for MMFs in a way that is consistent with the FSB's proposals.⁷⁸ To avoid regulatory arbitrage due to divergences in minimum standards (which could lead to a shift of liquidity risk towards EU MMF markets), the

⁷⁴ This may involve directly supervising the most systemic cross-border capital market actors, in cooperation with their national supervisors. See "[Statement by the ECB Governing Council on advancing the Capital Markets Union](#)", ECB, 7 March 2024.

⁷⁵ See "[Holistic Review of the March Market Turmoil](#)", FSB, 17 November 2020.

⁷⁶ See "[Targeted consultation assessing the adequacy of macroprudential policies for non-bank financial intermediation \(NBFI\)](#)", European Commission, 22 May 2024.

⁷⁷ See "[Thematic Review on Money Market Fund Reforms](#)", FSB, 27 February 2024.

⁷⁸ In 2023 the U.S. Securities and Exchange Commission raised the minimum liquidity requirements for MMFs and removed ties between regulatory liquidity thresholds and the imposition of fees and redemption gates (see [SEC Final Rule](#)). Proposed changes to current MMF regulation in the United Kingdom also include a significant increase in the minimum proportion of highly liquid assets and the removal of the link between liquidity levels and the activation of liquidity management tools (see [FCA Consultation Paper](#)).

EU should proceed with legal reforms of its MMF regulations as a matter of priority. Risks from liquidity mismatch should be addressed by increasing the liquidity buffer requirements for private debt MMFs and by making liquidity buffers more usable. Further measures could include the removal of threshold effects linked to the breach of liquidity requirements, as outlined by the ESRB recommendations.⁷⁹

Key principles underpinning a macroprudential approach to NBFI	
Taking a system-wide perspective	The approach should consider how vulnerabilities in the NBFI sector could affect and interact with the rest of the financial system and/or the real economy.
Tailored to different entities and activities	A one-size-fits-all approach is unlikely to be effective, given the diversity of NBFI entities and activities. Instead, policy measures should be appropriately tailored to different business models within the NBFI sector, accounting for diversity within the sector.
Proportionate/mindful of potential risks	The design, calibration and implementation of policy measures should be the result of carefully balancing costs and benefits from the perspective of the broader economy. The measures should also be proportionate to the severity of the risks addressed.
Focused on building resilience ex ante	Policy measures should focus primarily on building resilience and reducing the potential for contagion by mitigating existing vulnerabilities ex ante. Tools used to address systemic risk after a shock has materialised can usefully complement the toolkit, but they are no substitute for measures that mitigate risk ex ante.
Flexible in responding to emerging risks	The macroprudential policy toolkit should be developed in a way that enables it to respond flexibly to risks as they evolve over time and to target entities and activities. The tools should be designed specifically to pre-empt systemic risk arising from the collective action of institutions (e.g. raising large amounts of liquidity to meet investor redemptions in the investment fund sector).
Globally coordinated/consistent with global standards	Given the global nature of capital markets, vulnerabilities outside the euro area could have implications for European financial stability and vice versa. Similarly, in the absence of coordination the risk of leakages would be higher. A macroprudential approach to NBFI should thus be consistent with globally agreed standards to mitigate the risk of cross-border fragmentation and regulatory arbitrage.
Supported by clear governance	Macroprudential policies should be supported by a clear governance framework that enables coordination and cooperation between authorities, both domestically and internationally.

The EU should also move forward with the full and swift implementation of international recommendations aimed at addressing liquidity mismatch in open-ended funds.⁸⁰ While progress has been achieved through the recent review of the Alternative Investment Fund Manager Directive (AIFMD) and the Undertakings for Collective Investment in Transferable Securities (UCITS) Directive,⁸¹ further work is required to implement the FSB's recommendations effectively. This will involve classifying funds depending on asset liquidity and adapting rules to mitigate liquidity mismatch in illiquid funds by, for example, introducing EU-wide minimum notice periods for real estate funds.⁸² Ensuring greater use and consistency in the use of anti-dilution liquidity management tools may also require additional work, such as

⁷⁹ See “Recommendation of the European Systemic Risk Board of 2 December 2021 on reform of money market funds”, ESRB, published on 25 January 2022.

⁸⁰ See “Revised Policy Recommendations to Address Structural Vulnerabilities from Liquidity Mismatch in Open-Ended Funds”, FSB, 20 December 2023.

⁸¹ See “Amendments to AIFMD and UCITSD Managing risks and protecting investors”, European Parliamentary Research Service, 10 June 2024.

⁸² See “Issues note on policy options to address risks in corporate debt and real estate investment funds from a financial stability perspective”, ESRB, September 2023. Further discussions have taken place at the national level. See, for example, “Macroprrudential Policy for Investment Funds: Considerations by the CSSF”, CSSF, 10 June 2024; “An approach to macroprudential policy for investment funds”, Discussion Paper, Central Bank of Ireland, 18 July 2023; and Lewrick, U. et al., “An Assessment of Investment Funds’ Liquidity Management Tools”, CSSF Working Paper, CSSF, June 2022.

ensuring that less liquid funds use anti-dilution tools or offer redemption terms that are commensurate with their asset liquidity.⁸³

A dedicated tool for limiting structural liquidity mismatch in open-ended funds should form part of the macroprudential toolkit available to authorities. This macroprudential tool could resemble the existing measure in Article 25 of AIFMD for leverage but would be designed to specifically target liquidity mismatch in open-ended funds. The tool could be deployed for both alternative investment funds and UCITS, depending on the nature of the systemic risk posed by cohorts of either fund type. The tool should be discretionary in nature and aim to reduce vulnerabilities from liquidity mismatch ex ante, in order to safeguard financial stability. For instance, it should grant authorities powers to specify longer notice periods for specific fund types that invest in relatively illiquid assets. To help ensure that any new tools are operational and are used consistently across the EU, ESMA should play a greater role in coordinating the policy measures in consultation with the ESRB, consistent with an enhanced coordination mechanism.

Non-bank leverage is another key issue that warrants immediate action to assess and close potential gaps in the existing policy framework in the EU. This includes taking stock of the policy tools that are available to authorities in the EU to contain such risks and then consider potential policy solutions to address them. An important interim step would be to adopt the FSB minimum haircut framework for securities financing transactions.⁸⁴ This would help manage the leverage in the NBFI sector that is generated via securities lending and repo transactions backed by non-government debt collateral. In addition, under the UCITS Directive authorities should be equipped with policy tools for limiting the leverage of complex funds that pursue hedge fund-like strategies. All UCITS funds using value at risk should regularly report on and disclose their leverage in accordance with the commitment approach. Moreover, a discretionary tool should be introduced to impose tighter leverage restrictions on these funds. Further work may be required to align with the proposed measures coming out of the FSB's work on leverage in the NBFI sector.

The international policy response to risks from non-bank leverage should be comprehensive and based on a broad policy toolkit. Given the cross-border dimension and complexities involved in tackling risk arising from NBFI leverage as well as its interlinkages with liquidity risk, a comprehensive, global approach is needed to close policy gaps. Such an approach should consider how haircuts and margining in derivatives markets help to curb excessive leverage in the NBFI sector, while taking into account the potential unintended effects on the propensity of end users to hedge. Where tools used to constrain leverage at the entity level are already part of regulatory frameworks, as is the case for investment funds in the EU, it is worth considering whether the existing rules need to be enhanced from a financial stability perspective. Another important issue to address is how prime brokers and dealer banks facilitate non-bank leverage in accordance with their risk management practices. This is

⁸³ Currently, ESMA is consulting on liquidity management tools under the AIFMD and UCITS Directive. See "[ESMA consults on liquidity management tools for funds](#)", ESMA, July 2024.

⁸⁴ See "[Regulatory framework for haircuts on non-centrally cleared securities financing transactions](#)", FSB, originally published in November 2015, last updated in September 2020. The minimum haircuts would apply only to transactions in which non-banks received funding against non-government debt collateral.

especially relevant with regard to mitigating the build-up of leverage for entities that are not subject to regulatory leverage constraints, such as hedge funds or family offices. Further work will be needed as part of a comprehensive policy response to develop globally consistent metrics and improve data quality and coverage, as well as information sharing, to assess leverage-related risks.

Enhancing EU-wide coordination and providing ESMA with additional powers would help promote the EU's level playing field and reduce the potential for regulatory fragmentation. In the context of the macroprudential framework and oversight of non-banks, due consideration should be given to the respective roles of macroprudential authorities at both the national and the European level to ensure consistency in the development and implementation of macroprudential policy tools. In particular, a clearer EU-wide framework for policy coordination and standard-setting would be beneficial. Such an approach should ideally be based on common rules and standards across the EU and accompanied by coordinated supervisory action at the EU level. To guard against cross-border leakages and ensure a level playing field, two elements should be prioritised: a reciprocation mechanism for macroprudential measures aimed at non-banks in the EU and "top-up" powers that could be used by ESMA in collaboration with national authorities after consulting the ESRB.⁸⁵ As outlined in the context of the CMU, the ECB is supportive of further integration in the supervision of EU capital markets.⁸⁶

To underpin a macroprudential approach to NBFI, it is important that authorities with a macroprudential mandate have access to granular data on non-banks.

While the ESCB collects a range of data from non-banks for statistical purposes, current arrangements to access these data across authorities are insufficient to monitor and assess the risk to financial stability. For example, under its monetary and financial stability mandate, the ESCB does not have direct access to entity-by-entity supervisory data already reported (e.g. under AIFMD, the UCITS Directive, the Money Market Funds Regulation, Solvency II or MiFID/MiFIR).⁸⁷ The relevant EU regulations should include provisions ensuring the ESCB has timely and efficient access to granular NBFI data, as well as the sharing of statistical and regulatory data on non-banks between central banks and the relevant EU and national competent authorities. This could help mitigate inefficiencies in data collection and enhance usability, thereby also reducing the reporting burden on non-banks. In addition, given the global nature of capital markets, a mechanism for data sharing would ideally be designed and operated at an international level. The EU should go ahead with lifting legal constraints that hinder data and information sharing, to the extent that such data could enhance the identification of risks to financial stability.

⁸⁵ For instance, if a national authority were to implement leverage limits for a group of funds, reciprocation would ensure that funds with a similar systemic risk profile in other Member States would also be subject to those limits if they were active in the jurisdiction enacting such limits. Top-up powers could be granted to ESMA for specific macroprudential tools (e.g. requesting the implementation of new measures or topping up existing national measures).

⁸⁶ This would involve European supervisory authorities, especially ESMA and EIOPA, working in cooperation with national supervisors and could include directly supervising the most systemic cross-border capital market actors. See "[Statement by the ECB Governing Council on advancing the Capital Markets Union](#)", ECB, 7 March 2024.

⁸⁷ See, for example, "[Opinion of the European Central Bank of 9 August 2022 \(CON/2022/26\)](#)", 3 October 2022.

Special Features

A Communication for financial crisis prevention: a tale of two decades

Prepared by John Fell, Sándor Gardó, Benjamin Klaus, Jonas Wendelborn and Stefan Wredenborg⁸⁸

This edition of the ECB's Financial Stability Review (FSR) marks the 20th anniversary of its inaugural publication. The FSR was originally launched to help in preventing financial crises, and this special feature draws lessons from two decades of experience in identifying, analysing and communicating about systemic risks via this publication. Although risk analysis and risk communication are distinct processes, the special feature emphasises that they are inextricably intertwined in a seamless cycle where each informs and enhances the other. Effective risk identification is founded on the ability to combine structured, data-driven assessments with qualitative insights and expert judgement. Such an approach requires a comprehensive and adaptive framework that continuously integrates broad reviews of indicators with focused analyses on emerging risks. Early identification of vulnerabilities enables timely intervention, but the complex, non-linear way that the financial system functions means that flexibility remains essential. Clear and transparent communication of systemic risks supports this analytical process by shaping expectations and enhancing market discipline, creating a feedback loop that strengthens both policy response and risk awareness. However, central banks face the challenge of balancing communication frequency and depth in order to avoid false alarms while at the same time maintaining credibility. As the ECB's FSR has evolved, it has sought to become more accessible and data-driven, while utilising diverse media channels to broaden its audience. Experience confirms that targeted, proactive communication reinforces financial stability by aligning policymakers and markets, underscoring the symbiotic relationship between risk analysis and effective communication in maintaining financial system resilience.

1 Introduction

The European Central Bank (ECB), like all central banks, has a strong and natural interest in safeguarding financial stability as reflected in its mandate.⁸⁹

There is a long history of central banks prioritising financial stability as a core aspect of their mandates, with at least three reasons explaining this involvement. First and foremost, the aim is to prevent financial crises which could have severe consequences for the real economy. As central banks are integral to the functioning of the financial

⁸⁸ The authors gratefully acknowledge visualisation support by Mario Correddu, data support by Siria Angino and survey design support by Justus Meyer.

⁸⁹ Article 127(5) of the Treaty on the Functioning of the European Union specifies that "the ESCB shall contribute to the smooth conduct of policies pursued by the competent authorities relating to the prudential supervision of credit institutions and the stability of the financial system."

system, they have ready access to timely information, making them uniquely placed to detect and monitor sources of risk and vulnerabilities affecting financial stability. If required, central banks can communicate about the consequences of private sector inaction in managing systemic risks. If this proves ineffective, they can activate prudential policy instruments to mitigate such risks before they crystallise and escalate into crises which impair financial intermediation.⁹⁰ This crisis prevention role has grown in importance since the global financial crisis as many central banks have taken on macroprudential policymaking responsibilities.⁹¹ Second, central banks are often endowed with responsibilities as lenders of last resort, which allows them to provide liquidity to financial institutions during times of stress. This role is crucial in ensuring that financial institutions can meet their obligations, thereby preventing multiple bank failures and shielding the economy from systemic risks.⁹² Third, it is broadly acknowledged that financial stability is essential for the effective implementation of monetary policy and for the smooth operation of payment systems. Financial instability can lead to disruptions in the economy, and if such disruptions are sufficiently severe to cause panic, they can undermine the willingness of banks to lend. By contrast, when a financial system is stable, credit flows smoothly from lenders to borrowers, allowing central banks to influence economic activity and inflation by changing interest rates.

This special feature presents a stylised overview of the ECB's framework for identifying euro area-wide systemic risks and its approach to communicating them in its semi-annual Financial Stability Review. The rest of this special feature is organised as follows: Section 2 briefly presents the role of risk identification and communication as distinct, but intertwined processes. Section 3 outlines the ECB's framework for identifying systemic risks, while Section 4 discusses central bank communication about systemic risks. Section 5 concludes.

2 Systemic risk identification and communication as intertwined processes

The timely and robust identification of sources of risk and vulnerabilities is fundamental for an effective financial stability analytical framework. In contrast to the price stability objective of central banks, the concept of financial stability is difficult to define and even more difficult to measure. Financial systems are usually considered stable if they are able to intermediate efficiently between savers and borrowers, while having the capacity to manage financial risks effectively and absorb

⁹⁰ See, for instance, Gorton, G. and Winton, A., "Financial Intermediation", in Constantinides, G.M., Harris, M. and Stulz, R.M. (eds.), *Handbook of the Economics of Finance*, Vol. 1, Part A, Elsevier, 2003, pp. 431-552.

⁹¹ Macroprudential policy tasks were conferred on the ECB in 2013 by Article 5 of the SSM Regulation. The aim is to contribute to the safety and soundness of individual credit institutions and the stability of the financial system, both at the euro area level and in each Member State.

⁹² The ECB has specific responsibilities in the area of lender of last resort, primarily governed by the Treaty on the Functioning of the European Union and the ECB's own statutes. In particular, the ECB may object to the provision of emergency liquidity assistance (ELA) by the national central banks of the euro area. These national central banks provide emergency funding to solvent banks facing temporary liquidity challenges. The ECB's Governing Council monitors and can restrict or object to the provision of ELA by national central banks to ensure that it does not interfere with the ECB's monetary policy.

shocks.⁹³ With so many dimensions to financial stability, no single yardstick can reasonably be expected to capture each and every one. The task is to identify sources of risk and vulnerabilities which could impair financial intermediation and effective risk reallocation within the financial system. This involves detecting and prioritising fault lines which could threaten shock-absorption capacity. As the externalities inherent to systemic risk are often complex and non-linear, an eclectic approach is needed to ensure that risk identification is effective.⁹⁴ This ranges from the systematic use of data and models, the collection of qualitative information through market intelligence and out-of-the-box, or contrarian, analysis, all of which aim to anticipate implications for a constantly evolving financial system. The timely and robust identification of emerging vulnerabilities can, in turn, inform an assessment of the materiality of individual sources of risk through the use of macro stress testing, for instance.⁹⁵ These sources of risk can then be prioritised according to the effects they may have on shock-absorption capacity as well as the potential costs for the real economy. This informs communication strategy and macroprudential policy settings (**Figure A.1**). One aspect which sets the ECB apart from other central banks with macroprudential responsibilities is that they have a specific country focus. In practice, this means that the ECB needs to constantly cross-check the findings from top-down area-wide analyses of sources of risk and vulnerabilities against the findings from country-level analyses.⁹⁶ All in all, with an emphasis on what can go wrong, input from the various building blocks for identifying risks is crucial for the ECB to form a robust prioritisation of sources of risk and vulnerabilities and to decide on the appropriate communication strategy.

Central bank communication on financial stability and systemic risks plays an important role in safeguarding financial stability. While communication on threats to financial stability is a separate process from analysis, the two are inextricably intertwined in a seamless cycle where each informs and enhances the other (**Figure A.1**). Communication forms an important part of crisis prevention as it helps shape expectations. In turn, these expectations can bring about preventive action within the financial industry, strengthen market discipline and enhance the financial system's resilience. Furthermore, financial stability communication allows central banks to be transparent and ensures accountability as they carry out their financial stability duties. It can also foster financial inclusion and a better understanding of financial risks.

⁹³ See Schinasi, G., “[Defining Financial Stability](#)”, *Working Papers*, No 04/187, IMF, 2004.

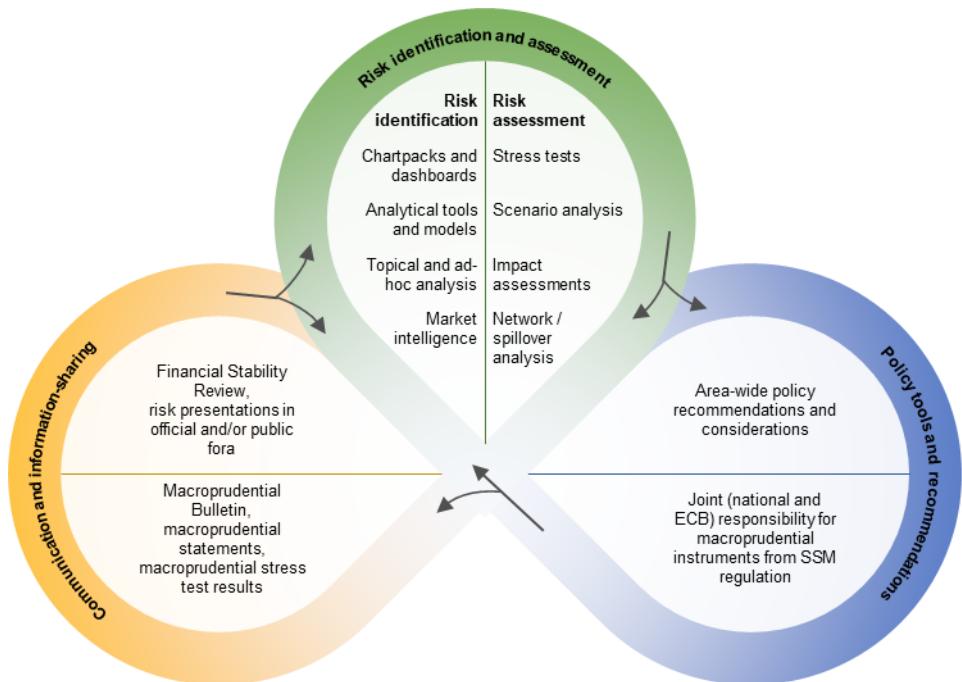
⁹⁴ Financial crises often have their roots in negative externalities and market failures. Such externalities can occur when the actions of individual financial institutions impose costs on others that are not reflected in market prices. For example, the failure of a major bank could lead to widespread economic disruption, affecting businesses and individuals who have had no direct dealings with the affected bank and resulting in a loss of confidence and weaker economic activity. In addition, typical market failures leading to financial crises include information asymmetry, moral hazard and coordination failures.

⁹⁵ See Budnik, K. (ed.), “[Advancements in stress-testing methodologies for financial stability applications](#)”, *Occasional Paper Series*, No 348, ECB, May 2024.

⁹⁶ See Constâncio, V. (ed.), “[Macroprudential policy at the ECB: Institutional framework, strategy, analytical tools and policies](#)”, *Occasional Paper Series*, No 227, ECB, July 2019.

Figure A.1

Risk identification and communication are inextricably intertwined in the ECB's financial stability analysis and macroprudential policy processes



Source: ECB.

3 Systemic risk identification: mission impossible?

Systemic risk refers to the possibility that the provision of financial products and services by the financial system could be impaired so severely that economic growth and welfare would be materially affected.⁹⁷ It can arise from at least three sources, including an endogenous build-up of financial imbalances, sizeable adverse aggregate shocks to the economy or the financial system, and contagion across markets, intermediaries or infrastructures. While systemic risk is not a phenomenon limited to financial systems, some characteristics of such systems make them particularly prone to systemic risk.⁹⁸ First, the financial system is characterised by important externalities (see footnote 94). Complex and dynamic networks of exposures among major financial intermediaries usually facilitate efficient risk-sharing mechanisms in tranquil times but they can become a source of instability in periods of stress.⁹⁹ Second, the prevalence of asymmetric information in the financial system creates agency problems between counterparties which may not be fully captured by underlying financial contracts. Third, powerful feedback and

⁹⁷ See "Consolidation of the Financial Sector", Group of Ten, 2001.

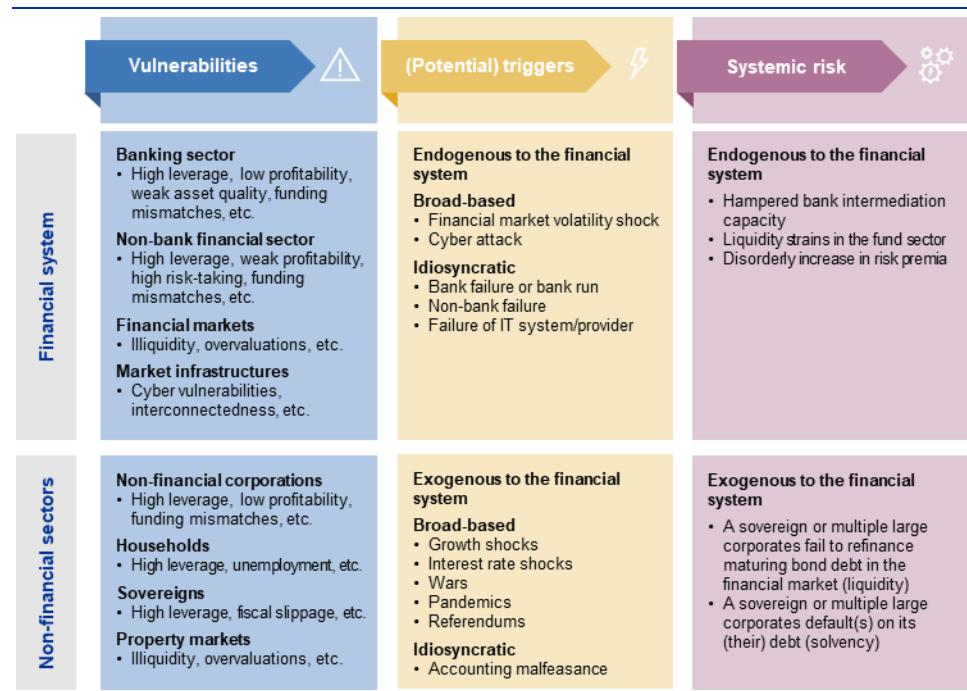
⁹⁸ See De Bandt, O. and Hartmann, P., "Systemic risk: A survey", *Working Paper Series*, No 35, ECB November 2000.

⁹⁹ See Haldane, A., "Rethinking the Financial Network", speech at the Financial Student Association, Amsterdam, April 2009; Gai, P., "The Robust-Yet-Fragile Nature of Financial Systems", in Gai, P. (ed.), *Systemic Risk: The Dynamics of Modern Financial Systems*, Oxford University Press, 2013, pp. 8-27.

amplification mechanisms – such as market illiquidity, maturity mismatches between assets and liabilities and leverage – increase the risk of shocks becoming more severe and more widespread.¹⁰⁰

Figure A.2

Operationalisation of a risk identification framework requires a thorough understanding of subtle differences between vulnerabilities, triggers and risks



Source: ECB.

Conceptually, it is crucial to distinguish between vulnerabilities, triggers which could unravel them and systemic risk scenarios, or narratives, which describe how financial crises play out.¹⁰¹ Vulnerabilities are imbalances or fault lines which reduce the financial system's capacity to absorb the impact of negative events. They often represent structural and fundamental weaknesses within the financial system and non-financial sectors which can propagate and amplify shocks. A trigger is an event that could unearth or catalyse the unravelling of a vulnerability. Triggers of financial stress can originate from either within or outside the financial system and can be broad-based or idiosyncratic in nature (Figure A.2). Depending on the resilience of the financial system, triggers can, if activated, have limited and manageable effects or they can unleash systemic financial crises. Risk scenarios bring together identified vulnerabilities and plausible triggers into a coherent and consistent framework that can describe and potentially quantify the main channels of systemic risk propagation. Such scenarios often involve the unravelling of several vulnerabilities simultaneously, as imbalances and fault lines are often interlinked. For example, a disorderly rise in risk premia could unearth vulnerabilities in different economic and financial sectors if

¹⁰⁰ See Segoviano, M. and Goodhart, C., "Banking Stability Measures", *Working Papers*, No 09/4, IMF, January 2009.

¹⁰¹ See also Fell, J. and Schinasi, G., "Assessing Financial Stability: Exploring the Boundaries of Analysis", *National Institute Economic Review*, No 192, April 2005.

there are cross-exposures to assets with compressed valuations and if funding is available at very low cost. The main concern over a situation becoming systemic is thus not that a single financial institution would face distress if asset prices were to fall, but that several financial institutions would be confronted with liquidity and/or solvency challenges at the same time.

The ECB takes a medium-term perspective when considering vulnerabilities and systemic risk scenarios. Ideally, sources of risk and vulnerabilities should be identified at an early stage to allow for swift communication and appropriate remedial action to be taken by the financial industry. For macroprudential policymaking, the horizon is often longer, for two reasons. First, corrective actions taken by the financial industry, if any, may reduce vulnerabilities and address systemic risks. Second, the amount of time needed to activate some macroprudential policy tools can be lengthy. For instance, a change of setting for the countercyclical capital buffer must be communicated to banks one year before it enters into effect.

Seminal early work laid the conceptual basis for financial stability frameworks, but costly financial crises have highlighted the need for refinement. Work done in the early 2000s provided the essential conceptual foundations needed to build robust analytical frameworks for financial stability.¹⁰² Later on, major bouts of financial instability, especially the global financial crisis of 2007-09, revealed several blind spots, including interconnections within the financial system that had not been properly detected, let alone measured. At the same time, lessons learned from this and other crisis episodes underscored the need for a framework that is sufficiently agile to adapt to a financial system that is constantly evolving. Efforts made after the global financial crisis to enhance the collection and availability of data for financial stability purposes have also been bearing fruit, and it is now possible to conduct analyses that were not possible before.

There is no one best way to organise a financial stability risk identification framework. Several factors need to be considered when designing a framework for financial stability risk detection, including the financial system's structure, the relative importance of different sectors in the economy and policymakers' preferences. A framework could, for example, be organised around types of vulnerability that proved to be sources of risk during past crises (such as excessive leverage, asset-liability mismatches and asset price misalignments).¹⁰³ Alternatively, it could be organised around the monitoring of different sectors within the financial system and the non-financial sector. Each approach has its pros and cons. A sectoral approach, while comprehensive, requires an additional analysis of the interactions and

¹⁰² See Crockett, A., "Marrying the micro- and macro-prudential dimensions of financial stability", BIS speech (Basel), 20-21 September 2000; De Bandt, O. and Hartmann, P., "Systemic risk: A survey", *Working Paper Series*, No 35, ECB, November 2000; Fell, J. and Schinasi, G., "Assessing Financial Stability: Exploring the Boundaries of Analysis", *National Institute Economic Review*, No 192, April, 2005; Schinasi, G., *Safeguarding Financial Stability: Theory and Practice*, International Monetary Fund, 2005; Goodhart, C.A.E., "A framework for assessing financial stability?", *Journal of Banking & Finance*, 30(12), 2006, pp. 3415-3422; and Borio, C. and Drehmann, M., "Towards an operational framework for financial stability: 'fuzzy' measurement and its consequences", *Working Papers*, No 284, BIS, June 2009.

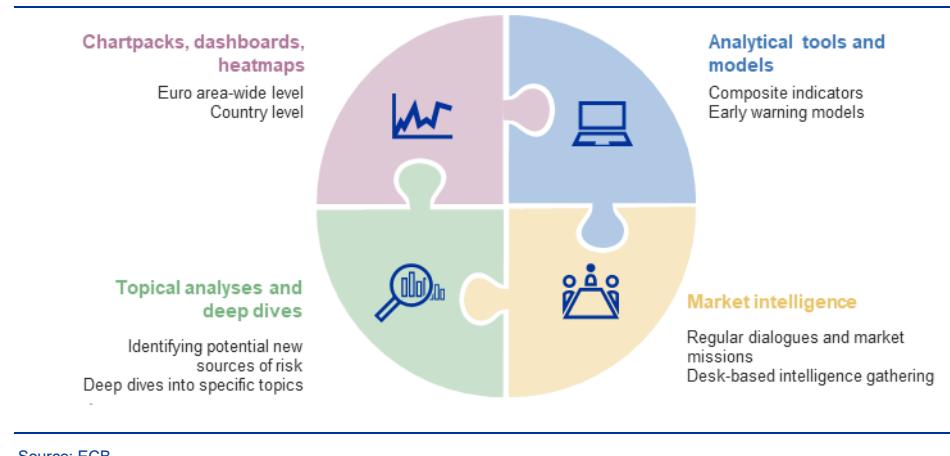
¹⁰³ See, for example, Powell, J.H., "The Federal Reserve's Framework for Monitoring Financial Stability", speech at The Economic Club of New York, Board of Governors of the Federal Reserve System, New York, November 2018; and Adrian, T., Covitz, D. and Liang, N.J., "Financial Stability Monitoring", *Staff Reports*, Federal Reserve Bank of New York, June 2014.

interconnectedness of vulnerabilities across sectors. Conversely, a framework based on familiar vulnerabilities offers a cross-sectoral span, but it risks being less comprehensive and might even miss newly emerging vulnerabilities.

The ECB follows a sectoral approach in its euro area-wide systemic risk identification framework. This covers (i) the non-financial sector, including sovereigns, non-financial corporations, households and property markets; (ii) financial markets; (iii) the banking sector; and (iv) the non-bank financial intermediation sector, with a focus on investment funds, insurance corporations and pension funds. This approach ensures the comprehensive monitoring of all parts of the financial system and the environment in which financial intermediaries operate. It also facilitates the development of tailored indicators and models for each sector. For the ECB, it is important to form a comprehensive overview of banking sector vulnerabilities, as its macroprudential powers are limited to “topping-up”, or being more stringent in the activation of, measures taken by national macroprudential authorities for their banking sectors.

Figure A.3

The four building blocks of the ECB's systemic risk identification framework comprise various monitoring and analytical tools, topical deep dives and market intelligence



More specifically, the ECB's systemic risk identification framework consists of four main complementary and interlinked building blocks. A thorough sweep of the latest developments serves as a starting point for risk identification. This is complemented by a systematic review of analytical tools and models to ensure the structured monitoring of developments and the assessment of risks. Topical analyses and deep dives, together with market intelligence-gathering, help detect potential sources of risk that might otherwise go undetected, e.g., due to measurement problems (Figure A.3). These building blocks are complementary since they cross-check a variety of information sources and combine them into a comprehensive view on sources of risk. For example, a deep-dive analysis of a new development that is relevant to financial stability (e.g. a financial innovation) could lead to more structural adjustments to regular monitoring. It could also prompt the adaptation of existing (or the development of new) analytical indicators to facilitate ongoing risk monitoring. Input from each of the four building blocks is crucial for forming a robust

prioritisation of vulnerabilities and for deciding on the appropriate communication strategy.

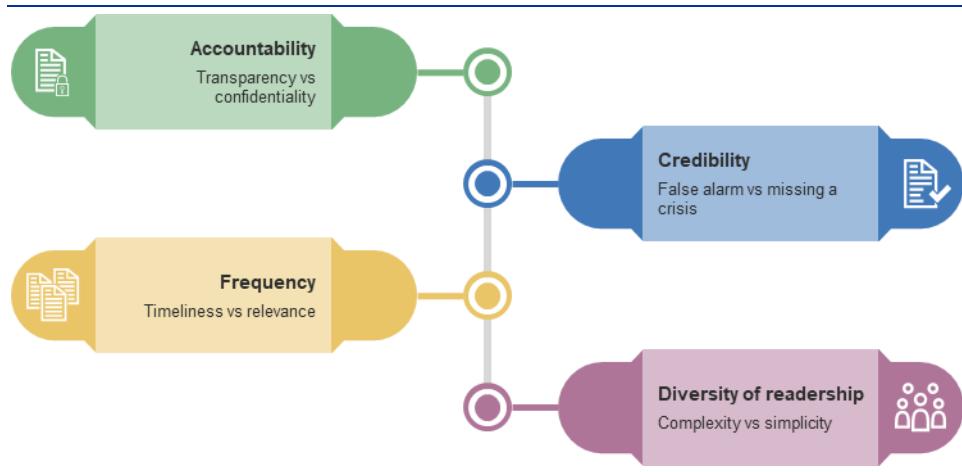
4 Financial stability communication: more than words

4.1 Communication challenges

Central banks face challenges associated with accountability, credibility and the frequency and accessibility of communication when designing a financial stability communication strategy. With regard to accountability, while financial stability communication has become more transparent over the past two decades, central banks need to be careful not to trigger identified risks by overstating them, while also ensuring that they do not underplay vulnerabilities.¹⁰⁴ At the same time, the credibility of central banks' financial stability assessments may be compromised if communication on sources of risk and vulnerabilities is either too early, thereby raising false alarms (known as a type II error), or too late, thereby missing a crisis (a type I error). The frequency of communication also matters. If it is too frequent, it could undermine urgency and have less impact, while if it is not frequent enough, it could be out of date or too late in communicating about sources of risk. Finally, central banks need to reach a diverse audience, including policymakers, industry professionals, academics and the general public. This requires a layered communication strategy to ensure that the right information is presented to the right audience (**Figure A.4**).¹⁰⁵

Figure A.4

Central banks need to make a number of trade-offs to ensure their financial stability communication is credible, timely and suitable for target audiences



Source: ECB.

¹⁰⁴ See Cukierman, A., "The Limits of Transparency", *Economic Notes*, Vol. 38, Issue 1-2, 2009.

¹⁰⁵ See also Haldane, A. and McMahon, M., "Central Bank Communications and the General Public", *AEA Papers and Proceedings*, Vol. 108, 2018, pp. 578-83.

4.2 Financial stability reports: the nuts and bolts of financial stability communication

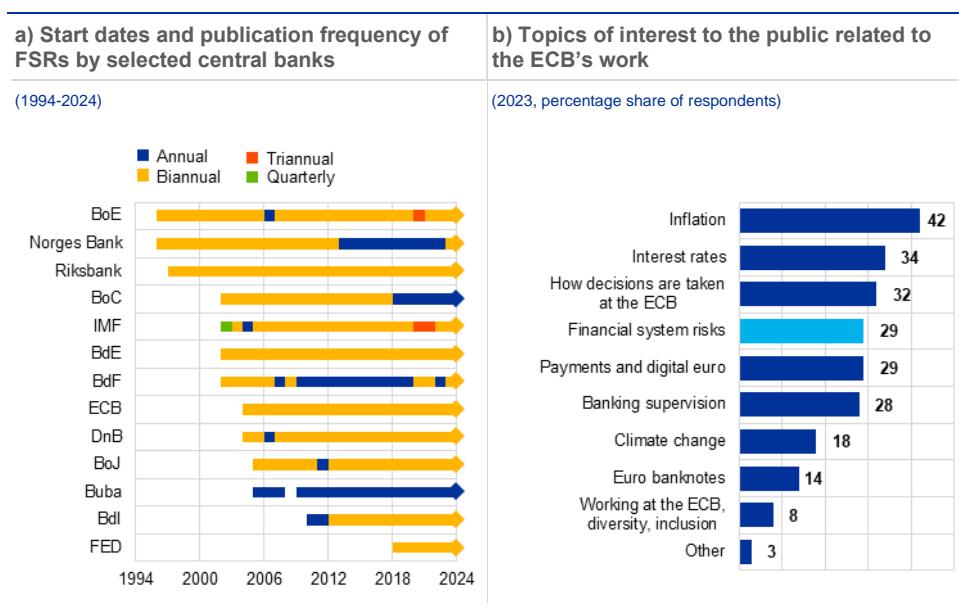
Central banks across the globe use financial stability reports (FSRs) as a primary tool for communication about the resilience of their financial systems.

The publication of FSRs began in the second half of the 1990s, with central banks in the United Kingdom, Norway and Sweden leading the way ([Chart A.1](#), panel a).

These central banks started publishing FSRs in response to banking crises in the early 1990s. Since then, the number of central banks publishing FSRs has grown rapidly.¹⁰⁶ Most produce them twice a year, although some only publish once a year. Publication frequency may change over time though, as in the case of Norges Bank and the Bank of Canada, for instance. These changes can also be temporary, e.g. to meet the need for enhanced communication during major crises as done by some institutions during the COVID-19 pandemic in 2020-21.

Chart A.1

Central banks publish financial stability reports to provide information to their stakeholders and to improve general awareness of financial stability risks



Sources: ECB and the ECB Knowledge and Attitudes Survey 2023.

Notes: Panel a: BoE: Bank of England, BoC: Bank of Canada, IMF: International Monetary Fund, BdE: Banco de España, BdF: Banque de France, ECB: European Central Bank, DnB: De Nederlandsche Bank, BoJ: Bank of Japan, Buba: Deutsche Bundesbank, BdI: Banca d'Italia, FED: Federal Reserve System. Triannual frequency resulted from interim FSRs or financial stability updates during the COVID-19 pandemic.

FSRs help create more stable financial environments and enhance the understanding of financial risks. Taking a market perspective, the literature suggests that FSR releases can move equity markets by more than 1% in the month after publication. They can also help to reduce noise, as market volatility tends to fall following the publication of an FSR. These effects are particularly strong when FSRs include an optimistic assessment of financial stability risks.¹⁰⁷ When it comes to

¹⁰⁶ See Cihák, M., Muñoz, S., Sharifuddin, S.T. and Tintchev, K., "Financial Stability Reports: What Are They Good For?", *Working Papers*, No 12/1, IMF, January 2012.

¹⁰⁷ See Born, B., Ehrmann, M. and Fratzscher, M., "[Central bank communication on financial stability](#)", *Working Paper Series*, No 1332, ECB, April 2011.

understanding the financial system and financial risks, the ECB Knowledge and Attitudes Survey 2023¹⁰⁸ finds that the general public is very interested to learn about the ECB's assessment of financial stability (**Chart A.1**, panel b). A recent survey of readers of the ECB's FSR underscores these results (**Box A**).

Like other central banks, the ECB regularly communicates its views on financial stability vulnerabilities to various internal and external stakeholders. The main purpose of the ECB's communication is to ensure that policymakers, the financial industry and the public at large are aware of systemic risks. The ultimate goal is to promote financial stability. Communication around identified sources of risk and vulnerabilities also forms part of the ECB's macroprudential and microprudential competences. A financial system-wide assessment of risks and vulnerabilities is not only a key aspect of the ECB's internal country-level macroprudential policy analysis, it also complements the microprudential supervision of individual banks.

The ECB's work on risk identification is communicated via various channels, with the Financial Stability Review as the flagship. The ECB communicates information on financial stability through (i) regular reports and notes; (ii) presentations of analytical work to various European and international fora; (iii) public speeches and presentations; and increasingly (iv) social media, podcasts and blogposts. The ECB's flagship publication on financial stability risks is its semi-annual Financial Stability Review, which has been published since December 2004.¹⁰⁹ It provides an overview of potential risks to financial stability in the euro area.¹¹⁰ It contains a detailed review of trends and developments, including vulnerabilities, in the non-financial sectors, financial markets, the banking sector and the non-bank financial intermediation sector. It also highlights general policy implications. The overall assessment of financial stability conditions, risks and vulnerabilities is presented in an overview.

Box A

Results from the May 2024 FSR readership survey

The ECB ran a survey among readers of its FSR to gauge its effectiveness as a communication tool. In anticipation of the 20th anniversary of its inaugural FSR, the ECB conducted a readership survey in parallel with the publication of the May 2024 issue. The survey was circulated to known regular readers such as experts in national central banks, market intelligence contacts and journalists. It was also made accessible via the ECB's website to anyone who viewed the FSR. In total, 86 responses were submitted.¹¹¹ The majority of respondents were employed by central banks and the financial industry (**Chart A**, panel a, left graph). While fewer responses were provided by

¹⁰⁸ The ECB Knowledge and Attitudes survey is an annual, cross-sectional survey conducted among the general public in the euro area countries, which focuses exclusively on knowledge and perception of the ECB. Its results are not regularly published. For further information see "[ECB Knowledge & Attitudes Survey 2021](#)", ECB, January 2022.

¹⁰⁹ See the [Financial Stability Review](#) homepage on the ECB's website.

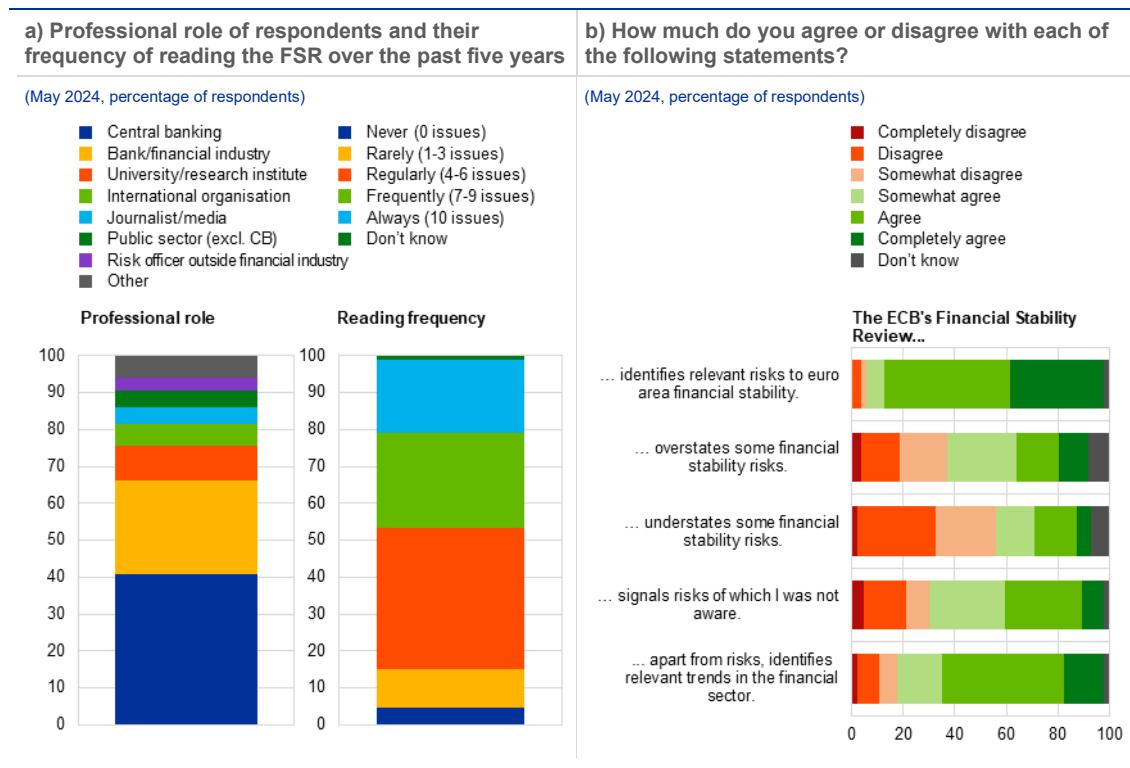
¹¹⁰ In addition to euro area area-wide risk identification, the ECB also produces internal macroprudential policy reports and notes. These identify risks at a euro area country level and outline macroprudential policy options for addressing these risks. Macroprudential policy topics are also discussed in the [ECB's Macropurudential Bulletin](#).

¹¹¹ The design and distribution of the survey risks introducing a selection bias, where certain readers may feel more compelled to respond than others. This means that the sample of respondents may not be fully representative of the entire readership of the FSR.

readers working in other fields, the results confirmed that there was also some interest in the FSR in academia, international organisations, the media, the public sector (other than central banks) and among risk managers from outside the financial industry. In addition, most respondents have read the FSR at least regularly (many frequently or always) over the last five years, indicating that readers have retained an interest in financial stability matters (**Chart A**, panel a, right graph).

Chart A

Readers of the FSR are mostly employed in the financial and public sectors, read the FSR regularly and largely agree with the analysis presented in the FSR



Source: ECB.

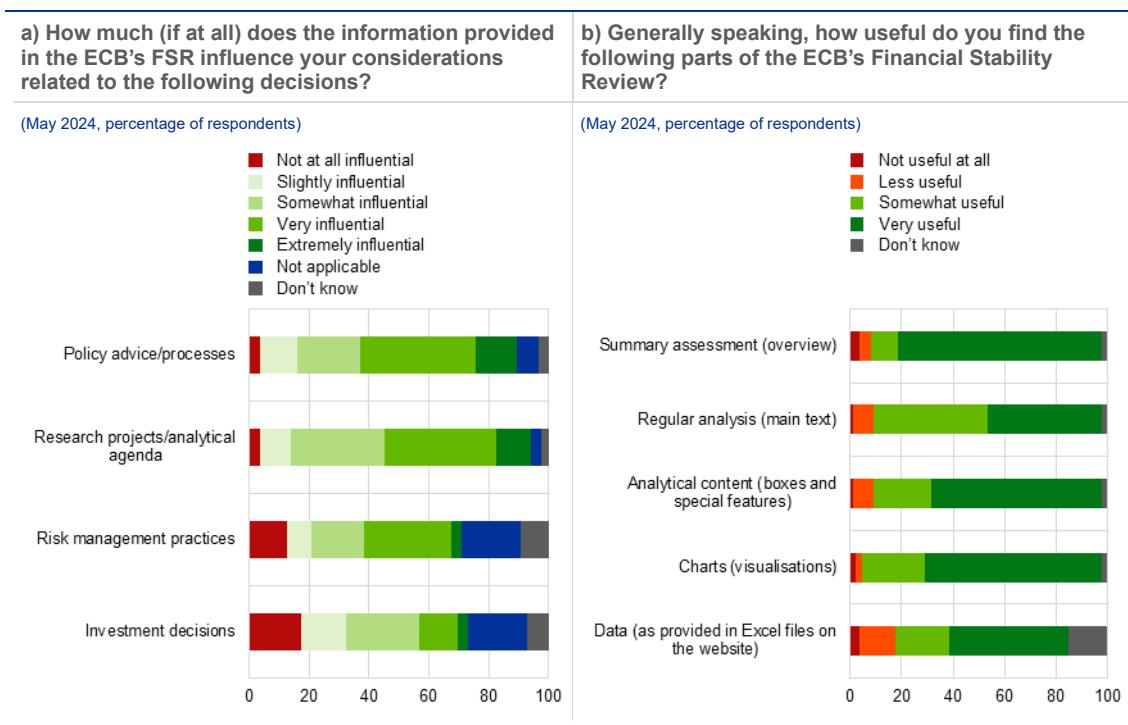
Respondents largely agree with the FSR's financial stability assessments, with some potential to improve the tone on some risks. The first question asked about the extent to which respondents agreed that the FSR (i) identifies relevant risks to euro area financial stability, (ii) overstates some financial stability risks, (iii) understates some financial stability risks, (iv) signals risks of which respondents were not aware of, and (v) identifies relevant trends in the financial sector apart from risks (**Chart A**, panel b). Over 90% of respondents agreed at least somewhat that the FSR identifies relevant risks; majorities of 80% and almost 70% respectively stated that the FSR identifies relevant trends apart from risks and that they were not aware of some of the risks identified in the FSR. On a more critical note, over 50% of respondents viewed some of the risks as being overstated in the FSR, while almost 40% reported that some risks are understated. This finding may indicate that the FSR could strike a better balance in the assessment of risks, although it may also reflect the complexity and uncertainty inherent in assessing potential risks, leading to differing views.

The FSR influences decision-making, especially in the areas of policy advice and processes, and when it comes to setting analytical agendas. The second question asked how much the information provided in the FSR influences respondents' considerations related to (i) policy advice or policy processes, (ii) research projects or analytical agendas, (iii) risk management practices, and (iv)

investment decisions (**Chart B**, panel a). While the survey does not distinguish between whether respondents simply offer opinions and advice on policy or whether they are directly involved in policy processes, over 85% of respondents reported that the FSR influences their decisions in these areas. A high level of influence was also reported for decisions on research projects and analytical agendas (90% reported some influence). For risk management practices and investment decisions, 20% of respondents reported that they are not involved in such decisions and a further 10-20% indicated that the FSR has no influence on these decisions. For investment decisions only around 15% of respondents reported a high level of influence.

Chart B

Respondents are influenced by the FSR in their decision-making and place most value on the summary assessment and topical analyses



Source: ECB.

The format of the FSR is generally regarded as useful, particularly the Overview, data visualisations and topical analyses. The third question asked respondents how useful they find the different parts of the FSR (**Chart B**, panel b). Around 90% of respondents found all parts of the FSR useful, namely the Overview that provides a summary assessment, the main text that provides regular analyses, and the boxes and special features that provide topical analyses. That said, a lower share of respondents regarded the main text as “very useful”. Data visualisations in the form of charts were also seen as useful by a vast majority of respondents (93%). The underlying data that are shared on the ECB’s website are seen as the least useful element of the FSR, but still received positive feedback from around 65% of respondents.

The survey results suggest that the ECB's FSR is well positioned to achieve its communication objectives. Bearing in mind that the primary goal of the FSR is to promote awareness of systemic risk among policymakers, the financial industry and the public at large, the results of the survey are reassuring across several dimensions. First, the composition of respondents confirms that the FSR is reaching its target audiences. Second, readers perceive the FSR’s

messages as relevant and are learning about risks they were not previously aware of. Third, going beyond promoting awareness, the FSR's messages play a role in readers' decision-making, particularly when it comes to policy advice. Nevertheless, readers also signalled that they did not entirely agree with the balance of risks presented, so there is no room for complacency in the continuous calibration of the ECB's financial stability communication strategy.

4.3 Feeling the pulse: adapting FSRs to a changing world

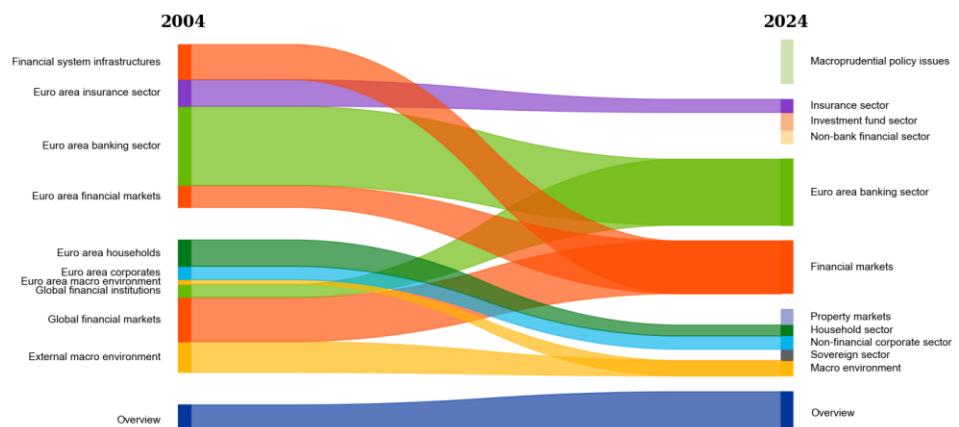
The structure and content of FSRs has changed markedly over the past two decades.

Most central banks used to focus on discussing vulnerabilities in their national banking sectors, but over time they have broadened the scope of their reports to cover a wider range of sectors and topics. In contrast to the first issue published in December 2004, the latest editions of the ECB's FSR in 2024 focus more on the euro area than on global developments and contain material that was added over the years due to a variety of reasons (Figure A.5). First, episodes of stress, such as the global financial crisis and the euro area sovereign debt crisis, led to more targeted description of vulnerabilities stemming from property markets and the sovereign sector. Second, the structural changes in the financial system arising from the growing importance of non-banks are now reflected in a standalone section on non-banks. This section discusses the trends and vulnerabilities in such institutions and their growing interconnectedness with traditional banks. Third, the ECB's macroprudential policy mandate, which it assumed in 2014, led to the introduction of a section on macroprudential policy issues, the aim of which was to link vulnerabilities and policies. All these changes underscore the need for flexibility in adjusting any analytical financial stability framework.

Figure A.5

The coverage of the ECB's FSR has changed since 2004 due to crises, changes in the financial system's structure and new policy mandates

Changes in the structure and content of the ECB's FSR since the first issue
(2004, 2024)



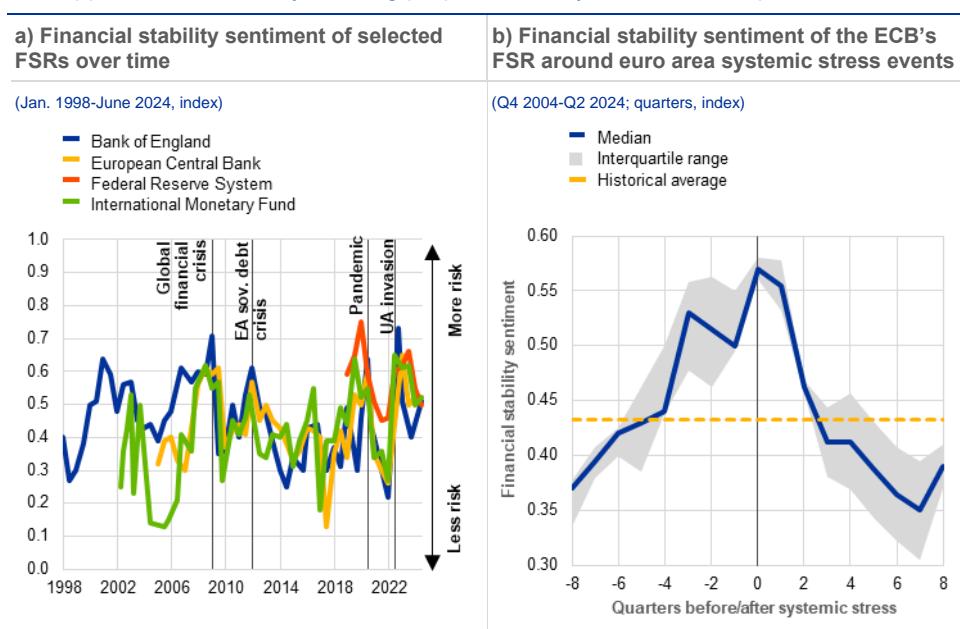
Source: ECB.

The analysis of textual data makes it possible to systematically measure sentiment in FSRs, supplying tentative evidence of early warning properties.

Natural language processing techniques make it possible to measure the sentiment embedded in FSRs. The financial stability sentiment index based on Correa et al. compares the total number of words conveying positive and negative sentiment.¹¹² The index suggests that sentiment in FSRs across major advanced economies exhibits strong co-movement that is consistent with that exhibited by their financial and business cycles (**Chart A.2**, panel a). In addition, sentiment in FSRs tends to turn more negative around major crises such as the global financial crisis or the pandemic, indicating that the resilience of financial systems is being tested. Zooming in on the ECB's FSR, findings from a statistical exercise show that the sentiment index contains some early warning properties around episodes of systemic stress, defined as bouts of coincident financial market and real economic stress (**Chart A.2**, panel b). As these systemic stress episodes have high economic costs, public discussion of financial system vulnerabilities offers value added to a range of stakeholders.

Chart A.2

Financial stability sentiment in the FSRs of major advanced economies has co-moved and appears to have early warning properties for systemic stress episodes



Sources: Bank of England, ECB, Federal Reserve, IMF and ECB calculations.

Notes: Panel a: financial stability sentiment is measured as the relative proportion of negative to positive words in financial stability reports, based on a dictionary developed by Correa et al.* The resulting sentiment index can vary between -1 and +1, with a value of +1 (-1) corresponding to the most negative (most positive) sentiment. UA stands for Ukraine. Panel b: the historical dispersion (median, 25th and 75th percentiles) of the financial stability sentiment is computed for a specific quarter across all available systemic stress episodes. Systemic stress is based on the peaks of the Composite Indicator of Systemic Stress (CISS) as determined by the Bry-Boschan algorithm. In line with the ECB/ESRB EU crises database set out in Lo Duca et al.**, only stress episodes in 2008, 2011 and 2020 were considered to be systemic. Quarterly averages are taken for the CISS, and the financial stability sentiment is interpolated to a quarterly frequency.

* Correa, R., Garud, K., Londono-Yarce, J. and Mislang, N., "Constructing a Dictionary for Financial Stability", *IFDP Notes*, Board of Governors of the Federal Reserve System, 2017.

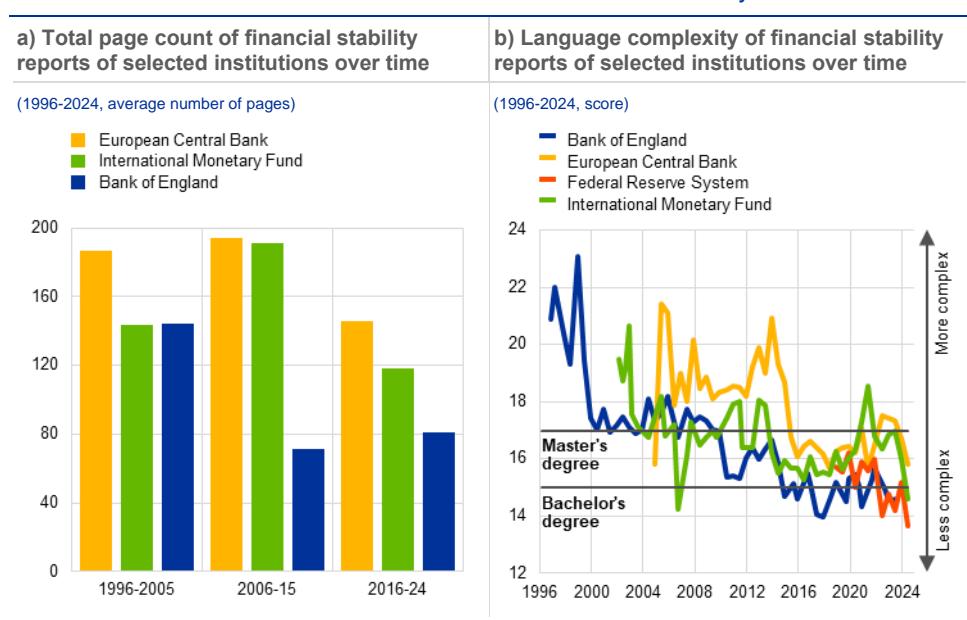
**) Lo Duca, M., Koban, A., Bastein, M., Bengtsson, E., Klaus, B., Kusmierczyk, P., Lang, J., Detken, C. and Peltonen, T., "A new database for financial crises in European countries", *Occasional Paper Series*, No 13, ESRB, July 2017.

¹¹² Correa, R., Garud, K., Londono-Yarce, J. and Mislang, N., "Constructing a Dictionary for Financial Stability", *IFDP Notes*, Board of Governors of the Federal Reserve System, 2017.

FSRs have become more accessible over time, in terms of both length and language complexity. In a world in which information is abundant, there has been a clear trend towards making FSRs more impactful and reader friendly. One key development has been a reduction in page count (**Chart A.3**, panel a), which has helped communication become more succinct and better targeted. While in the early 2000s, FSRs often exceeded 200 pages, today they range between 70 and 130 pages. This variation in length is partly due to the different approaches central banks take to structure their communication. The ECB, for instance, publishes a *review*, offering a summary of developments since the publication of the previous issue, while other central banks produce *reports*, which tend to be more thematic in nature and can therefore be shorter. At the same time, the readability of these reports has improved, as signalled by the Flesch-Kincaid Grade Level score, which measures text complexity on the basis of sentence length and word complexity (**Chart A.3**, panel b). This reflects the adoption of layered communication techniques which make financial stability information easier to understand. Bucking this overall trend, the readability of FSRs tends to decline in times of crisis.

Chart A.3

The decline in page count and language complexity highlights the trend towards more accessible communication from central banks on financial stability



Sources: Bank of England, ECB, Federal Reserve, IMF and ECB calculations.

Notes: Panel a: the total page count is an average across all editions in the given time period for each institution, Panel b: the complexity of the language employed is measured using the Flesch-Kincaid Grade Level score, which indicates how many years of formal training are required to understand the text based on sentence length and word complexity.

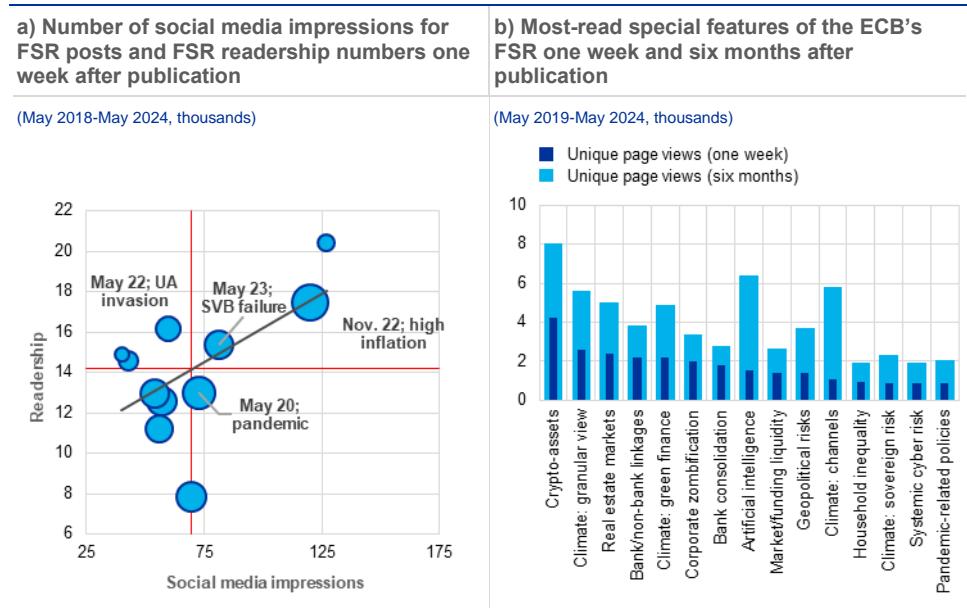
Social media helps amplify financial stability communication, with especially topical pieces having a longer-term impact. Alongside more formal outreach activities, social media has become an important channel for conveying key financial stability messages to the general public.¹¹³ Findings from the ECB's FSR are promoted via various platforms (X, LinkedIn and YouTube) as well as through

¹¹³ These outreach activities entail engagement with the media, international bodies and fora, market intelligence contacts and research institutes following the publication of each FSR.

podcasts and blogposts. While FSR-related social media activities only began in 2018, early evidence suggests that social media impressions have helped boost FSR readership (**Chart A.4**, panel a). Tracking readership numbers over time suggests that the FSR in general, and its topical content (boxes and special features) in particular, has a lasting impact, as its content is still read long after publication (**Chart A.4**, panel b). Topics related to climate change and technological innovation (e.g. crypto-assets and artificial intelligence) seem to have garnered particularly strong interest.

Chart A.4

Social media activity can help widen readership, while most analytical pieces in the ECB's FSR have a longer-term impact



Sources: ECB, X, LinkedIn and ECB calculations.

Notes: Panel a: the size of the bubble represents the corresponding value of the financial stability sentiment index. The number of impressions comprises the sum of impressions from X (formerly Twitter) and LinkedIn. The red lines represent the averages. UA stands for Ukraine; SVB stands for Silicon Valley Bank.

5 Concluding remarks

Significant progress has been made on improving financial stability risk identification over the past two decades. Advances have been made in closing data gaps and the analytical toolkit has been expanded, leading to improved knowledge of how the financial system works. There is, however, no room for complacency. A key lesson from two decades of financial stability analysis is that frameworks need to be robust, agile and pre-emptive. This means that further work will be needed to better integrate cross-border vulnerabilities into systemic risk frameworks, as globalisation and technological innovations continue to blur traditional boundaries.

Central bank communication on financial stability and systemic risks has also evolved over the past two decades. An increasing number of central banks and other authorities have been communicating their views on sources of risk and

vulnerabilities for reasons of crisis prevention as well as accountability. Publications on sources of risk and vulnerabilities remain the primary communication tool for financial system stability. However, the trade-off between transparency and stability remains a key challenge. Central banks must avoid overstating sources of risk, thereby inadvertently creating panic, but at the same time they should ensure they do not underplay vulnerabilities. A more tailored communication strategy, with content specifically designed for different audiences ranging from policymakers to the general public, can improve understanding and ensure that timely, appropriate action is taken. Increased use of digital platforms and social media will also be crucial in reaching a broader audience, although it is vital to maintain credibility and avoid oversimplification.

B

Low firm productivity: the role of finance and the implications for financial stability

Prepared by Desislava Andreeva, Vasco Botelho, Alessandro Ferrante, Lucyna Górnicka and Francesca Lenoci

Many factors – economic, financial and structural – shape firm productivity. This special feature zooms in on the role played by finance and the allocation of capital across firms. Aggregate productivity, access to credit and financial stability are closely interlinked. Inefficient allocation of capital can reduce the productive capacity of the economy, leading to subdued income growth and lower financial resilience for all sectors. While euro area firms rely mostly on bank lending to satisfy their funding needs, banks do not generally have a strong track record in distinguishing between more and less-productive firms, as their expertise lies in the assessment of credit risk. They tend to lack the skills needed to evaluate early-stage technologies and hesitate to finance risky innovations that involve intangible assets or other assets that are hard to collateralise. Financial markets and equity investors may be better suited to financing novel but risky projects. A more diversified external funding structure, including further progress on the capital markets union, could help boost the productivity of euro area firms, to the benefit of financial stability.

1 Aggregate productivity matters for financial stability

Access to external funding helps firms grow their business and become more productive. Productivity is an indicator of economic performance that measures the amount of output created for a given set of inputs, typically labour, capital, raw materials, and energy. As such, productivity developments are the key determinant of potential output growth in the economy and are the principal source of improvements in living standards. Productivity differences across firms can partly explain why some firms are able to grow and gain market share while others fail and are forced to exit the market.¹¹⁴ Access to finance can play an important role, as the effect of productivity-enhancing investments usually depends on whether firms can secure sufficient external funding, including through bank loans. It follows that the way funding is allocated can also affect which firms enter and which firms exit the market.¹¹⁵

This special feature analyses the role of finance in driving firm productivity dynamics in the euro area and the implications for financial stability.

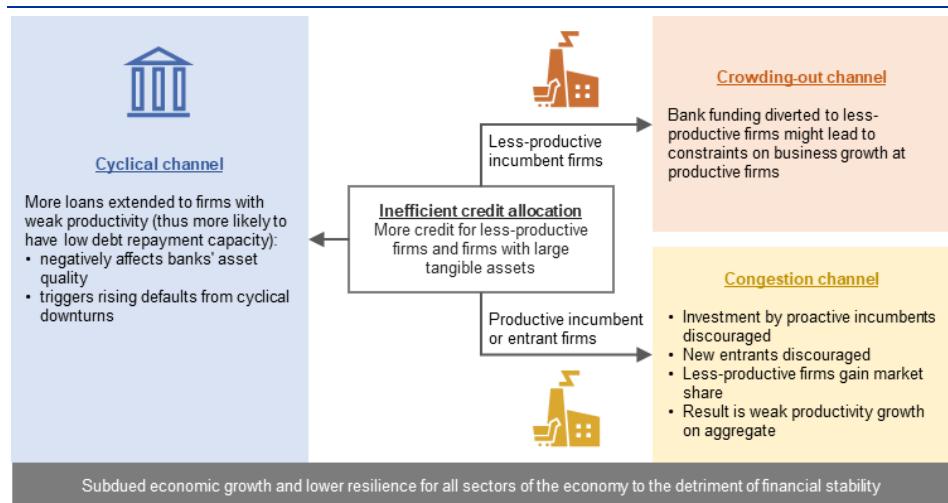
Productivity, access to credit and financial stability are closely linked. The inefficient allocation of credit across firms or a lack of external financing for particularly

¹¹⁴ See the box entitled “[Firm productivity dynamism in the euro area](#)”, *Economic Bulletin*, Issue 1, ECB, 2022.

¹¹⁵ Access to finance is one of several factors that matter for productivity. Other factors include (i) the level of human capital and the accumulation of skills by workers; (ii) the efficiency of capital allocation in the production process; (iii) the design, adoption, and diffusion of new and highly innovative technologies; and (iv) regulations related to doing business. For policy recommendations related to productivity growth, see, for example, Draghi, M., “[The future of European competitiveness](#)”, European Commission, September 2024.

innovative and productive companies affects the productive capacity of the economy as well as financial stability (**Figure B.1**).¹¹⁶ There is a *direct, cyclical* channel related to bank intermediation. If bank loans flow towards less-productive firms, bank asset quality and profitability are more likely to suffer in any downturn. Financial stability can also be affected indirectly. For example, capital being a scarce resource, more-productive firms may find it challenging to expand their business if bank funding is diverted to other companies (a *crowding-out* channel). This is a concern in bank-centric financial systems like the euro area where access to market-based funding might be difficult, especially for smaller and younger firms.¹¹⁷ Moreover, the resulting higher market share enjoyed by weaker firms can reduce profits for would-be productive competitors, discouraging entry into the market and investments (a *congestion* channel). This can suppress economic growth over the medium to long run. Ultimately, financial stability is likely to suffer from a banking system which has weaker asset quality and high debt levels as well as, overall, less-productive firms, coupled with subdued economic growth and therefore lower incomes for all sectors of the economy. Against this background, this special feature analyses the allocation of bank credit across sectors and discusses the role of equity finance. It then zooms in on the flow of bank funding to firms within the same industry, distinguishing between more-productive and less-productive companies.

Figure B.1
Transmission channels between credit allocation, productivity and financial stability



Source: ECB staff.

¹¹⁶ The link between capital allocation, firms' balance sheets and aggregate productivity is well-documented. See, for example, Gopinath, G., Kalemli-Özcan, S., Karabarbounis, L. and Villegas-Sánchez, C., “[Capital allocation and productivity in South Europe](#)”, *The Quarterly Journal of Economics*, Vol. 132(4), 2017, pp. 1915-1967; Ferrando, A. and Ruggieri, A., “[Financial constraints and productivity: evidence from euro area companies](#)”, *International Journal of Finance & Economics*, Vol. 23(3), 2018, pp. 257-282; Duval, R., Hong G.-H. and Timmer, Y., “[Financial Frictions and the Great Productivity Slowdown](#)”, *The Review of Financial Studies*, Vol. 33(2), 2020, pp. 475-503.

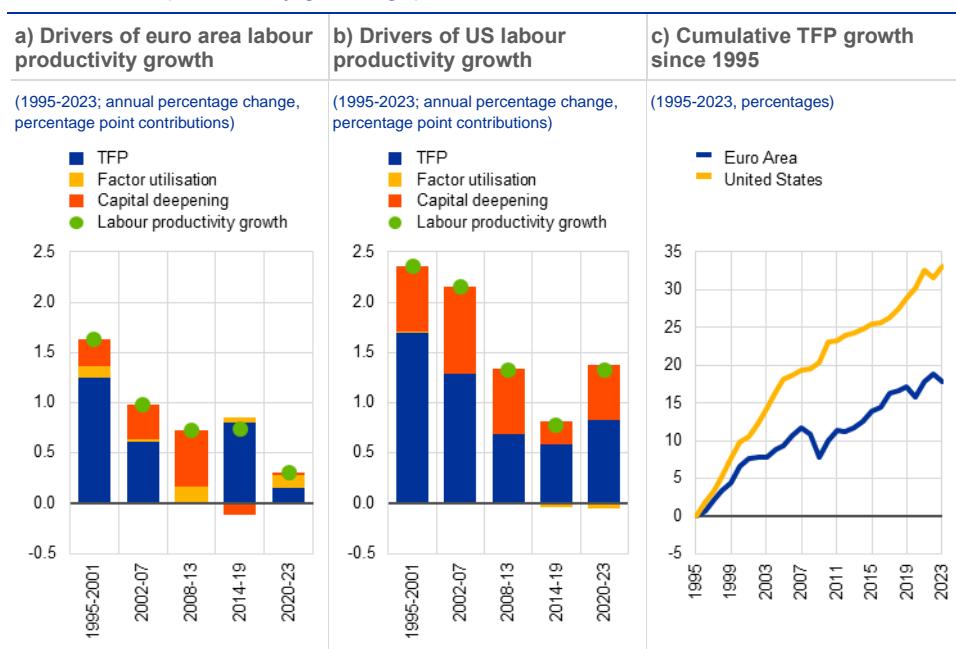
¹¹⁷ See “[Non-bank financial intermediation in the euro area: implications for monetary policy transmission and key vulnerabilities](#)”, *Occasional Paper Series*, No 270, ECB, 2021.

2 Euro area productivity growth has been declining for over 30 years

The aggregate productivity growth gap between the euro area and the United States has been widening since the mid-1990s. The main indicator of production efficiency in an economy is total factor productivity (TFP), which measures how much the average firm can produce for a given combination of inputs. As such, TFP captures the level of efficiency (or technology) employed by firms in the production process. It also captures unobserved characteristics that influence efficiency, such as management quality, digitalisation, and human capital accumulation. Focusing on the last 30 years, the average annual growth rate of labour productivity (real GDP per hour worked) in the euro area declined from 1.6% between 1995 and 2001 to 0.3% between 2019 and 2023 (**Chart B.1**, panel a). The main drivers of this were a capital-to-labour ratio that had stagnated since the sovereign debt crisis and a declining contribution from TFP growth. Although the US economy also experienced a productivity slowdown over the same period (**Chart B.1**, panel b), average labour productivity growth was significantly lower in the euro area. Moreover, between 1995 and 2023, TFP increased by just 18% in the euro area but by 33% in the United States (**Chart B.1**, panel c). The widening of the TFP gap versus the United States, together with less support from capital deepening, resulted in the euro area gradually becoming less and less competitive than the United States.

Chart B.1

Slowing TFP growth has contributed to declining labour productivity growth in the euro area and to a productivity growth gap versus the United States



Sources: European Commission (AMECO) and ECB calculations.

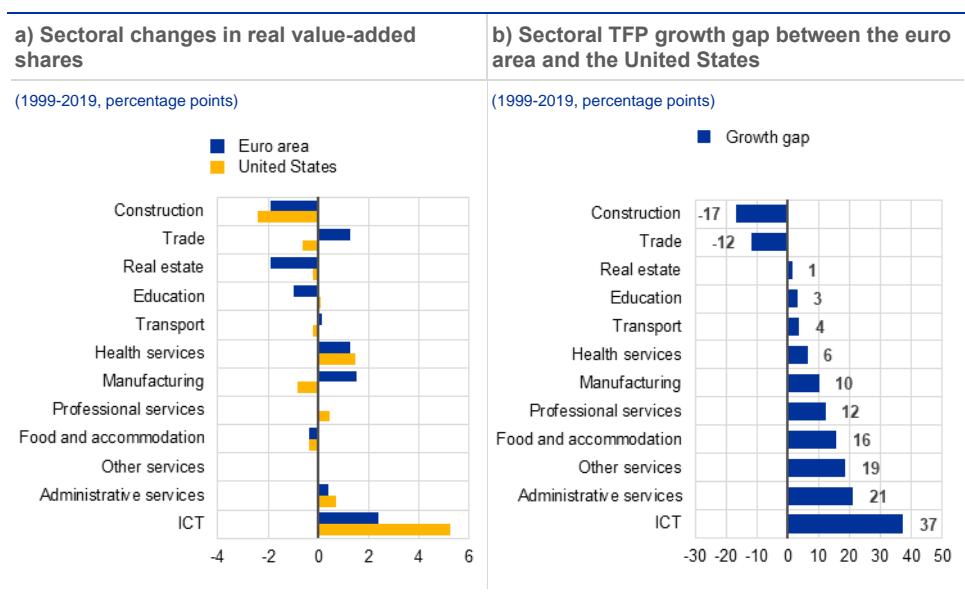
Notes: Labour productivity is defined as real GDP per hour worked. Capital deepening refers to the growth of the net capital stock per employee, while factor utilisation is the difference between the growth rate of capital utilisation and average hours worked. Contributions from these two factors are multiplied by capital share. The averaging periods correspond to business cycle and financial cycle phases.

Lower growth in the euro area than in the United States for technology-intensive and innovative sectors is one driver of the widening

productivity gap. The technology-intensive ICT sector is the sector that has made the most significant contribution to the widening TFP growth gap between the euro area and the United States.¹¹⁸ Between 1999 and 2019, the ICT sector increased its weight by 5.2 percentage points in the US economy but by just 2.4 percentage points in the euro area economy (**Chart B.2**, panel a). At the same time, TFP in the ICT sector grew by 80% in the United States and by 43% in the euro area, widening the TFP growth gap in the sector by 37 percentage points over this period (**Chart B.2**, panel b). The relative weakness of the ICT sector in the euro area can also affect innovation in adjacent highly-innovative sectors that benefit from state-of-the-art digital technologies, such as pharmaceuticals or defence.¹¹⁹ This increases the risk of the euro area lagging behind in sectors of strategic importance.¹²⁰ The relatively broad-based sluggish productivity growth in the euro area across sectors – trade and construction being the only notable exceptions – has prompted a search for potential explanations, including the role of access to finance.

Chart B.2

The widening TFP growth gap between the euro area and the United States has largely been driven by the ICT sector



Sources: European Commission (KLEMS) and ECB calculations.

Notes: Panel a: the sectoral changes in real value-added shares compare the relative size of a given sector of activity in 2019 (latest data available) with its relative size in 1999. Sectors that increase their value-added shares increased their relative size in the economy. Panel b: the TFP growth gap between the euro area and the United States is measured by calculating cumulative TFP growth per sector between 1999 and 2019 for both geographical areas and then subtracting the euro area growth rate from the US growth rate. A positive (negative) TFP growth gap in a given sector reveals that TFP in that sector increased faster (slower) in the United States than in the euro area. Sectors are ordered in both charts by their TFP growth gap between 1999 and 2019, from smallest to largest.

¹¹⁸ Recent decades have offered evidence of the increasing role of intangible investments relative to tangible investments. For an overview of the literature on intangible investments and sources of economic growth, see Corrado, C. and Hulten, C., “How Do You Measure a “Technological Revolution?”, *American Economic Review*, Vol. 100, No 2, 2010, pp. 99-104.

¹¹⁹ See, for example, “The impact of digitalisation on labour productivity growth”, Monthly Report, Deutsche Bundesbank, 2023, pp.43-66.

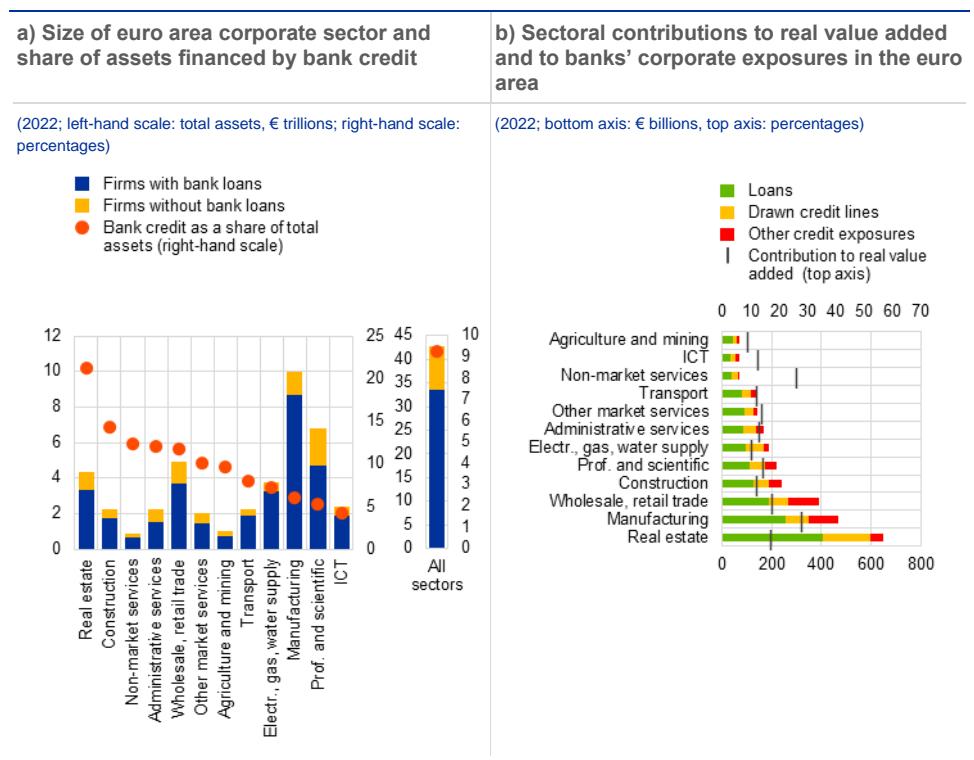
¹²⁰ See, for example, Draghi, M., op. cit.

3 Euro area firms are strongly bank dependent

Most euro area firms rely mainly on bank intermediation as an external source of financing. At the end of 2022, in terms of total non-financial corporation (NFC) sector assets, only around 20% of firms operated without any form of bank funding (**Chart B.3**, panel a). These firms probably use only internal funds because, in contrast to the United States, it is rare for euro area firms to fund themselves exclusively via financial markets.¹²¹ Roughly 22% of euro area firms with more than 20 employees tap the bond market, besides obtaining bank loans. Even for large, listed firms with access to debt markets, bank loans are the main source of credit and represented, on average, 58% of total external funding at the end of 2022.

Chart B.3

Bank lending to real estate firms vastly exceeds their share in gross value added



Sources: BvD Electronic Publishing GmbH – a Moody's Analytics company, ECB (AnaCredit), European Commission (KLEMS) and ECB calculations.

Notes: "ICT" stands for information and communications technology; "Prof. and scientific" stands for professional, scientific and technical activities; "Administrative services" stands for administrative and support services. "Other market services" includes accommodation and food services, arts, entertainment and recreation, other service activities and activities of extraterritorial organisations and bodies; "Non-market services" includes human health and social work activities, education and public administration, and defence. "Financial services" sector is excluded. Panel a: bank credit includes credit lines, loans, trade receivables and overdrafts reported in AnaCredit. A firm is defined as having access to bank lending if it has at least one outstanding credit exposure in AnaCredit or Orbis.

A significant share of bank lending in the euro area is directed towards the real estate sector, which contributes only marginally to TFP growth. The real estate sector, the wholesale and retail trade and the construction sector have a much larger share of the banking sector's aggregate corporate loan portfolio than is warranted by

¹²¹ In our sample, just 304 of the five million euro area firms active between 2015 and 2022 relied on bonds as their only external source of funding. For the capital structure of euro area firms, see Cappiello, L. et al., "Non-bank financial intermediation in the euro area: implications for monetary policy transmission and key vulnerabilities", Occasional Paper Series, No 270, ECB, December 2021.

their contribution to gross value added (**Chart B.3**, panel b). This may reflect their high external financing needs given their longer production cycles (e.g. for the investment-heavy construction of new buildings). It may also be because sectors whose tangible assets are generally accepted as collateral have better access to credit. Nevertheless, the large, disproportionate exposure stands out, particularly in the case of the real estate sector.

Even within sectors, euro area banks lend to less-productive firms. Following an estimation of firm-level TFP, the productivity levels of firms which do not rely on bank loans were compared with those of firms which do.¹²² The dots in **Chart B.4**, panel a) represent granular two-digit NACE (NACE2) sectors located in each euro area country. The graph shows that firms with bank funding are generally less productive than competitors which do not rely on bank loans as a source of external funding. To some extent this could reflect differential access to bank funding between firms which rely on tangible assets versus those which rely on intangible assets. Indeed, the differences in estimated TFP levels between firms which use bank loans and those which do not are larger in sectors such as ICT or professional, scientific and technical services compared with manufacturing or construction. These differences in average productivity levels do not seem to reflect the impact of a few large firms: for most sectors and countries, both the bottom 20% and the top 20% of the TFP-level distributions are lower for firms with access to bank lending than for firms without bank loans within the same NACE2 sector (**Chart B.4**, panel b).

A more diversified external funding structure could be one reason for the productivity gap between the euro area and the United States. Equity markets may be better able to finance innovative but potentially risky projects.¹²³ First, equity holders benefit fully from improvements in firm productivity while the upside for creditors is capped at the level of the outstanding principal amount plus the applicable interest rate. Equity investors may therefore have a greater incentive to screen for particularly innovative and productive firms. Second, the relevant time horizon for banks may be too short since it is linked to the typical loan maturity, while equity holders also benefit from improvements in firm performance over the long run. Third, banks may be hesitant to finance innovations that involve intangible assets or assets that are firm-specific and hard to collateralise.¹²⁴ Finally, unlike venture capital firms, banks may lack the skills to evaluate early-stage technologies or, unlike private equity firms, they may lack the ability to intervene directly and improve the operational efficiency of existing firms.¹²⁵

¹²² Firm-level TFP is estimated at the country-NACE2 sector level using the approach adopted by Levinsohn, J. and Petrin, A., “[Estimating Production Functions Using Inputs to Control for Unobservables](#)”, *Review of Economic Studies*, Vol. 70(2), 2003, pp. 317-341, using data from Orbis for Belgium, Germany, Spain, France, Italy and Portugal. Since the estimation method does not account for intangible assets, it might overestimate TFP for firms with high levels of intangible assets.

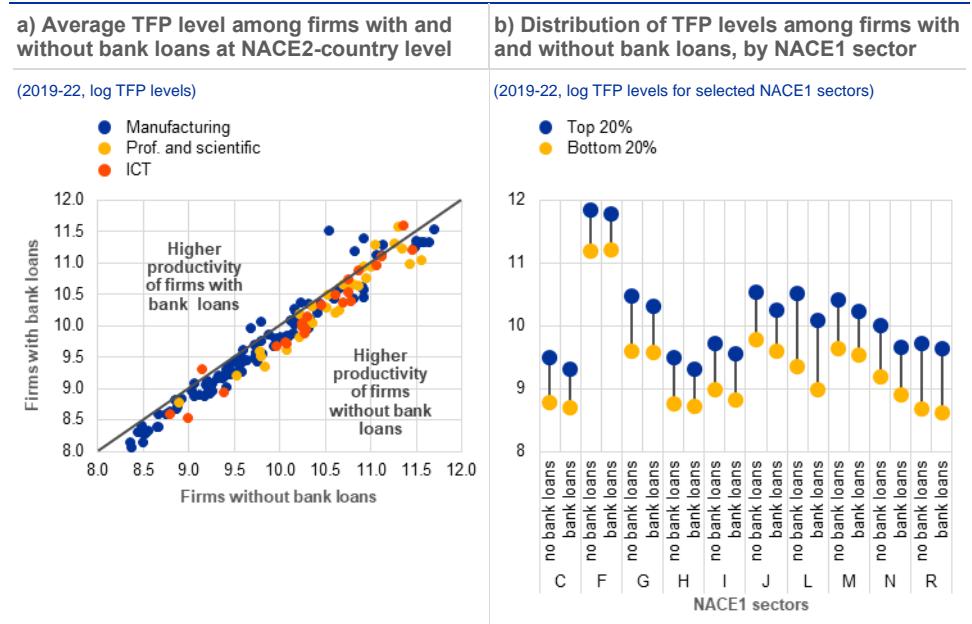
¹²³ For instance, green investment projects are more likely to be supported by the equity market. See Andersson, M. et al., “[Massive investment needs to meet EU green and digital targets](#)”, *Financial Integration and Structure in the Euro Area*, June 2024, and De Haas, R. and Popov, A., “[Finance and carbon emissions](#)”, *Working Paper Series*, No 2318, ECB, September 2019.

¹²⁴ See Carpenter, R. and Petersen, B., “[Is the Growth of Small Firms Constrained by Internal Finance?](#)”, *The Review of Economics and Statistics*, Vol. 84, No 2, May 2002, pp. 298-309.

¹²⁵ See Ueda, M., “[Banks versus Venture Capital: Project Evaluation, Screening, and Expropriation](#)”, *The Journal of Finance*, Vol. 59, Issue 2, April 2004, pp. 601-621.

Chart B.4

Firms with bank loans show lower average productivity than their competitors without bank loans



Sources: BvD Electronic Publishing GmbH – a Moody's Analytics company, ECB (AnaCredit) and ECB calculations

Notes: Countries covered: Belgium, Germany, Spain, France, Italy and Portugal. Panel a: the sample is restricted to firms belonging to the three NACE1 sectors that are most relevant for current aggregate productivity developments. The findings are also robust when looking at (i) firms with no loans and firms which received bank loans during the same year but had no bank loans in the year before, (ii) firms with fewer than 50 employees and firms with more than 50 employees separately, and (iii) firms younger than seven years only. The dots represent separate NACE2 sector-country observations within Manufacturing (C), Professional, scientific and technical activities (M), and Information and communication (J) NACE1 sectors. The x-axis (y-axis) shows the average log TFP level among firms without (with) bank loans, weighted by firms' total assets. Panel b: the yellow (blue) dots represent the bottom (top) 20 percentiles of the log TFP level distribution among firms with and without bank loans at year-NACE2 sector-country level, aggregated at NACE1 sector level. TFP levels are not comparable across sectors. NACE1 sectors: C: Manufacturing, F: Construction, G: Wholesale and retail trade, H: Transporting and storage, I: Accommodation and food, J: Information and communication, L: Real estate, M: Professional, scientific and technical activities, N: Administrative and support services, R: Arts, entertainment and recreation.

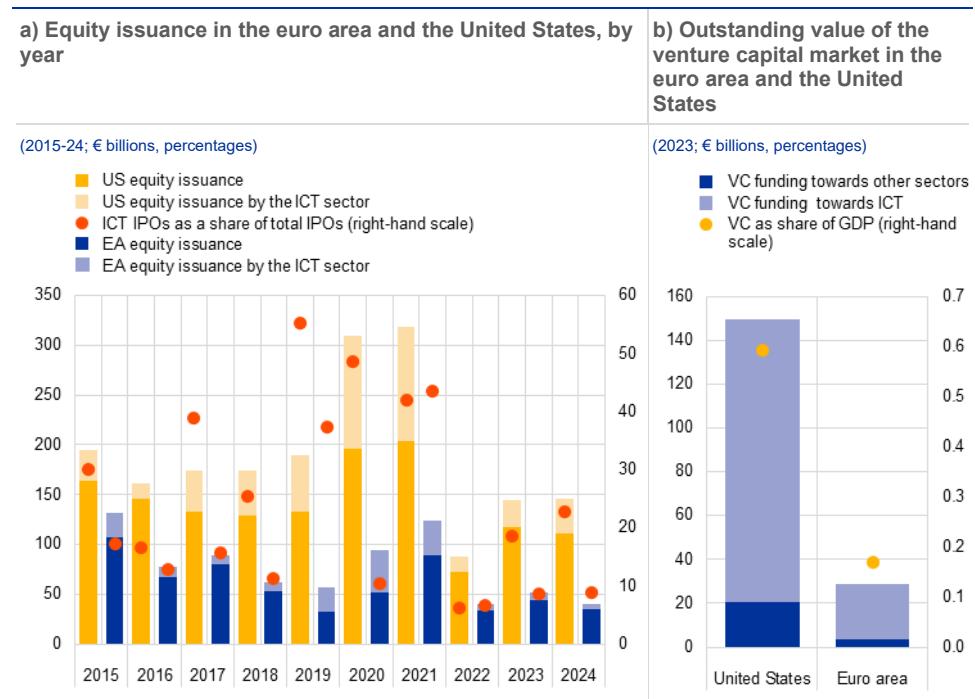
US firms can tap a developed equity market which channels resources towards firms with long-term growth potential, while euro area companies find it more difficult to access equity finance. As of June 2024, the market capitalisation of euro area corporates amounted to €7.8 trillion, representing 53% of GDP (this percentage is three times as high in the United States). In addition to higher equity issuance (**Chart B.5**, panel a), the US equity market is also characterised by a larger share of issuance by more-productive and riskier sectors such as ICT.¹²⁶ The US private equity market is also more mature, with a net asset value of €3.33 trillion as of June 2023 (versus €0.43 trillion for the euro area).¹²⁷ Its venture capital segment, which usually allocates funding to startups with the potential for substantial and rapid growth, also appears more advanced than that of the euro area (**Chart B.5**, panel b).

¹²⁶ During the tech rally of 2020-21, the share of resources directed towards tech firms via equity issuance was 34% in the United States and 27% in the euro area, and 11% and 5% respectively for IPOs. See also the box entitled "Examining the causes and consequences of the recent listing gap between the United States and Europe", *Financial Integration and Structure in the Euro Area*, ECB, June 2024.

¹²⁷ See the special feature entitled "Private markets, public risk? Financial stability implications of alternative funding sources", *Financial Stability Review*, ECB, May 2024.

Chart B.5

US listed and private equity markets are more developed than those of the euro area



Sources: Dealogic, PitchBook Data, Inc., S&P Global Market Intelligence and ECB calculations.

Notes: EA stands for euro area. Panel a: deal value of equity issuances. The share of IPOs in the ICT sector is computed as the deal value of IPOs by ICT firms divided by the deal value of IPOs for all sectors. For 2024, the chart shows data as of 19 September 2024. Panel b: VC stands for venture capital; ICT stands for the “Information and communication” sector using NAICS classification.

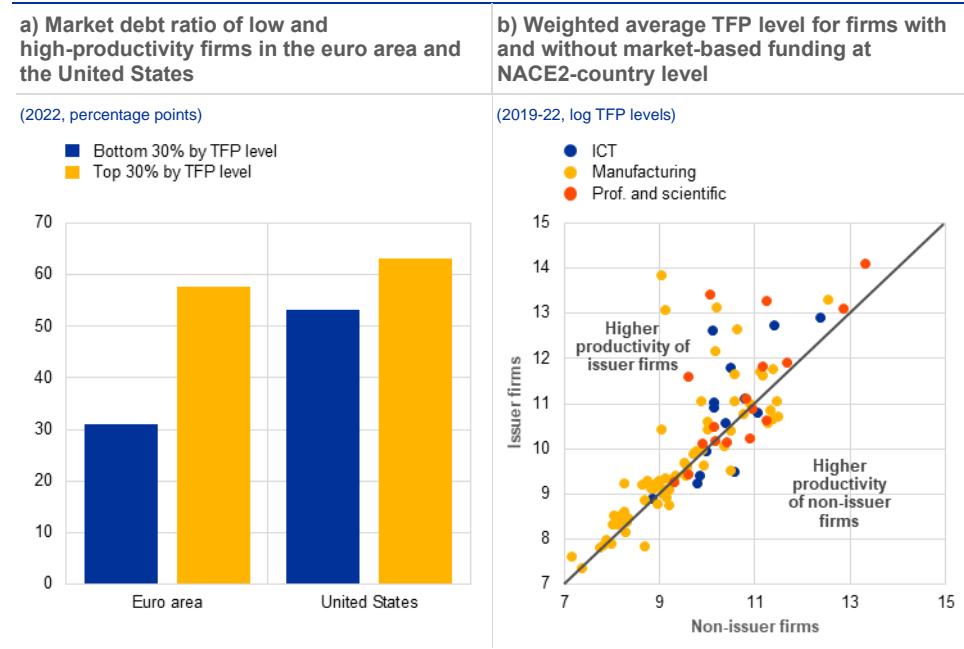
Market debt financing also plays a much smaller role as a source of NFC funding in the euro area.

At the end of June 2024, debt securities represented 21% of total NFC sector debt in the euro area, compared with 39% in the United States. Enhanced credit market depth has a positive influence on TFP by improving price discovery, thereby facilitating more efficient investments. In addition, it can alleviate financial constraints, particularly during economic downturns. It can also reduce the cost of debt financing by lowering intermediary expenses and distributing risk more effectively among investors.¹²⁸ In line with this reasoning, an analysis of the firm-level TFP of large euro area and US listed firms has shown that firms within the top 30% of the TFP level distribution have higher market debt ratios than the rest of firms in both regions (**Chart B.6**, panel a). This positive relation holds for the pre-pandemic period and when controlling for firm size and a range of other firm characteristics. However, looking at a broader sample of firms in the euro area (which also includes non-listed companies) shows that this pattern might be driven by companies in the manufacturing sector, while in ICT and for professional activities productivity levels and to the use of bond funding appear to be unrelated (**Chart B.6**, panel b).

¹²⁸ See Bennett, B., Stulz, R. and Wang, Z., “Does the Stock Market Make Firms more Productive?”, *Journal of Financial Economics*, Vol.136, Issue 2, May 2020, pp. 281-30; Ferrando, A. and Ruggieri, A., “Financial constraints and productivity: Evidence from euro area companies”, *International Journal of Finance & Economics*, Vol. 23, Issue 3, February 2018, pp. 257-282; and Bats, J. and Houben, A., “Bank-based versus market-based financing: Implications for systemic risk”, *Journal of Banking & Finance*, Vol. 114, May 2020.

Chart B.6

Firms with a greater reliance on market debt funding tend to be more productive, but the pattern varies across sectors and firm sizes



Sources: BvD Electronic Publishing GmbH – a Moody's Analytics company, Dealogic, S&P Global Market Intelligence and ECB calculations.

Notes: Panel a: the y-axis represents the average share of market debt in firms' total debt, weighted by firm assets. The TFP categories indicate firms in the bottom and top 30 percentiles of the (log) TFP level distribution across firms, calculated at the NACE1 sector-year level. Due to the lack of information on material costs for US firms, we use an OLS regression framework to estimate TFP.* Panel b: the dots represent separate NACE2 sector-country observations within the NACE1 sectors "Information and communication", "Manufacturing" and "Professional, scientific and technical activities". The y-axis shows average log TFP level for firms with market debt, weighted by those firms' total assets. The x-axis shows average log TFP level for firms with no market debt, weighted by those firms' total assets.

*) See Ahmad, S., Oliver, S. and Peters, C., "Using firm-level data to compare productivities across countries and sectors: possibilities and challenges", *Economics Working Paper Series*, U.S. International Trade Commission, July 2018.

4 The pandemic exacerbated bank lending to less-productive firms

Given how important bank lending is to euro area firms, the role of firm productivity in lending decisions and its impact on bank balance sheets warrant closer analysis. The remaining part of this special feature looks at the bank characteristics that are associated with lending to low-productivity firms. It then explores whether this pattern is driven by the supply of funding from banks or by differences in the external financing needs of firms. Finally, it investigates the role of government guarantees in directing lending towards less-productive firms during the pandemic. The analysis focuses solely on the euro area banks and firms.

Lending to low-TFP firms is associated with notably weaker bank asset quality but stronger capital and liquidity buffers. Banks with larger credit exposures to low-TFP firms show worse asset quality, measured using both backward-looking metrics such as the NPL ratio and forward-looking metrics such as probabilities of default on performing exposures (**Chart B.7**). Such banks also have somewhat lower profitability. The patterns are consistent with the *direct, cyclical* channel, through which productivity affects financial stability. By contrast, the regulatory capital ratios of

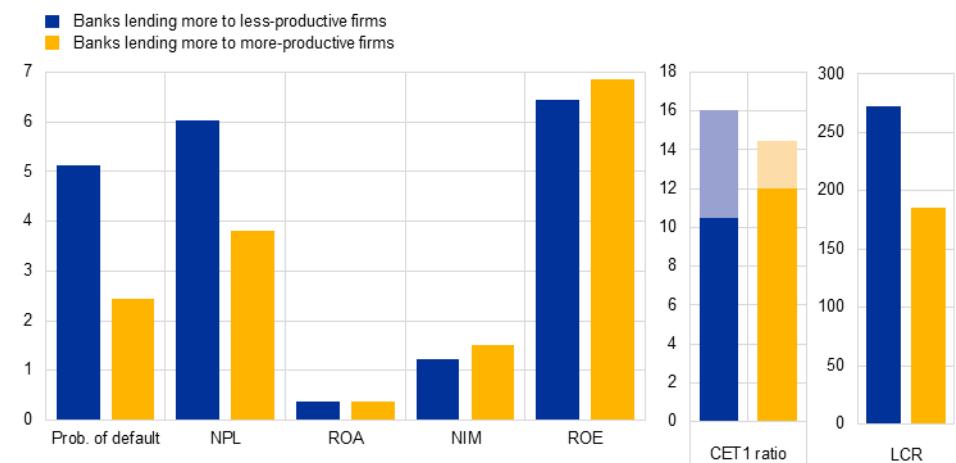
banks which lend more to low-TFP firms tend to be somewhat higher and their liquidity buffers significantly higher. Several factors could explain these higher buffers. For example, banks with a customer base consisting of less-productive firms may hold a larger portfolio of liquid securities because of weaker lending opportunities. In addition, lending to low-TFP firms is more prone to unexpected losses, meaning that banks which lend predominantly to such firms may wish to hold higher capital or liquidity buffers to manage credit risk in their loan books.

Chart B.7

Banks lending relatively more to less-productive firms have worse asset quality than banks lending more to more-productive firms

Bank balance-sheet characteristics and lending to low-productivity firms

(2019-22, percentages)



Sources: BvD Electronic Publishing GmbH – a Moody's Analytics company, ECB (AnaCredit, RIAD, supervisory data) and ECB calculations.

Notes: Blue (yellow) bars show the averages of bank balance-sheet metrics weighted by individual banks' share of total loans outstanding for less-productive (more-productive) firms. Less-productive and more-productive firms are defined as the bottom 30th and top 30th percentiles respectively of firms' TFP level at year-NACE2 sector-country level. For the CET1 ratio, the bold bars correspond to the weighted average regulatory capital requirements. NPL stands for non-performing loans; ROA stands for return on assets; NIM stands for net interest margin; ROE stands for return on equity; CET1 stands for Common Equity Tier 1; LCR stands for liquidity coverage ratio.

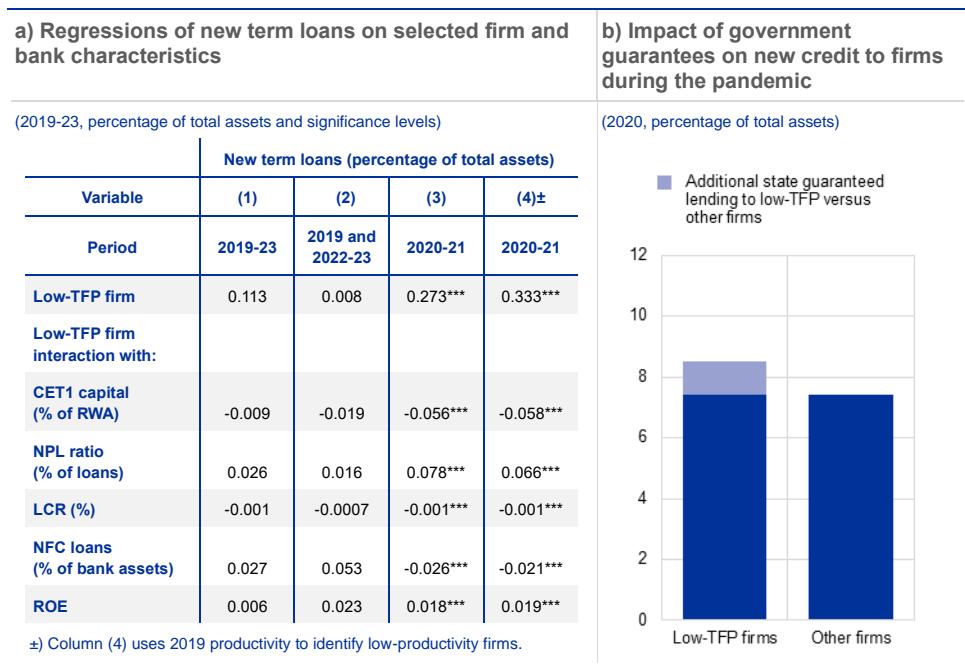
Making use of granular loan-level data, this analysis explores whether bank credit in the euro area is tilted towards less-productive firms. In the econometric framework used, a set of bank-firm level regressions explains the supply of bank credit to individual firms, depending on their productivity levels. Bank credit is measured by new loans from bank j to firm i , scaled by total firm assets.¹²⁹ The main explanatory variables feature a firm-specific indicator of a low TFP level plus a range of bank characteristics and their interactions. Fixed effects at the level of country-industry-firm size-time are included to control for loan demand. Within this framework, a positive and statistically significant coefficient on the low-TFP indicator would imply that, all else equal, less-productive firms receive more bank credit than other firms.

¹²⁹ The results are broadly robust for two alternative measures of bank credit: (i) growth in outstanding loans, and (ii) new credit exposures scaled by total firm assets. Outstanding loans include new loans and loan repayments. New credit includes loans, credit lines and other exposures. Using new loans as the dependent variable, rather than the growth in outstanding loans, makes it possible to estimate credit supply to low-TFP firms in terms of both intensive and extensive margins, by considering firms accessing bank credit for the first time.

The results suggest that during the pandemic, bank lending tilted towards less-productive firms and the tilt was quantitatively significant. There is no strong evidence that the allocation of credit by banks was biased towards less-productive firms before and after the pandemic (the coefficient on the low-TFP indicator is positive but not significant in columns (1)-(2) of **Chart B.8**, panel a), consistent with banks focusing on the assessment of credit risk, rather than identifying high-productivity firms. However, the opposite holds for the pandemic period. During this period, new loans were higher for less-productive firms – by around 0.3% of total firm assets – than for more-productive competitors (positive and significant coefficient on the low-TFP indicator in column (3)). This effect is confirmed when measuring firm productivity based on levels observed in 2019 (column (4)). In other words, the allocation of credit to low-TFP firms during the pandemic seems to reflect credit allocation to genuinely less-productive firms rather than a cyclical decline in productivity during the period of pandemic shutdowns. Importantly, banks with low non-performing loan levels and which specialise in corporate lending were less likely to lend to low-TFP firms during that period. Higher capital and liquidity ratios also seem to have limited lending to low-TFP firms (significant coefficients on the interaction between the low-TFP indicator and bank variables in column (3)).

Chart B.8

Regressions of loan growth on bank characteristics and the impact of government guarantees



Sources: BvD Electronic Publishing GmbH – a Moody's Analytics company, ECB (AnaCredit, RIAD, supervisory data) and ECB calculations.

Notes: "Low-TFP firm" is a dummy equal to 1 if a firm's log TFP level is below the 30th percentile of firms' TFP distribution at year-NACE2 sector-country level, and equal to 0 for other firms. Estimations are based on an unbalanced sample of euro area firms between 2019 and 2023. The dependent variable is new term loans as a share of firms' total assets. The specifications (1), (2) and (3) differ in the sample covered, while (4) uses the 2019 TFP level to identify low-productivity firms during pandemic years. Controls include (i) the share of bank j in firm i for total outstanding loans; (ii) bank characteristics: the CET1 ratio, LCR, corporate loans as a share of total bank assets, ROE, the logarithm of total bank assets, the NPL ratio; and (iii) firm characteristics: the share of tangible fixed assets in total assets, a logarithm of total firm assets and country-NACE2 sector-firm size-year fixed effects. All controls are lagged, de-meaned and winsorised at the 1st and 99th percentiles. Stars next to coefficients denote statistical significance levels: * - $p < 0.1$, ** - $p < 0.05$, *** - $p < 0.01$. Panel b: results are based on regressions of new term loans in 2020 on the low-TFP indicator, its interaction with the government guarantee dummy and a range of firm and bank characteristics.

State guarantees were essential in helping viable firms to overcome temporary liquidity issues during the pandemic, with less-productive firms benefiting relatively more than the rest of firms from the guaranteed credit. Government loan guarantees introduced to encourage new bank lending during the pandemic had a positive effect on credit flows to firms. This was essential to prevent bankruptcy in the case of otherwise healthy firms facing temporary liquidity difficulties during the period of pandemic shutdowns. Yet, while largely directed towards the most affected firms, the guarantees also seem to have encouraged more lending to less-productive firms than to other enterprises. The amount of new loans received by a typical less-productive firm in 2020 increased by 8.5% of total assets if the loan was backed by a government guarantee. By contrast, for otherwise similar but more-productive competitors, the additional new lending backed by state guarantees was only 7.4% (**Chart B.8**, panel b). These findings are consistent with the past literature on state credit guarantees that indicates a certain degree of moral hazard on the part of banks, who may have less incentive to screen borrowers because the underlying risks are partly borne by the government.¹³⁰

5 Conclusions

Over the long run, persistently weak productivity can undermine economic growth and the resilience of all sectors in the economy. Financial instability tends to be associated with the acute stress that is visible in high volatility, sharp reversals of sentiment and outright financial distress. However, structural weaknesses are equally relevant, as they gradually erode resilience. Persistently weak productivity is one such weakness and can undermine financial stability over the long run. This special feature analyses the role of access to finance, with a focus on bank lending as one of the factors driving aggregate productivity dynamics. It discusses the implications for financial stability.

Overall, the supply of bank credit has tilted more towards less-productive firms in recent years. The main reason for this is that the real estate sector has received a disproportionate share of bank credit despite its limited contribution to TFP growth. In addition, the allocation of bank loans within sectors tilted towards less-productive firms during the pandemic, while before and since the pandemic bank lending and firm productivity were/have been unrelated.

These findings beg the question as to whether more-productive firms have been to some degree crowded out, to the detriment of economic growth and resilience. This concern is relevant given the bank-centric nature of the euro area's financial system. While the continued flow of bank lending during the period of pandemic shutdowns prevented fundamentally sound firms from becoming insolvent, this special feature points to potential side effects.¹³¹ The direct effect on bank asset quality of lending to less-productive companies has likely been mitigated by

¹³⁰ See Gropp, R., Guettler, A. and Saadi, V., "Public bank guarantees and allocative efficiency", *Journal of Monetary Economics*, Vol. 116, 2020, pp. 53-69.

¹³¹ See also Lalinsky, T., Meriküll, J. and Lopez-Garcia, P., "Productivity-enhancing reallocation during the Covid-19 pandemic", *Working Paper Series*, No 2947, ECB, June 2024.

government guarantees at the expense of higher risks for sovereigns and a stronger bank-sovereign nexus. In addition, the tilt towards less-productive firms could have an indirect effect on productivity if the survival of less-productive firms suppresses the profitability of more-productive competitors, discouraging market entry and investment.

An external funding structure that is more diversified could help boost the productivity of euro area firms, to the benefit of financial stability. Equity investors may be more suited to funding inherently riskier but more-productive projects. They have greater incentives to identify frontier firms, as they reap the full benefits if such firms perform better. Some of them have superior skills when it comes to evaluating early-stage technologies while others are able to intervene directly and improve the operational efficiency of firms. Overall, additional progress towards the capital markets union – as part of a comprehensive policy agenda – could help improve growth potential of the euro area economy and support its resilience to adverse shocks.

Acknowledgements

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