EUROPEAN CENTRAL BANK

EUROSYSTEM

Financial Stability Review

November 2025

Contents

Foreword

The international environment remains volatile, and the euro area – an open economy that is well integrated into global supply chains and international financial markets – could face strains ahead. While the acute risk of a widespread trade war appears to have abated since May, tensions remain. Also, adverse spillovers beyond the trade sphere are possible. Market concerns about stretched public finances, for example, could create strains in global bond markets. In turn, this could have repercussions for euro area financial stability through shifts in international capital flows and currency swings, diminishing the competitiveness of euro area goods and causing fluctuations in euro area funding costs.

Global stock markets have reached new all-time highs despite recent volatility, while credit spreads are tight by historical standards. Market sentiment could shift abruptly, not only if growth prospects deteriorate but also if technology sector earnings – especially those of companies associated with artificial intelligence – fail to deliver on expectations. Euro area non-bank financial intermediaries would likely suffer losses in such a scenario, due to the size and concentration of their US exposures. Liquidity mismatches of open-ended investment funds, pockets of high leverage among hedge funds and opacity in private markets could amplify market stress.

At the same time, fiscal fundamentals in some euro area countries have been persistently weak. Fiscal slippage could test investor confidence, especially in countries where political majorities are fragile. A repricing of sovereign risk would be more difficult to absorb today than previously due to a gradual shift in the investor base towards more price-sensitive investors. That said, financial markets have so far accommodated high levels of issuance smoothly, including in more turbulent periods. In addition, the banking system has shown resilience to recent shocks, underpinned by strong capital, liquidity and profitability positions. Yet rising credit risk among tariff-sensitive firms could undermine the performance of bank loans, while growing interlinkages with non-banks could expose bank funding vulnerabilities in stressed market conditions.

This edition of the Financial Stability Review also includes two analytical special features. The first discusses whether the safe-haven properties of US Treasuries and the dollar have changed since the April tariff turmoil and analyses the implications for euro area financial stability. The second examines the systemic risk arising from linkages between banks and non-bank financial intermediaries.

The ECB's Financial Stability Review 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. It is intended to promote awareness of systemic risks among policymakers, the financial industry and the public at large, with the ultimate goal of promoting financial stability.

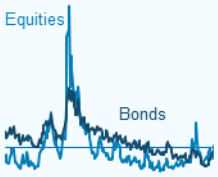
Luis de Guindos
Vice-President of the European Central Bank

Overview

Financial stability vulnerabilities remain elevated, given uncertainty over geoeconomic trends and tariff impacts

1 High asset valuations carry the risk of sharp adjustments that could challenge and be amplified by non-banks

Volatility per market segment



- Current market pricing and subdued volatility seem out of sync with persistently elevated vulnerabilities and uncertainties.
- Stretched valuations and extreme market concentration, particularly in US technology and AI-related firms, heighten the risk of sharp repricing.
- Risks of adverse spillovers from US Treasury markets are high, given concerns about US fiscal fundamentals and the evolving role of the dollar in financial markets.
- Crypto markets continue to expand and show greater interconnectedness with the traditional financial system, with signs of rising speculative leverage.
- Structural liquidity and leverage fragilities in the non-bank financial sector, as well as opacity in private markets, could amplify market stress.

2 A challenging fiscal outlook in some advanced economies could test investor confidence and lead to stress in sovereign bond markets

30-year and 10-year government bond spread

- Need for increased defence spending and higher funding costs could further strain sovereigns with structurally high debt and deficits.
- Cyclical headwinds, together with structural challenges such as ageing populations, may complicate the path towards fiscal consolidation.
- Fiscal capacity to address any risks to economic growth might be limited by high public debt levels in some countries.
- Fiscal slippage or adverse spillovers from external fiscal shocks could lead to global repricing of sovereign risk, which could be amplified by leveraged trading strategies.
- Higher sovereign yields could spill over to the corporate and banking sectors via higher funding costs.

3 Credit risk exposures to tariff-sensitive firms and growing funding risk exposures to non-banks could pose challenges for banks during periods of economic or market stress

Declarations of bankruptcy

- Trade frictions coupled with weak cyclical conditions may translate into higher corporate insolvencies, especially in tariff-sensitive industries.
- Weaker than expected growth outturns and a deterioration in labour market conditions could erode some households' debt servicing capacity.
- Banks with high exposures to trade-sensitive industries could face worsening asset quality in the event of deteriorating corporate fundamentals.
- The ability of banks to absorb further asset quality deterioration is supported by robust profitability and ample capital and liquidity buffers.
- Strong linkages could cause any stress in the non-bank financial intermediation sector to spill over to euro area banks, especially via funding.

Other risks

Several cross-cutting structural issues remain important for financial stability, including:

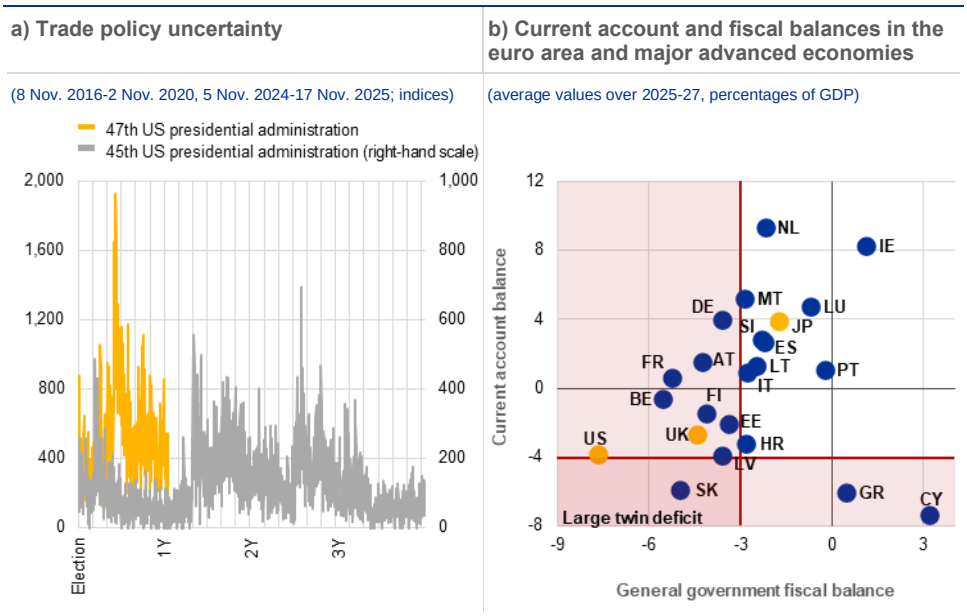
- Cybersecurity threats, such as those associated with systemic IT outages and the rise of AI, in a complex geopolitical world
- Risks stemming from global regulatory fragmentation and deregulation
- Risks associated with ageing populations
- Climate-related risks along the way to a low-carbon economy

Financial stability vulnerabilities remain elevated, given uncertainty over geoeconomic trends and tariff impacts

Measures of trade policy uncertainty have eased from their April highs, but uncertainty continues to linger, with potential for renewed spikes. Recent trade agreements between the United States and several of its main trading partners, including the EU, have eased trade policy uncertainty since the previous edition of the Financial Stability Review was published (**Chart 1**, panel a). As a result, market participants now consider certain acute risks, such as the resurgence of a global trade war, less likely to materialise in the near term. This has supported a modest, albeit fragile, improvement in global growth prospects and helped to boost financial market sentiment. As such, market focus has shifted from the risk of immediate escalation in geopolitical tensions to the longer-term economic and financial effects of tariffs and trade frictions, which could have uneven impacts on euro area sectors and countries over time. Despite the easing of trade tensions, the current environment remains one of elevated uncertainty and, if history is any guide, renewed spikes in trade policy uncertainty cannot be ruled out down the road (**Chart 1**, panel a). Tariff announcements, pauses and reversals are still perceived as structural features of the global environment.

Chart 1

Trade policy uncertainty could surge again, while structural risks stemming from fiscal sustainability and broader geoeconomic shifts are growing



Sources: Caldara et al.*, European Commission and ECB calculations.
Notes: Panel b: balances are calculated as a three-year average of the forecasts for 2025, 2026 and 2027. The vertical red line marks the 3% of GDP budget deficit threshold set in the Maastricht Treaty. The horizontal red line shows the indicative threshold for the current account deficit form the European Commission's macroeconomic imbalance procedure scoreboard. The blue dots represent euro area countries, while the yellow dots represent major advanced economy peers.
*) 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.

Beyond trade, exposure to risk spillovers from the United States has emerged as a key macro-financial vulnerability. Market concerns over US fiscal credibility have risen on the back of persistently high fiscal deficits, expectations of higher debt

service costs and high borrowing needs, and are compounded by a considerable current account deficit (**Chart 1**, panel b). These concerns over long-term debt sustainability and the external financing required to fund the US twin deficit have steepened yield curves. Together with market worries about central bank independence, these developments have weakened the safe-haven properties of US Treasuries and weakened the US dollar. Typically, exchange rate movements tend to offset the impact of tariffs, but a depreciating dollar is likely to amplify US tariff impacts on euro area exporters, as the euro area is a very open economy which is well integrated into global supply chains. These dynamics highlight the risk that global financial conditions – largely shaped by US capital markets where the floor for the global real interest rate tends to be set – could pose challenges for euro area financial stability through disorderly currency swings, adverse effects on trade competitiveness and fluctuations in funding costs for sovereigns, firms and banks. A further reassessment of the risk profile of US assets – reminiscent of the tariff turmoil in April – could trigger significant shifts in global capital flows, with wide-reaching implications for the global financial system (see **Special Feature A**). Moreover, the potential for policy shocks to disrupt the international order poses significant risks of geoeconomic and regulatory fragmentation across the globe, while ongoing geopolitical tensions further increase the likelihood of more frequent and impactful adverse tail events.

In this context, three main sources of risk and vulnerability emerge as central to euro area financial stability. First, stretched valuations in increasingly concentrated asset markets raise the risk of sharp, correlated price adjustments. Should they occur, such sudden market drawdowns could pose balance sheet challenges for euro area non-banks, given their persistent liquidity and leverage vulnerabilities, increasing the risk of fire sales which could amplify market stress. Opaque private markets could also be a source or amplifier of market downturns. Second, fiscal challenges in some advanced economies could test investor confidence, possibly triggering stress in sovereign bond markets. Third, although banks have demonstrated resilience to recent shocks, credit risk exposures to the tariff-sensitive segment of the corporate sector could yet undermine the performance of bank loans, while growing interlinkages with non-banks could expose bank funding vulnerabilities in stressed market conditions. The potential for these vulnerabilities to materialise simultaneously given common triggers, possibly amplifying each other further, increases the risks to euro area financial stability.

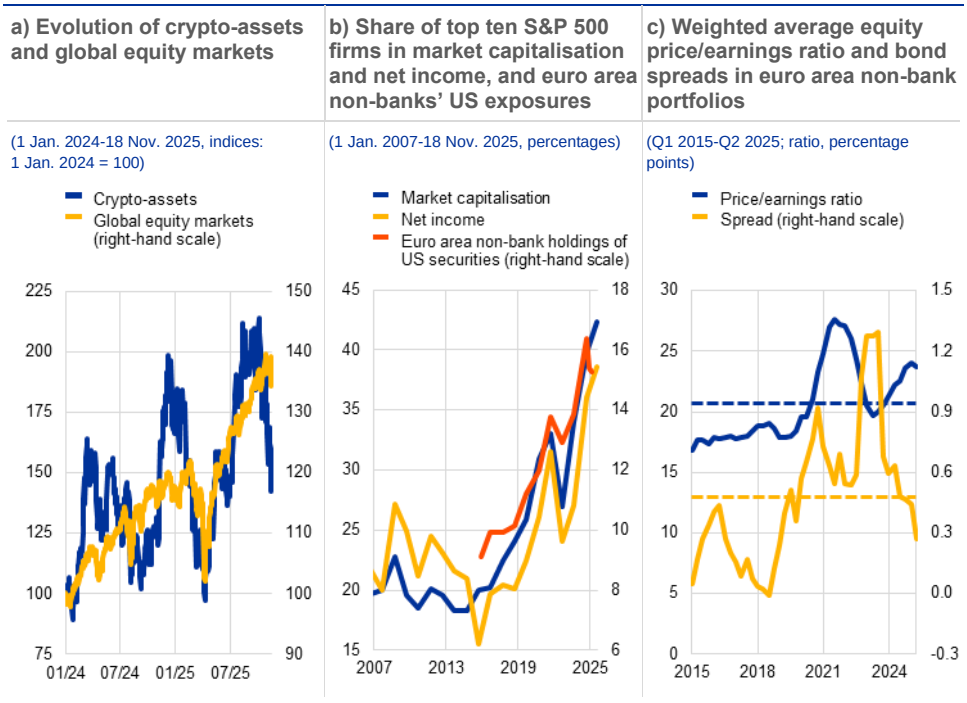
High valuations carry the risk of sharp adjustments that could challenge and be amplified by non-banks

Financial markets, notably equity markets, remain vulnerable to sharp adjustments due to persistently high valuations and increasing market concentration. Global stock markets rebounded swiftly from their early April lows, repeatedly reaching all-time highs in recent months (**Chart 2**, panel a). This renewed risk-on sentiment, which drove already high valuations even higher, was the result of perceptions of diminishing trade tensions, strong corporate earnings, growing expectations of further monetary policy easing in the United States and continued

optimism surrounding the productivity-boosting potential of artificial intelligence (AI). At the same time, market concentration among, and interconnection between, a handful of large US-based tech firms has risen further (**Chart 2**, panel b). This leaves global public markets − and increasingly also private markets − exposed to risks stemming from potential shocks to these firms (see **Section 2.3**). Unlike the asset price inflation seen during the dotcom bubble in 2000, which pushed the valuations of unprofitable firms to levels that were hard to explain, these "hyperscalers" combine high profit margins, strong earnings growth, little debt and diversified underlying businesses beyond AI, explaining their high current valuations. Beyond equity markets, credit spreads remain compressed. Meanwhile, less mainstream asset classes like crypto-assets remain highly volatile and show greater interconnectedness with the traditional financial system, with total crypto market capitalisation reaching short-lived new highs and stablecoin use growing (see **Box 5**).

Chart 2

High valuations and increasing risk concentration render financial markets and non-bank portfolios vulnerable to the risk of sudden price adjustments



Sources: Bloomberg Finance L.P., LSEG, ECB (SHS, ICB, IVF, PFBR) and ECB calculations.
Notes: Panel a: "Crypto-assets" refers to the Bloomberg Galaxy Crypto Index which is a benchmark designed to measure the price performance in US dollars of the largest cryptocurrencies. "Global equity markets" refers to the MSCI ACWI index, which measures the performance of large- and mid-cap stocks across both developed and emerging markets worldwide. Panel b: euro area non-bank holdings of US securities are shown as a share of total assets. Panel c: the price/earnings ratio calculation is limited to non-bank holdings within the S&P 500, EURO STOXX 600, Nikkei 225 and FTSE 100 indices, accounting for their changing compositions over time. The metric used is the 12-month forward price/earnings ratio. The spreads are calculated as the difference between an individual security's yield to maturity and a corresponding benchmark rate. Euro-denominated holdings are benchmarked against the euro area ten-year government benchmark bond yield while US dollar and all other currency holdings are benchmarked against the ten-year US Treasury yield. Each security's yield is compared with a common ten-year benchmark, regardless of its individual maturity.

The apparent disconnect between prevailing economic policy uncertainty and benign market pricing leaves room for sudden shifts in sentiment. Current market pricing does not appear to reflect persistently elevated vulnerabilities and uncertainties. One possible explanation is that this might be based on optimism that tail risks will not materialise. Alternatively, it may reflect fears of missing out on a

continued rally, as markets have proved to be resilient to recent shocks, or it could be related to an increasingly complex and hard-to-price risk environment (see **Section 2.2**). Negative surprises – including sharply deteriorating economic growth prospects, a re-escalation of trade and geopolitical tensions, market concerns over central bank independence and US fiscal credibility, or disappointing news on AI adoption and associated corporate earnings expectations – could trigger abrupt sentiment shifts, with spillovers across asset classes and geographies.

High valuations and risk concentration, coupled with liquidity and leverage vulnerabilities, could challenge non-banks' balance sheets and amplify market stress via forced asset sales. Overall, non-banks navigated the April tariff turmoil relatively well, remaining a key source of funding for the real economy and euro area sovereigns. Fund flows of European investors into risky assets have rebounded, with a notable shift towards shorter maturities and some further evidence of diversification towards euro area assets (see **Section 4.2**). That said, the portfolio holdings of investment and pension funds reflect buoyant market conditions by showing signs of elevated valuations (**Chart 2**, panel c), exposing these segments to the risk of sudden and broad-based valuation adjustments. Exposures in the euro area non-bank financial intermediation (NBFI) sector remain heavily concentrated in US dollar assets (**Chart 2**, panel b), increasing the sector's vulnerability to US-specific shocks and exchange rate fluctuations. More broadly, structural vulnerabilities in the NBFI sector remain significant. Liquidity mismatches in open-ended investment funds (e.g. corporate bond funds) and pockets of elevated financial and synthetic leverage in some entities (e.g. hedge funds) could trigger procyclical asset sales and exacerbate market volatility under stress through procyclical selling behaviour (see **Box 4**).

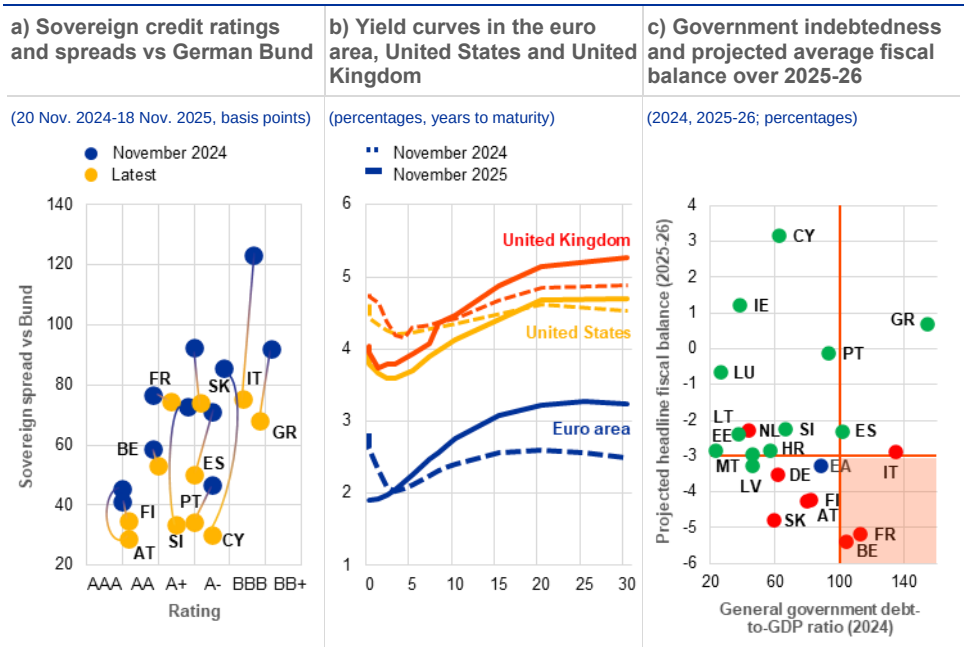
Liquidity and leverage vulnerabilities in the NBFI sector merit an appropriate policy response as market-based finance expands in terms of size and interconnectedness. Recent stress episodes underscore the need to broaden monitoring and strengthen the macroprudential framework for non-banks. Progress will depend on improving data availability and cross-border information sharing, ensuring timely implementation of international reforms and developing a more comprehensive toolkit to address the risks posed by NBFI leverage, combining both entity and activity-based measures. Improving data availability is particularly important in private markets, where difficulties in exiting private equity deals, and credit defaults in the United States, have raised concerns over opaque valuations and lax lending standards. At the EU level, stronger supervisory coordination, new macroprudential tools to address liquidity mismatches and leverage, and the development of system-wide stress testing would help reinforce resilience. Accelerated efforts to advance the savings and investments union in parallel, by deepening equity markets, mobilising retail and institutional savings and enhancing integrated supervision, will be essential for supporting growth and competitiveness across the EU while safeguarding financial stability.

A challenging fiscal outlook in some advanced economies could test investor confidence and lead to sovereign bond market stress

Euro area sovereigns are benefiting from lower risks to economic growth and flight-to-safety dynamics. International trade agreements, including between the United States and the EU, have helped reduce near-term tail risks for global and euro area growth outlooks. While the long-term economic implications remain uncertain, worst-case scenarios appear to have been averted, supporting sovereign debt sustainability. In addition, euro area sovereign bond markets have benefited from flight-to-safety dynamics following the April tariff turmoil as investors questioned the safe-haven status of US assets. Improved fiscal fundamentals and recent sovereign rating upgrades in several euro area countries have compressed bond spreads, although they have widened in countries facing fiscal challenges and rating downgrades, notably France. As a result, bond spreads have converged between countries with significantly different underlying ratings (**Chart 3**, panel a).

Chart 3

Higher issuance and funding costs could strain weak sovereigns, with fiscal slippage or external fiscal stress potentially leading to renewed sovereign fragmentation



Sources: LSEG, Fitch Ratings, Moody's Analytics, S&P Global Market Intelligence, Bloomberg Finance L.P., European Commission and ECB calculations.
Notes: Panel a: the chart shows only euro area countries with revised ratings since November 2024. Average rating of the long-term issuer ratings assigned by Moody's, Standard & Poor's and Fitch Ratings. The latest observations are for 18 November 2025. Panel b: yields reflect monthly averages. November 2025 figures based on data up to 18 November. Panel c: projected headline fiscal balance is calculated by taking the average of 2025 and 2026. The horizontal red line marks the 3% of GDP budget deficit threshold set in the Maastricht Treaty. The vertical red line marks the threshold of 100% of GDP for sovereign debt and is based on findings in the empirical literature. The green (red) dots indicate projected real GDP growth rates for 2026 above (below) the euro area average. EA stands for euro area.

Planned defence spending and persistent structural challenges may strain sovereign balance sheets in the medium term. Elevated geopolitical tensions and hybrid threats highlight the urgency of increasing defence spending to meet the new NATO target of 5% of GDP by 2035. Most euro area countries currently fall

substantially short of this figure and limited fiscal space may make it hard for some to reach it (see **Section 1.2**). Necessary defence spending could unlock positive growth effects if well targeted. It may, however, further limit the fiscal space needed to shelter the economy from future adverse shocks and to address structural challenges associated with digitalisation, low productivity, population ageing and climate change. As such, there have so far been few concrete pledges to greatly increase defence spending.

Fiscal expansion could pose risks from higher issuance needs and funding costs. High defence spending and major infrastructure investment plans in some euro area countries are expected to boost sovereign bond issuance. Given the Eurosystem's reduced presence in euro area bond markets, the capacity of the investor base to absorb this additional supply will be key for ensuring orderly sovereign bond market functioning. However, experience has shown that foreign investors have proved to be "flighty" in times of stress. In addition, leveraged positions by hedge funds on European sovereign bond markets, while more limited than on other markets such as the US Treasuries markets, can significantly amplify shocks when such positions need to be unwound. At the same time, shifts in the investor base are ongoing. There is lower demand for longer-dated debt from some institutional investors, notably Dutch pension funds which are moving from defined benefit to defined contribution schemes. As a result, investors may require higher yields to absorb new issuance or a compressed maturity profile. Market expectations of higher government financing needs have already seen yield curves steepen (**Chart 3**, panel b). Rising debt service costs and structural headwinds to potential growth from weak productivity could further strain fiscal positions and rekindle concerns about sovereign debt sustainability.

Weak fiscal fundamentals in some euro area countries and external fiscal risk spillovers could test investor confidence and trigger stress in bond markets. Despite the substantial progress that has been made with fiscal consolidation across much of the euro area since the COVID-19 pandemic, some countries are still burdened by elevated debt levels with high budget deficits expected to persist in the coming years (**Chart 3**, panel c). Fiscal slippage and non-compliance with the new EU fiscal framework could yet test investor confidence, notably in countries with more fragile political landscapes. In addition, fiscal fragilities in major advanced economies, including the recent US budget impasse and government shutdown, could heighten sovereign debt sustainability concerns, trigger stress in global benchmark bond markets and prompt a broader reassessment of sovereign risk in the euro area. Any repricing of sovereign risk could spill over to the corporate and financial sectors via higher funding costs and rating downgrades.

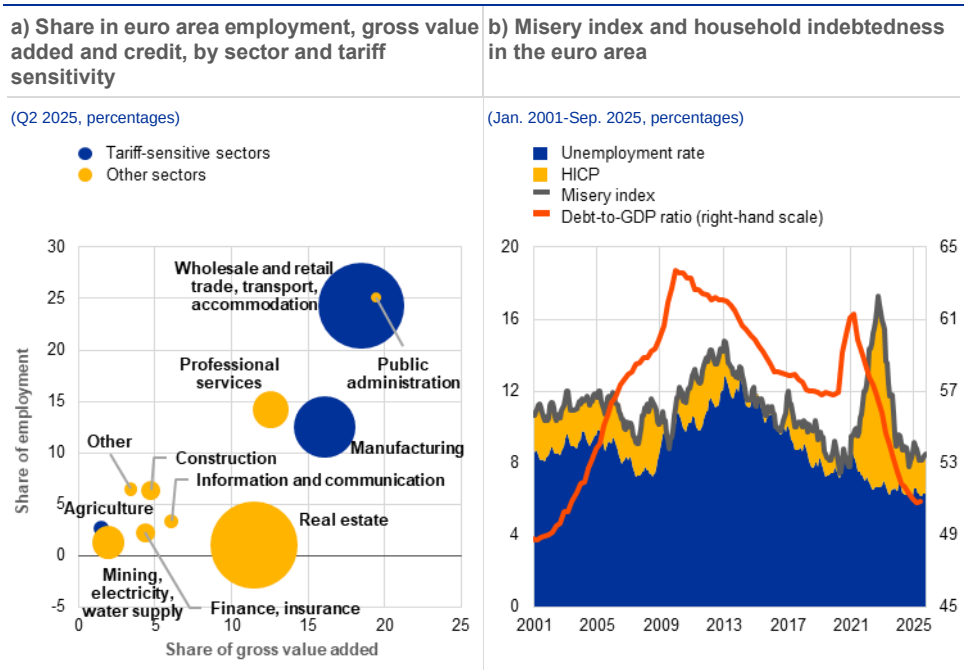
Credit risk exposures to tariff-sensitive firms and stronger funding ties with non-banks could strain euro area banks

Vulnerabilities in the euro area corporate sector remain elevated as the impact of tariffs unfolds, with potential spillovers to the household sector. Euro area corporate balance sheets have improved in recent years and indebtedness has fallen

below levels last observed before the global financial crisis. Nonetheless, profitability remains under pressure from subdued demand, elevated debt service burdens and higher labour costs. Insolvencies have been rising across sectors and countries in light of continued weak and uncertain business prospects (see **Box 1**). Trade frictions and the recent appreciation of the euro have compounded these pressures, eroding price competitiveness abroad at a time when Chinese firms are increasing their exports to global markets due to weak domestic demand. Tariff-sensitive and export-oriented sectors, such as manufacturing, account for a large share of total value added, credit and employment, implying that shocks affecting these sectors could have broader repercussions (**Chart 4**, panel a). Although conditions in commercial real estate markets have improved, real estate firms remain highly vulnerable to the ongoing macroeconomic and geopolitical uncertainty given their exposure to both international capital flows and local economic conditions. Euro area households continue to benefit from high savings, rising real wages, resilient labour markets and the marked reduction in the debt-to-GDP ratio which has taken place over recent years (**Chart 4**, panel b). However, this resilience could be tested if stress in the corporate sector were to push up unemployment or dampen wage growth, potentially weighing on household consumption and debt servicing capacity.

Chart 4

Corporate vulnerabilities remain elevated as the effects of tariffs take hold, potentially weakening household resilience if layoffs affect their debt servicing capacity



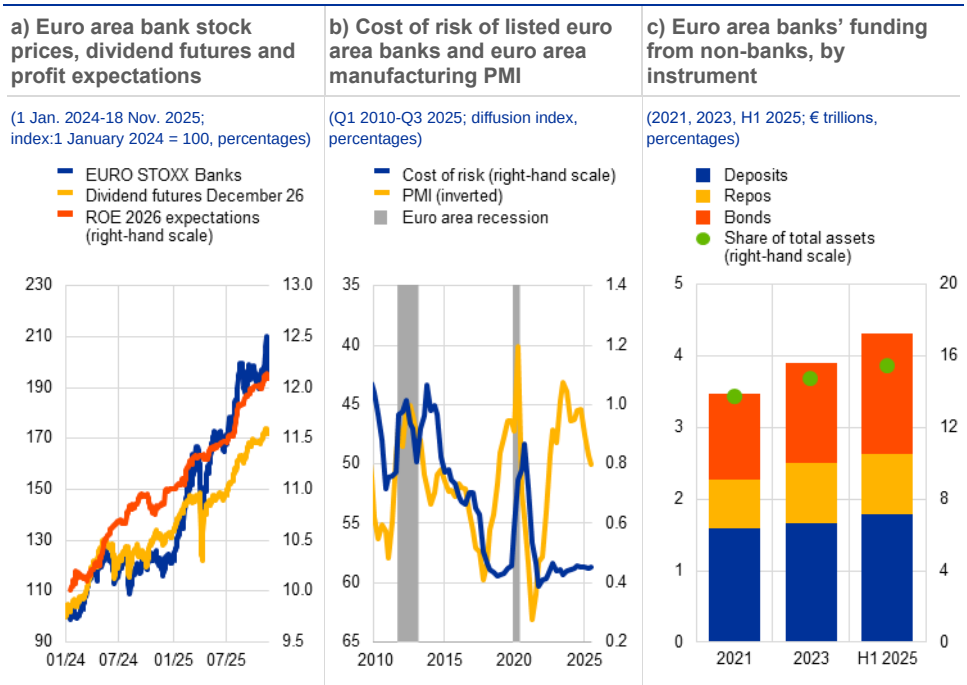
Sources: Eurostat and ECB (ICP, MNA, QSA), Eurostat (LFSI), ECB (supervisory data) and ECB calculations.
Notes: Panel a: bubble size represents the share of total loans. Panel b: the misery index is an economic indicator that measures economic hardship by adding the unemployment rate to the inflation rate. HICP stands for the Harmonised Index of Consumer Prices measure of inflation.

Strong investor sentiment and continued earnings outlook upgrades have lifted bank valuations, but non-performing loans and provisioning needs may rise as tariff effects ripple through the real economy. The stock prices of euro area banks have been driven by sustained strong earnings momentum and record profit

distributions (dividends and buybacks) in recent months (**Chart 5**, panel a), with price-to-book ratios rising to new post-financial crisis highs and gradually catching up with those of US peers. At the same time, euro area banks' non-performing loan ratios remain near historical lows on aggregate. However, there is continued deterioration in some sectors, notably for small and medium-sized enterprises and consumer lending, albeit with significant variation across countries. Looking ahead, asset quality could worsen for corporate exposures should trade fragmentation increase or economic conditions weaken further. These exposures could weigh on banks' asset quality through both direct credit losses and indirect effects, such as knock-on impacts on suppliers or a broader macroeconomic slowdown, especially if layoffs undermine the debt servicing capacities of households. As such, banks may yet face higher provisioning costs should risks actually materialise in non-financial sectors (**Chart 5**, panel b).

Chart 5

Euro area banks' resilience supports rising valuations, but credit risk exposures to tariff-sensitive firms and stronger funding ties with non-banks could pose a challenge



Sources: Bloomberg Finance L.P., S&P Global Market Intelligence, CEPR and Haver Analytics, ECB (supervisory data) and ECB calculations.
Notes: Panel a: ROE stands for return on equity. Panel b: "Cost of risk" is defined as impairments on loans divided by loans. PMI stands for Purchasing Managers' Index. The grey bars indicate recession periods, as determined by the CEPR Euro Area Business Cycle Dating Committee. Panel c: non-banks comprise insurance corporations, pension funds, investment funds, money market funds and other financial institutions. Deposits and repos from non-banks are obtained from ECB supervisory data and are collected at the consolidated level. For data on bonds from non-banks obtained from the SHS dataset, all bonds issue by euro area significant institutions are aggregated at the consolidated level.

The ability of banks to absorb further asset quality deterioration is supported by strong profitability and ample capital and liquidity buffers. Euro area banks maintained robust return on equity levels, averaging close to 10% in the first half of 2025, albeit with some cross-country variation (see **Section 3.1**). Banks' resilience has also been bolstered by capital and liquidity ratios that are well above regulatory requirements. Maintaining this resilience is essential in the context of elevated geopolitical and trade uncertainty. The 2025 EU-wide stress test confirmed that euro

area banks are adequately capitalised to withstand severe shocks, not least thanks to the macroprudential policy measures implemented by the authorities in recent years. As such, releasable capital buffer requirements should be preserved, with targeted increases considered in countries where releasable buffers are low, provided such measures do not pose procyclicality risks. Proper calibration of borrower-based measures is also essential to uphold sound lending standards (see **Section 3.5**). The prevailing regulatory and supervisory framework, including in the macroprudential remit, has been effective in safeguarding financial stability. There is, however, scope for making the framework more efficient and effective by reducing unwarranted complexities, without compromising bank resilience or undermining compliance with the Basel framework, and by completing the banking union.

Rising interlinkages with non-banks may reveal bank funding vulnerabilities if market conditions turn volatile or corporate fundamentals deteriorate. Weak economic conditions and elevated trade policy uncertainty may impair the asset quality of non-bank portfolios, exposing the non-bank financial intermediation (NBFI) sector to the risk of revaluation losses from unexpected downgrades and increasing default risk. The importance of non-bank funding for banks has grown in recent years (**Chart 5**, panel c), with the share of volatile, short-term liabilities constituting a significant portion of overall funding from non-banks. Some of these liabilities arise from intermediation activities and are offset by corresponding asset exposures. Funding from non-banks may be difficult to substitute, due to their high concentration among a few large banks and the preference of non-banks for specific funding instruments. As a result, short-term non-bank funding outflows and counterparty credit losses on exposures to non-banks, possibly caused by asset price shocks, could lead banks to deleverage. In turn, as banks would then reduce funding to non-banks, these entities might need to unwind positions and sell assets. The loss-absorbing capacity of banks closely interlinked with the NBFI sector and sufficient liquidity buffers in non-banks are thus essential to maintain the smooth provision of financial services in times of stress (see **Special Feature B**). In addition, euro area banks are exposed to the opaque private markets via direct lending to private market funds and via lending to private market-backed firms.

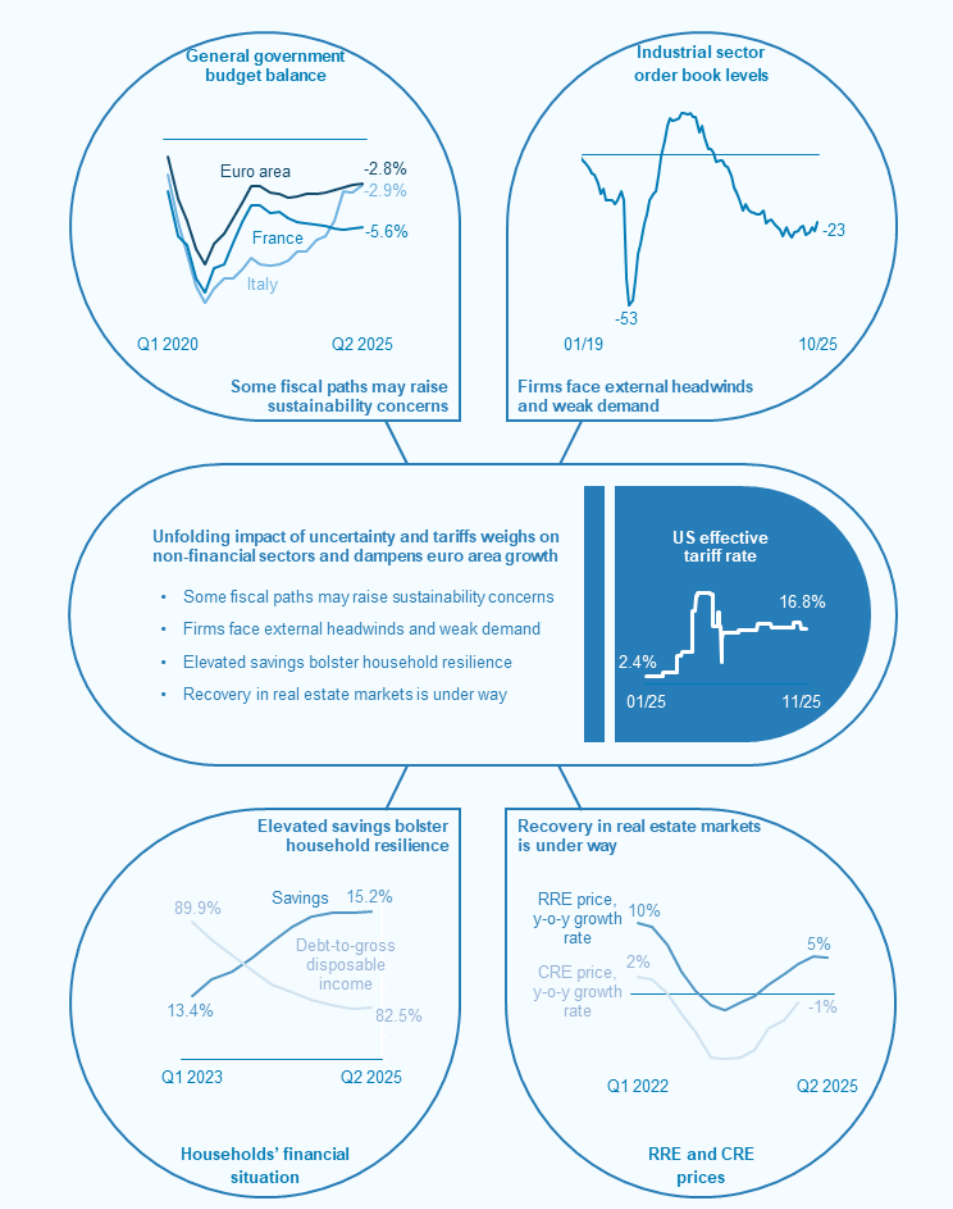
Financial stability vulnerabilities remain elevated, given uncertainty over geoeconomic trends and tariff impacts

All in all, the financial stability landscape continues to be shaped by trade policy uncertainty, which despite recent measured declines remains elevated and leaves scope for renewed volatility. Notwithstanding reduced uncertainty and multiple sources of resilience in euro area financial as well as non-financial sectors, vulnerabilities persist and warrant close monitoring. In fact, the macro-financial effects of the tariff shock have yet to fully materialise and, together with possible spillovers from US-centric risks − notably those associated with fiscal and institutional credibility − remain important vulnerabilities. Additionally, it is possible that risk sentiment could deteriorate again as some risky asset valuations remain high, with relatively benign pricing seemingly at odds with prevailing uncertainties about macro-financial and

geoeconomic conditions. At the same time, sizeable defence spending needs and higher funding costs could yet weaken fiscal positions and test market confidence. In parallel, credit risk exposures to tariff-sensitive firms and deepening funding links with non-banks could add to the pressures faced by euro area banks. Against this background, there is a pressing need for accelerated progress to be made on the savings and investments union, encompassing both the banking and capital markets union. This initiative is aimed at fostering a single, deep and liquid market that will contribute to safeguarding financial stability and supporting investment-led growth and competitiveness.

Beyond the macro-financial environment, several overarching structural issues remain pivotal for safeguarding financial stability and have the potential to exacerbate existing cyclical vulnerabilities. These include cybersecurity weaknesses and hybrid threats in an increasingly complex geopolitical landscape, the growing importance of AI – offering both opportunities and risks of destabilisation along the innovation path − risks arising from global regulatory fragmentation and deregulation, challenges linked to ageing populations and climate-related risks along the way to a low-carbon economy. The potential for these cyclical and structural vulnerabilities to crystalise simultaneously and amplify each other heightens the materiality of risks to financial stability.

1 Macro-financial and credit environment



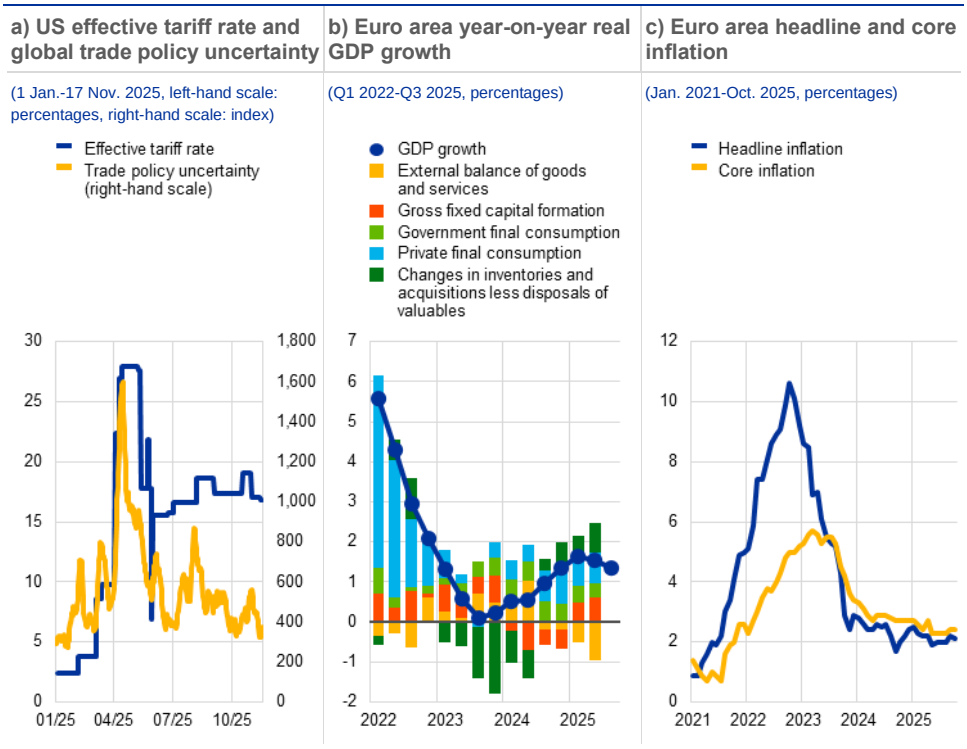
1.1 External headwinds continue to weigh on euro area growth

Lingering global uncertainties are posing risks to the growth outlook in the euro area, with trade tensions among the key factors. Tariffs on euro area exports to the United States have increased considerably since the start of the year. The recent US-EU agreement has capped tariffs for most goods, resulting in a notable decline in trade policy uncertainty. That said, it remains elevated by historical

standards and renewed spikes cannot be ruled out (**Chart 1.1**, panel a).[1,2] Persistent uncertainty about the longer-term impact of higher tariffs is continuing to weigh on global activity, adding to downside risks for growth in the euro area. Exporters in particular are facing a challenging environment as subdued external demand and intensified competition from abroad erode growth prospects. Beyond its impact on direct trade flows, heightened uncertainty may also be weighing on firms' investment plans and hiring decisions.[3] This is dampening activity in those sectors closely integrated into global value chains, with knock-on effects on consumer confidence.

Chart 1.1

Global uncertainties and tariff rates weigh on euro area growth, while inflation continues to moderate



Sources: The Budget Lab at Yale, Caldara et al.*, Eurostat, ECB and ECB calculations.
Notes: Panel a: the effective tariff rate for 2025 is measured pre-substitution (i.e. assuming there are no shifts in the import shares of different countries compared with 2024). The trade policy uncertainty index is as presented in Caldara et al.* Panel b: the chart shows average annualised year-on-year GDP growth rates and average contributions from different components. Panel c: headline inflation is measured by the Harmonised Index of Consumer Prices (HICP), while core inflation is defined as the HICP excluding energy and food.
*) Caldara, D., Iacoviello, M., Molligo, P., Prestipino, A. and Raffo, A., "The economic effects of trade policy uncertainty", *Journal of Monetary Economics*, Vol. 109, 2020, pp. 38-59.

Growth in the euro area has proven to be resilient over the first three quarters of 2025 and higher than foreseen in the June 2025 Eurosystem staff macroeconomic projections for the euro area. After a strong first quarter driven by frontloaded exports and resilient services activity, GDP growth slowed, partially reflecting the expected unwinding of frontloading effects. The external balance of goods and services has exerted a drag throughout the year so far, while private

1 See Section 3 entitled "Prices and Costs", *Economic Bulletin*, Issue 6, ECB, 2025.

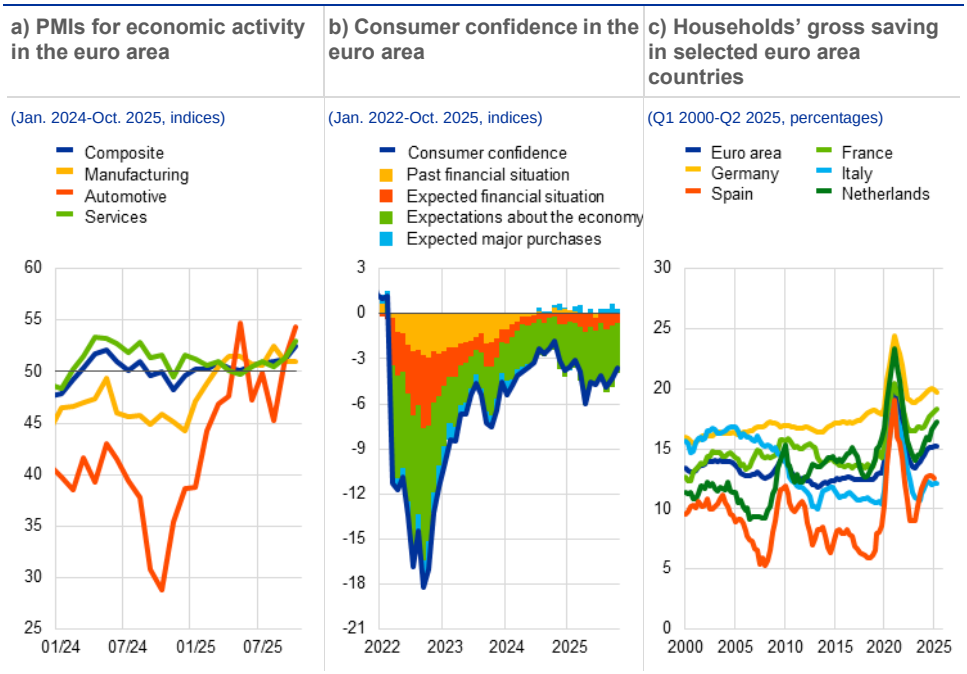
2 Average index value in 2015-24 is 86.5.

3 See, for example, Allayioti, A. et al., "More uncertainty, less lending: how US policy affects firm financing in Europe", *The ECB Blog*, ECB, 2025.

consumption, government spending and investment have made a positive contribution (**Chart 1.1**, panel b). Meanwhile, inflationary pressures have eased markedly. Headline inflation has fallen sharply from its 2022 peak, stabilising close to the ECB's target level of 2% on the back of declining energy prices and food inflation. Core inflation has been more persistent but is continuing to moderate gradually, supported by easing wage growth and lower services inflation (**Chart 1.1**, panel c). Disinflation has been accomplished in the euro area economy without an associated sharp slowdown so far. At the same time, growth has remained positive and is expected to recover further in the fourth quarter of 2025.[4] However, the outlook could prove vulnerable to external shocks like revived trade tensions and a further escalation of geopolitical conflicts and domestic challenges, in particular sovereign risks (see **Section 1.2**), that could trigger broader market reassessments.

Chart 1.2

Euro area business sentiment stabilises as trade tensions ease, but subdued consumer confidence limits near-term prospects for domestic demand



Sources: Eurostat, S&P Global Market Intelligence, European Commission, ECB and ECB calculations.
Notes: Panel a: a Purchasing Managers' Index (PMI) value above (below) 50 implies an improvement (deterioration) in economic activity. Panel b: consumer confidence indicator (seasonally adjusted and demeaned). Euro area 20 (fixed composition) as of the 1 January 2023 European Commission (including Eurostat) Consumer Survey. Panel c: households' gross saving as a share of adjusted gross disposable income.

Although there are tentative signs of stabilisation in business confidence, households remain cautious. The risk of escalating trade tensions, with widespread retaliation to the import tariffs announced by the United States, has eased notably since the previous edition of the Financial Stability Review, providing some support to business sentiment. Purchasing Managers' Indices (PMIs) show a modest recovery at the margin. Services and manufacturing remain in expansionary territory, while the automotive sector has been volatile and remains fragile (**Chart 1.2**, panel a). By

[4] See "ECB staff macroeconomic projections for the euro area, September 2025", published on the ECB's website on 11 September 2025.

contrast, consumer confidence is still subdued, reflecting households' concerns about both the general economic outlook and their own financial situations (**Chart 1.2**, panel b). Their spending decisions remain cautious, as evidenced by the highest aggregate level for the gross saving ratio ever recorded (apart from during the COVID-19 pandemic) across major euro area economies (**Chart 1.2**, panel c). Indirect evidence suggests that the elevated saving ratio may, to some extent, reflect households' expectations that their financial health will not improve in response to increased public spending.[5] However, these accumulated savings also provide a buffer and could underpin a stronger rebound in domestic demand once sentiment improves.

Looking ahead, the macroeconomic outlook for the euro area is balancing pockets of resilience against sustained challenges. While factors such as moderating inflation, a strong labour market and accumulated household savings provide the conditions for a gradual recovery in private consumption, the external environment is set to remain difficult. US tariffs, an appreciating euro and rising import competition from China are likely to continue to weigh on export-oriented sectors, particularly manufacturing (see **Section 1.3**). Investment is also expected to remain subdued as firms face weaker profitability and heightened uncertainty. Overall, growth is projected to recover only gradually.[6] A sharper deterioration in global trade conditions, stronger currency appreciation or other shocks that could prolong a persistent weakness in consumer confidence could materially weigh on the recovery, underscoring the fragile nature of the current outlook.

1.2 Some fiscal paths may raise debt sustainability concerns

International agreements on trade have reduced short-term uncertainty, but cyclical and structural fiscal challenges remain. International trade agreements, including the US-EU deal announced in August, have averted the worst-case scenario of a trade war involving widespread retaliation. While the euro area growth outlook remains weak overall, it now appears to be more resilient, as tail risks from trade shocks are less likely in the near term (see **Section 1.1**). However, the full economic and financial impact of past shocks – notably tariff measures and trade frictions – will unfold over time. In addition, governments face a long list of structural issues that need to be addressed and may require public resources. These include the green and digital transitions, ageing populations, low productivity and the need to upgrade infrastructure and expand defence capabilities.

Fiscal fundamentals are on greatly differing trajectories across countries and remain particularly weak in some. While many euro area countries have made substantial progress on fiscal consolidation since the pandemic, some have not materially reduced their debt levels from the pandemic-era peaks and are still running

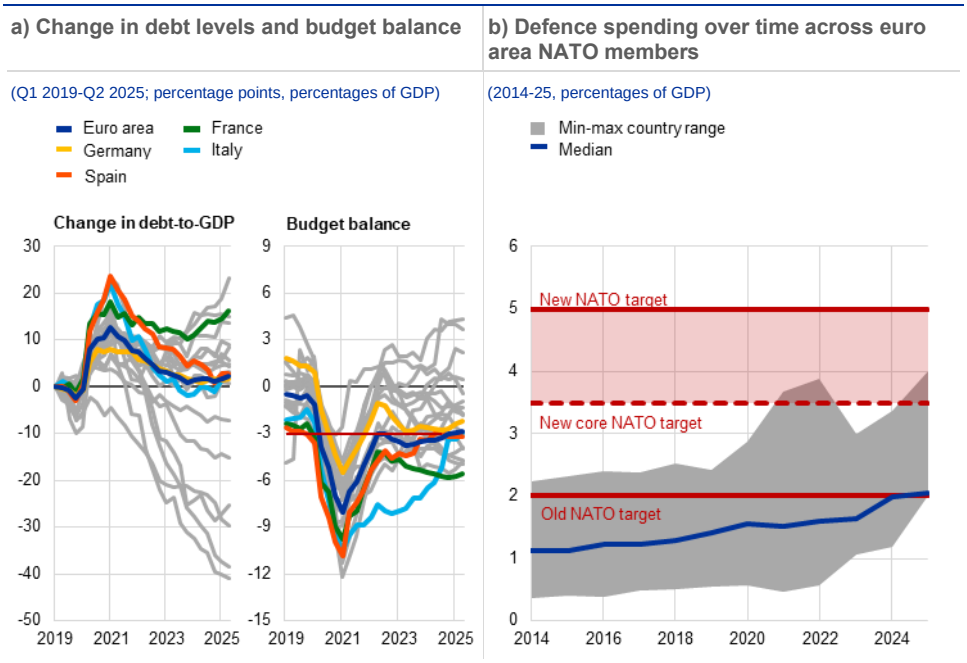
5 ECB Consumer Expectations Survey findings suggest that announcements of increased defence spending are perceived as a burden on households' financial situations (see the box entitled "Higher defence spending and its impact on household expectations", *Economic Bulletin*, Issue 5, ECB, 2025). This could be explained by Ricardian effects, which may restrain household consumption.

6 See the "Combined monetary policy decisions and statement", ECB, 11 September 2025.

sizeable budget deficits (**Chart 1.3**, panel a). This is less of a problem for countries that still have low or medium-sized levels of debt. For more highly indebted euro area countries, however, such a trajectory for fiscal fundamentals could raise debt sustainability concerns among investors, especially where consolidation efforts are complicated by small or unstable parliamentary majorities. Furthermore, the Next Generation EU programme finishes at the end of 2026, and there is a risk that substantial amounts of available funds will not be disbursed to Member States in time.[7] If additional flexibility is applied to speed up disbursement, it will still be important to ensure that funded projects and structural reforms are of appropriate quality. Overall, euro area deficits are expected to increase in the coming years.[8]

Chart 1.3

Euro area countries face divergent fiscal paths, with some struggling to reduce deficits and meet rising defence spending targets



Sources: ECB and Eurostat (GFS), NATO and ECB calculations.
Notes: Panel a: the left graph shows percentage point changes in the debt-to-GDP ratio since Q1 2019. The horizontal red line in the right graph denotes the target for the budget balance under the Stability and Growth Pact. Panel b: data on defence spending come from NATO, with the figures for 2024 and 2025 being estimates. Data may differ from official euro area statistics because of differences in the way defence spending is classified.

Increasing geopolitical tensions and hybrid threats underscore the need to boost defence spending, which may prove difficult for some countries. In June 2025 NATO allies agreed on a new defence spending target of 5% of GDP, to be reached by 2035. This new target comprises a minimum of 3.5% for core defence and up to 1.5% for broader security-related spending, including some expenditure on infrastructure.[9] Despite the faster progress made after Russia's invasion of Ukraine in 2022, many euro area countries still fall substantially short of this new target

7 See "NextGenerationEU – The road to 2026", European Commission, 4 June 2025.

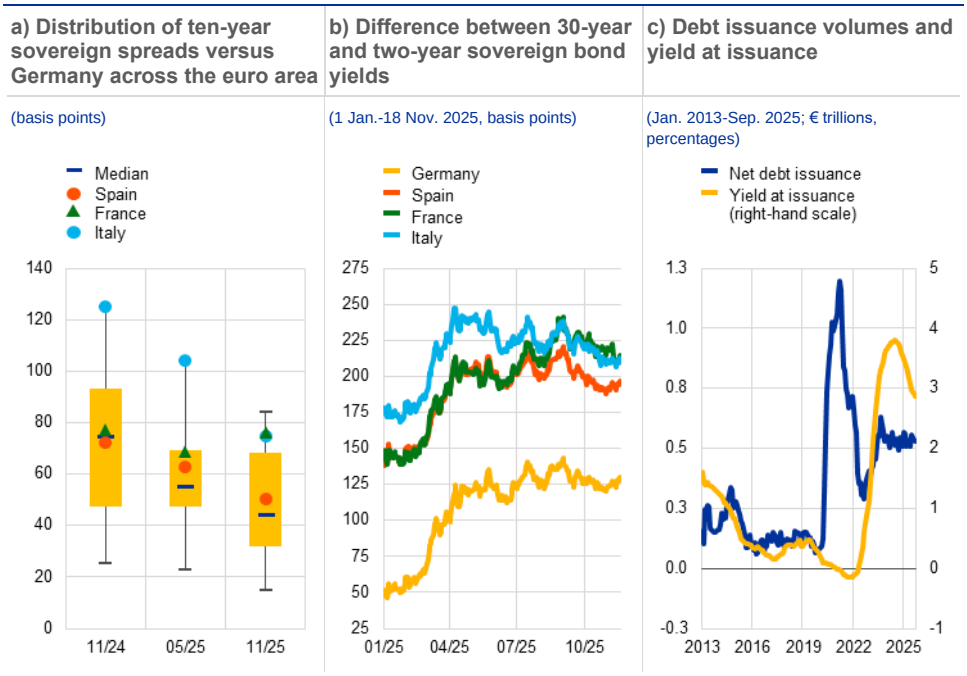
8 See "ECB staff macroeconomic projections for the euro area, September 2025", published on the ECB's website on 11 September 2025, and "European Economic Forecast Autumn 2025", *Institutional Paper*, No 327, European Commission, November 2025.

9 See "The Hague Summit Declaration", *press release*, NATO, 25 June 2025.

(**Chart 1.3**, panel b). Governments widely agree that defence capabilities need to be significantly enhanced, and economic analysis suggests that this could have a positive impact on growth.[10] Given the fact that fiscal space is low, however, there have so far been few concrete pledges to greatly increase defence spending. Accordingly, initiatives to create fiscal space under the European Commission's Readiness 2030 plan are of particular importance. For instance, activating the Stability and Growth Pact's national escape clause for several euro area countries would provide greater budgetary flexibility over the next four years.[11] In addition, the full €150 billion envelope of the Security Action for Europe instrument has been tentatively allocated. Disbursements could start in early 2026.[12]

Chart 1.4

Euro area debt sustainability faces challenges from rising interest costs and a potential reassessment of risk by investors



Sources: ECB and Eurostat (GFS), LSEG, Bloomberg Finance L.P. and ECB calculations.
Note: Panel a: spreads are shown as monthly averages. The latest observations are for 18 November 2025. Panel c: the chart shows 12-month moving sums for debt issuance and 12-month moving averages for the yield at issuance.

Market pricing reflects changes in investors' risk perceptions towards individual euro area countries. The flight-to-safety dynamics seen in the aftermath of the April tariff turmoil have led to an overall decline in sovereign bond spreads across most euro area countries (**Chart 1.4**, panel a and **Special Feature A**). More

10 The results of analyses of the impact of defence spending on growth are subject to uncertainty. For details, see the article entitled "Macroeconomic impacts of higher defence spending: a model-based assessment", *Economic Bulletin*, Issue 6, ECB, September 2025.

11 The national escape clause was activated for 11 euro area countries: Belgium, Germany, Estonia, Greece, Croatia, Latvia, Lithuania, Portugal, Slovenia, Slovakia and Finland. See "Council activates flexibility in EU fiscal rules for 15 member states to increase defence spending", *press release*, Council of the EU, 8 July 2025, and "Economic governance: Council approves Germany's fiscal expenditure path and its flexibility to increase defence spending", *press release*, Council of the EU, 10 October 2025.

12 See "Communication to the College on the notification to requesting Member States of the allocation of the loan amounts pursuant to Council Regulation 2025/1106", European Commission, 9 September 2025.

recently, investors' perceptions of risk have focused on the deteriorating trajectory of fiscal fundamentals in France. As a result, French sovereign bond spreads have moved closer to those for Italian debt (see **Chapter 2**). That said, French sovereign bond spreads have remained within the same range since June 2024 and markets have stayed liquid.

Shifts in demand among institutional investors and a weak growth outlook will weigh on interest costs and debt levels. While ECB policy rate cuts have reduced the costs associated with short-term borrowing, longer-term rates have increased as the yield curve has steepened over the course of 2025 (**Chart 1.4**, panel b). As most sovereign debt is issued at longer maturities and debt that was issued at much lower rates needs to be rolled over, interest burdens are set to increase further and will weigh on budgets for years to come (**Chart 1.4**, panel c). At the same time, shifts in the investor base, notably in the context of Dutch pension fund reform, will likely lower demand from some euro area institutional investors for longer-dated debt (see **Chapter 4**). Investors might therefore only absorb additional bond issuance at higher yields or with shorter maturities, increasing interest rate and rollover risks for sovereigns. Higher interest rates, coupled with inflation stabilising around the ECB's 2% target and subdued real economic growth, imply that the favourable impact of the interest rate-growth differential on debt levels will fade.

A reassessment of sovereign risk could lead to stress in bond markets, underpinning the importance of ensuring debt sustainability. Creditors' confidence might be tested if consolidation efforts and reforms are delayed. Triggers such as (unexpected) rating downgrades, weak demand in sovereign auctions or stress in global benchmark bond markets could lead to a repricing of euro area sovereign risk. In particular, foreign investors might be sensitive to such signals and could quickly reverse investment flows. The repricing of sovereign risk also carries the potential for spillovers to the funding costs of corporates and banks. However, such dynamics have not been seen recently. To retain investor confidence, governments should ensure that the public finances are sustainable and in line with the EU's economic governance framework, while prioritising essential growth-enhancing structural reforms and strategic investment. At the euro area level, it will be necessary over the coming years to consolidate the public finances in a growth-friendly manner and manage medium-term fiscal challenges.

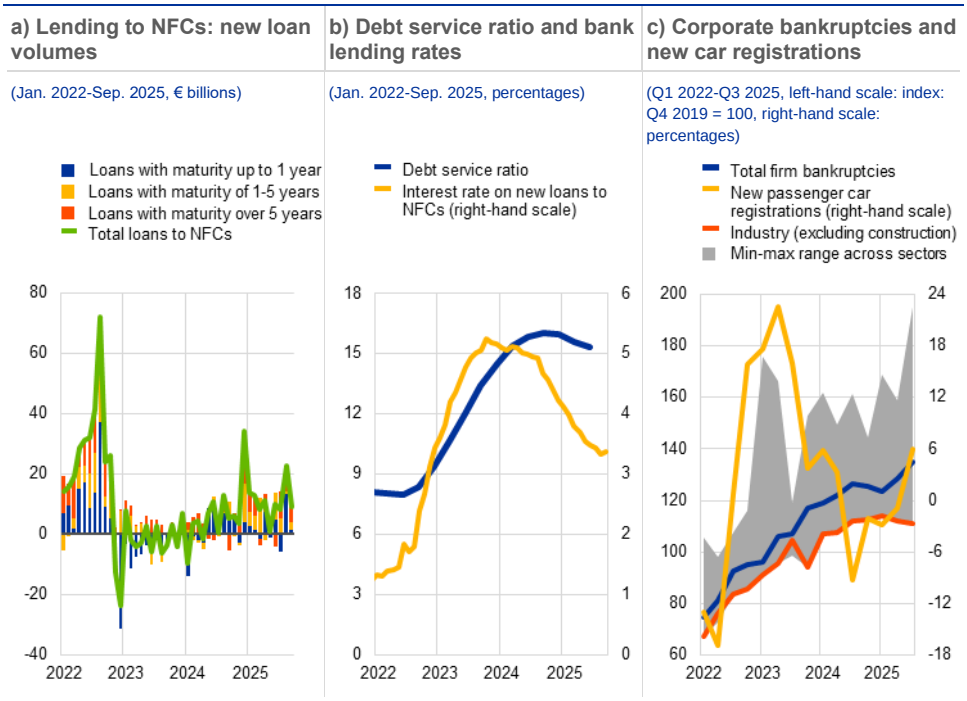
1.3 Firms face a fragile recovery given external pressures and high debt service costs

Euro area corporations still appear reluctant to expand their borrowing, even though financing costs are more favourable than they were six months ago. According to the latest survey data, firms continue to report a decline in bank lending rates. However, both large firms and small and medium-sized enterprises have indicated a further slight net tightening of other loan conditions, relating to both other

financing costs and collateral requirements.[13] Banks reported a small, unexpected net tightening of credit standards in the third quarter amid perceived risks related to the economic outlook, while the terms and conditions for new loans were broadly unchanged.[14] The demand for loans increased slightly, albeit from levels that had remained weak, suggesting that firms remain cautious over taking on new debt amid elevated uncertainty (see **Section 1.1**). Against this backdrop, lending flows to non-financial corporations (NFCs) in the euro area were generally subdued in 2025 (**Chart 1.5** panel a).[15] This suggests that while financing costs have become more favourable overall, firms remain reluctant to expand borrowing in the face of uncertain prospects for profitability and demand.[16]

Chart 1.5

The euro area corporate sector faces uncertain prospects amid elevated debt service costs and bankruptcies



Sources: Eurostat, ECB and ECB calculations.
Notes: Panel a: adjusted loans to euro area non-financial corporations (NFCs) reported by monetary financial institutions in the euro area (transactions). Panel b: the debt service ratio is the sum of the interest paid in the current and the past three quarters divided by the sum of net operating surplus and property income in the current and the past three quarters for the NFC sector. Bank interest rates are for loans to corporations (new business) in the euro area. Panel c: the grey area shows the minimum-maximum range of index values across the following 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 passenger car and commercial vehicle registrations are for the euro area 20 (fixed composition).

13 See the ECB's "Survey on the Access to Finance of Enterprises in the euro area" covering the third quarter of 2025.

14 See the ECB's "Euro area bank lending survey" covering the third quarter of 2025.

15 At current margins, total new loan volumes are 7% lower than the average for the period 2022-25 and a full 28% lower than the average for the period 2019-25.

16 In addition, the availability of skilled labour and production, as well as labour costs, remains a major concern limiting production. Firms also highlighted finding customers (53%) and competition (45%) as major concerns. This indicates that trade policy uncertainty was affecting their business decisions (see the ECB's "Survey on the Access to Finance of Enterprises in the euro area" covering the third quarter of 2025).

Despite some relief from lower interest rates, euro area firms continue to face high debt service costs. While the recent cuts in interest rates have reduced costs for new corporate borrowing, the stock of outstanding debt is continuing to reprice at less favourable conditions, keeping debt service ratios elevated (**Chart 1.5**, panel b). Survey data show that most firms believe their financial positions are under strain from weaker external demand, which is squeezing their profitability. At the same time, bankruptcy has shown mixed trends (**Chart 1.5**, panel c). Aggregate corporate bankruptcies are increasing and are above pre-pandemic levels, but recent data point to declines in sectors such as information and communication and modest improvements in manufacturing. This coincides with a recovery in new passenger car and commercial vehicle registrations, which rose by 5.9% year on year in the third quarter of 2025, suggesting that demand for durable goods has stabilised to some extent. Taken together, these dynamics suggest that while there are some signs of an incipient recovery, overall corporate resilience remains fragile. Small firms and firms operating in export-dependent sectors are facing particular challenges.[17]

International trade dynamics remain a key source of pressure on the euro area corporate sector. The tariffs introduced by the United States in early 2025, capped at 15% for most goods by the new US-EU trade agreement, are weighing most on manufacturing, which is one of the euro area's most export-oriented sectors.[18] The frontloading of shipments in the first quarter of 2025 was followed by weaker exports to the United States in the second quarter, underlining the drag from trade frictions. A much greater impact from trade tensions is reported by firms that export to the United States than by those that do not. Many are indicating that they need to redirect sales towards domestic and intra-EU markets and they also need to restructure their supply chains. The appreciation of the euro in recent months has compounded these pressures, eroding price competitiveness abroad at a time when Chinese firms, facing weak domestic demand, are increasing their exports to global markets. This is reflected in declining order book balances for industry in the euro area. These remain in negative territory despite some stabilisation at the margin (**Chart 1.6**, panel a), pointing to continued weakness in external demand.

The broader corporate vulnerability picture remains mixed. The composite vulnerability indicator has increased from previous quarters and suggests that overall risks related to debt servicing, profitability and especially activity remain above their historical average levels. However, projections point to a stabilisation over the forecast horizon (**Chart 1.6**, panel b). Altman Z-scores point to particular stress among manufacturing firms, which are generally continuing to show greater distress than other real-economy sector firms (**Chart 1.6**, panel c). Notably, recent dynamics diverge between the manufacturing and the non-manufacturing sectors across the distribution.[19] These pressures underline the sectoral discrepancies in the corporate outlook. While services, construction and parts of the retail trade have shown relative resilience, manufacturing remains the most severely affected by tariffs, the

---

17 See the box entitled "Impact of trade tensions and US tariffs on euro area firms" in the ECB's Survey on the Access to Finance of Enterprises in the euro area covering the second quarter of 2025.

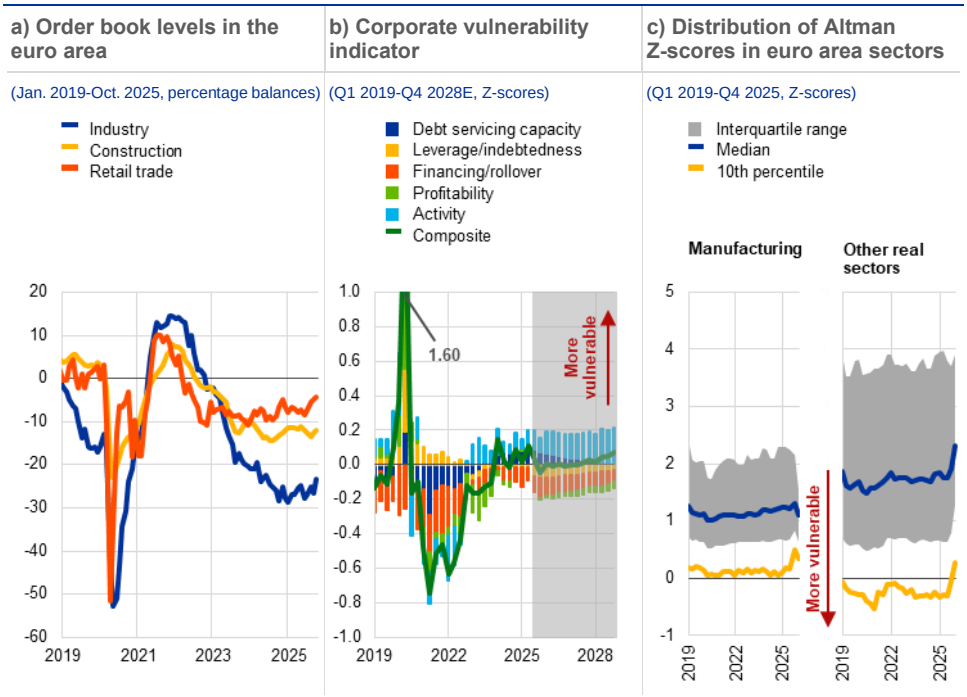
18 See Section 1.3 of the Financial Stability Review, ECB, May 2025, and Economic Bulletin, Issue 6, ECB, 2025.

19 However, as there are fewer observations at the margin, results should be interpreted with caution, although they do provide information on emerging sectoral patterns.

appreciation of the euro and intensified import competition. These developments are consistent with the notion of rolling corporate recessions, where sector-specific downturns emerge sequentially and do not immediately translate into broader stress (see **Box 1**), although there could be greater correlation between sectoral vulnerabilities if shocks were to align.

Chart 1.6

Vulnerabilities in the euro area corporate sector remain elevated, especially for manufacturing firms, as the broader impact of US tariffs is felt



Sources: ECB (BSI, MIR), S&P Global Market Intelligence, Eurostat and ECB calculations.
Notes: Panel a: order book levels in the euro area 20 (fixed composition). Panel b: for details on the construction of the corporate vulnerability index, see the box entitled "Assessing corporate vulnerabilities in the euro area", *Financial Stability Review*, ECB, November 2020. Positive values indicate higher vulnerability while negative values indicate lower vulnerability. The grey shaded area refers to the forecast. Panel c: the Altman Z-score calculation is sector specific, according to Altman*, ** and Altman, Hartzell and Peck***. A higher Altman Z-score corresponds to a healthier balance sheet structure. Other real sectors include firms in agriculture, arts and recreation, construction, information and communication, other industry, professional services, real estate, and wholesale and retail trade.
*) See Altman E.I., "Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy", *The Journal of Finance*, Vol. 23, September 1968, pp. 589-609.
**) Altman, E.I., "Corporate Financial Distress: A Complete Guide to Predicting, Avoiding, and Dealing With Bankruptcy", Wiley Interscience, John Wiley and Sons, Hoboken, 1983.
***) Altman, E.I., Hartzell, J. and Peck, M., "Emerging market corporate bonds — a scoring system", in Levich, R.M. (ed.), *Emerging Market Capital Flows*, Vol. 2, The New York University Salomon Center Series on Financial Markets and Institutions, Springer, Boston, MA, 1998.

Overall, the outlook for the euro area corporate sector remains fragile, amid easing domestic financing conditions but persistent external headwinds. While lower lending rates and some degree of stabilisation in bankruptcy trends are providing support, many firms are continuing to struggle with high debt service burdens and weak profitability. Adjusting to US tariffs, a stronger euro and increased competition from Chinese exporters are proving particularly challenging for manufacturing and other export-oriented sectors, whereas more domestically focused industries are showing greater resilience. On balance, the risks to the euro area NFC sector remain tilted to the downside, as any further intensification of trade frictions or renewed weakening of global demand could materially test corporate resilience.

Box 1

From localised shocks to systemic risks: the hidden threat of rolling recessions

Prepared by Peter Bednarek, Sándor Gardó, Ana Goulão Diogo Bandeira and Benjamin Klaus

Rolling corporate recessions mask underlying vulnerabilities and complicate risk analysis. Despite increased broader macroeconomic challenges and corporate vulnerabilities in the euro area in recent years, as indicated for instance by the marked rise in business bankruptcies, credit metrics such as the non-performing loan (NPL) ratio have remained surprisingly low (**Chart A**, panel a).[20] This disconnect between major macroeconomic shocks (e.g. the COVID-19 pandemic and the energy price shock after Russia's invasion of Ukraine) and the absence of broad-based stress across corporate and bank balance sheets is often attributed to fiscal support cushioning the economy and inflation dynamics indirectly improving firms' debt servicing capacity and profit margins.[21,22] However, it may also reflect a structural shift in how downturns unfold. Unlike traditional recessions, which affect the economy uniformly, rolling recessions – defined as sectoral downturns that propagate sequentially – exacerbate weaknesses in specific sectors over time.[23] This staggered pattern obscures the overall health of the economy, leading to heightened uncertainty. While structural shifts such as climate change and digitalisation pose medium to long-term sectoral risks, rolling recessions entail the short-term risk of non-linearity, potentially triggering an unexpected economy-wide downturn. This box explores how rolling recessions may create hidden vulnerabilities and complicate the assessment of macro-financial risks.

Rolling recessions are reinforced by firm-level frictions and the evolving nature of economic shocks. Firms adjust their capital stock and output only in response to sufficiently large deviations from optimal conditions, owing to fixed costs of change, irreversibility and uncertainty.[24] This rigidity in their investment and pricing behaviour means they delay taking action until shocks are sufficiently substantial or persistent to justify the adjustment costs. These microeconomic frictions are amplified by the changing nature of economic shocks. Shocks such as climate change, technological advances and geopolitical disruptions, which are more sector-specific in terms of their impact, are becoming more prominent and persistent, and are increasingly shaping macroeconomic volatility and inflation dynamics.[25] At the same time, traditional shocks, such as oil price and monetary policy shocks –

20 As insolvency regimes differ across countries, the lead-lag relationship between bankruptcies and NPLs can reverse (i.e. NPLs may precede bankruptcies). Moreover, while rising bankruptcies may signal stress, they can also boost medium to long-term productivity by reallocating resources to more efficient firms. Nonetheless, bankruptcies serve as a proxy for the state of the economy and should ultimately be reflected in bank balance sheets.

21 For more information on debt servicing capacity, see Brunnermeier, M., Correia, S., Luck, S., Verner, E. and Zimmermann, T., "The Debt-Inflation Channel of the German (Hyper) Inflation", *American Economic Review*, Vol. 115, No 7, July 2025, pp. 2111-2150.

22 For more information on profit margins, see the article entitled "How have unit profits contributed to the recent strengthening of euro area domestic price pressures?", *Economic Bulletin*, Issue 4, ECB, 2023.

23 The concept of rolling recessions has gained popularity recently; see, for example, "What is a rolling recession? And are we in one right now?", World Economic Forum, March 2023. It was, however, already discussed in the late 1990s; see, for example, "Rolling Recessions", *Southwest Economy*, Issue 5, Federal Reserve Bank of Dallas, 1997. The term was first coined by analysts in the 1980s to describe the evolution of regional business cycles in the United States. Later it was also used for sectoral business cycles, as regional and sectoral business cycles in the United States often move together.

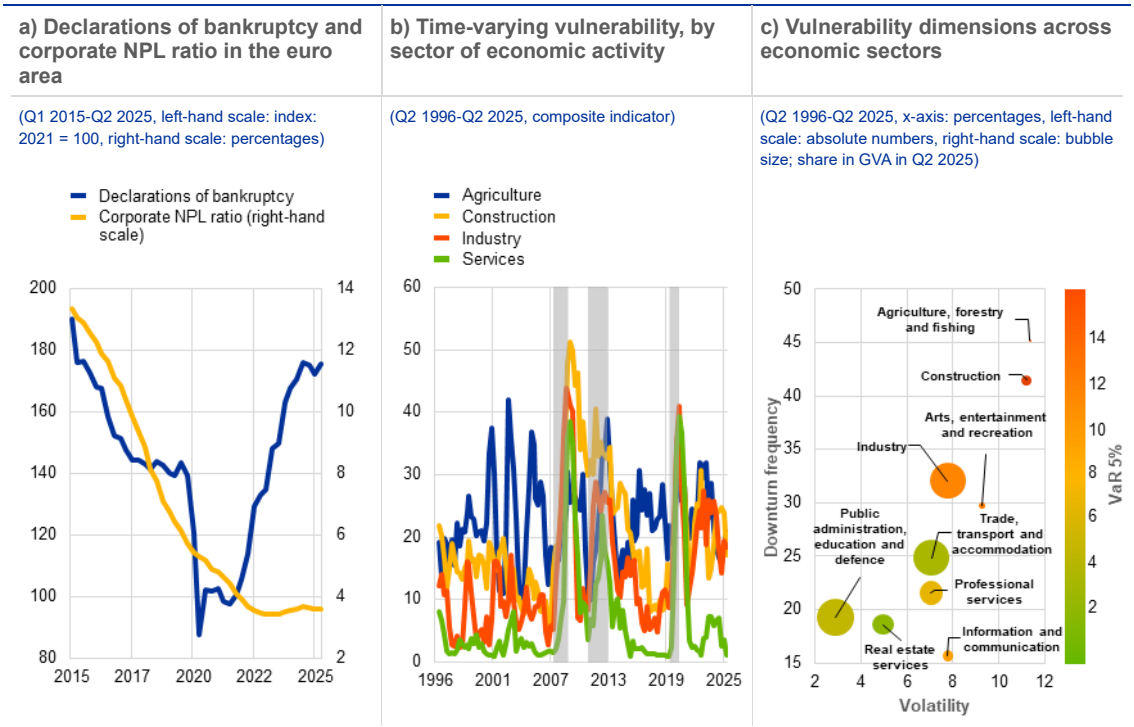
24 See, for example, Caballero, R.J. and Engel, E.M.R.A., "Microeconomic rigidities and aggregate price dynamics", *European Economic Review*, Vol. 37, No 4, May 1993, pp. 697-717.

25 See, for example, Görtz, C., Gunn, C. and Lubik, T.A., "The Changing Nature of Technology Shocks", *Working Paper Series*, No 24-13, Federal Reserve Bank of Richmond, September 2024; and Kim, H.S., Matthes, C. and Phan, T., "Severe Weather and the Macroeconomy", *American Economic Journal: Macroeconomics*, Vol. 17, No 2, April 2025, pp. 315-341.

which tend to be more broad-based – are having less of an impact or are propagating differently as a result of shifts in energy use, globalisation and institutional policy frameworks.[26]

Chart A

Rolling recessions create staggered, sector-specific vulnerabilities masked by aggregate indicators



Sources: Eurostat and ECB (QSA), ECB (supervisory data), CEPR and ECB calculations.
Notes: Panel a: the chart shows Eurostat's index of bankruptcy declarations, which is a weighted average of national indices, based on the absolute number of bankruptcies. The voluntary data collection before 2021 and national differences in bankruptcy laws imply a need for caution in interpreting the data. Panel b: the sectoral vulnerability measure captures three dimensions based on gross value added (GVA): (i) volatility of year-on-year GVA growth; (ii) downturn frequency; and (iii) tail risk, defined as the 5% value-at-risk (VaR) of year-on-year GVA growth. It is calculated over a 20-quarter rolling window using a pooled sample from all euro area countries at a quarterly frequency. The grey areas indicate crisis periods, as determined by the CEPR Euro Area Business Cycle Dating Committee. Panel c: volatility, downturn frequency and tail risk are calculated for the period from Q1 1996 to Q2 2025 using a pooled sample from all euro area countries at a quarterly frequency. The colour of the bubbles indicates the tail risk, defined as the 5% VaR of year-on-year GVA growth.

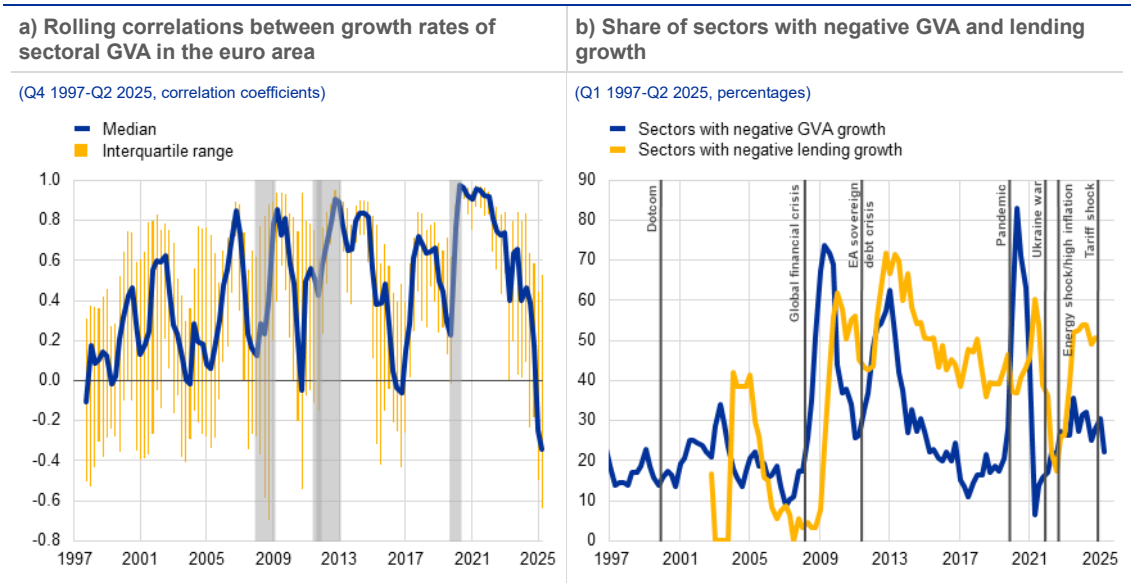
Rolling recessions may lead to a build-up of risks in individual sectors, creating pockets of vulnerability. Evidence from recent macro-financial shocks suggests that sectoral vulnerabilities can materialise in a staggered manner without spilling over to the broader economy until they reach critical mass or become synchronised (**Chart A**, panel b). While aggregate GDP and employment data may appear stable, firms in sectors like agriculture, construction or energy and interest rate-sensitive industries can face margin pressures, cost shocks and financing constraints owing to external factors such as commodity price changes, supply chain disruptions and monetary policy tightening. Some sectors are structurally more vulnerable, with high levels of volatility and more frequent downturns indicating greater sensitivity to shocks and lower adaptability (**Chart A**, panel c). For example, construction and agriculture are generally more sensitive to weather conditions and climate change, while sectors such as industry tend to be more affected by financing conditions, energy prices and trade dynamics.

[26] For more information on the declining importance of energy price shocks, see, for example, Edelstein, P. and Kilan, L., "How sensitive are consumer expenditures to retail energy prices?", *Journal of Monetary Economics*, Vol. 56, Issue 6, 2009, pp. 766-779; and on monetary policy shocks, see, for example, Boivin, J. and Giannoni, M.P., "Has Monetary Policy Become More Effective?", *The Review of Economics and Statistics*, Vol. 88, Issue 3, 2006, pp. 445-462.

When vulnerability waves align, rolling recessions can become systemic. Although typically asynchronous, rolling sectoral downturns may converge to anywhere on the scale from no synchronisation to full alignment. Evidence from the euro area shows a spike in sectoral growth correlations during major crisis periods (**Chart B**, panel a). Synchronisation can be triggered by common shocks, such as rapid monetary policy tightening or surging energy prices, and reinforced by feedback loops due to credit market developments, trade links or investor sentiment, leading to contagion across otherwise weakly connected sectors. As soon as sectoral downturns align, banks may face deteriorating asset quality and rising capital needs.[27] These risks are heightened if banks' exposures are concentrated in specific sectors, which yields efficiency gains in normal times but amplifies losses during synchronised shocks.[28] Historical evidence supports this notion: during the global financial crisis and the euro area sovereign debt crisis, for example, the share of sectors with negative growth in gross value added and lending surged to multi-year highs (**Chart B**, panel b).

Chart B

Rolling recessions can unexpectedly align across sectors, increasing the likelihood of tail-risk events



Sources: Eurostat and ECB (QSA), CEPR and ECB calculations.
Notes: Panel a: the chart shows the distribution of rolling correlations (based on an eight-quarter rolling window) between gross value added (GVA) year-on-year growth rates for all sector pairs across euro area countries over time. The grey areas indicate crisis periods, as determined by the CEPR Euro Area Business Cycle Dating Committee. Panel b: the chart compares two measures of economic stress: (i) the GVA stress indicator, which shows the percentage of non-financial sectors with negative year-on-year GVA growth; and (ii) the credit stress indicator (only available from 2002), which reflects the share of sectors experiencing negative lending growth at each point in time. EA stands for euro area.

Increasingly aligned sector-specific downturns could give rise to correlated credit losses across the banking sector. Banks may see a deterioration in asset quality as sectoral shocks interact, with high NPL correlations across key sectors, notably industry, real estate, trade and manufacturing, pointing to potential spillover risks (**Chart C**, panel a). Despite the current disconnect between heightened macro-financial uncertainty and subdued credit risk metrics, the number of sectors facing rising NPL ratios has increased since 2022, albeit unevenly across sectors (**Chart C**, panel b). This could raise the possibility of simultaneous losses across banks' loan portfolios. Left

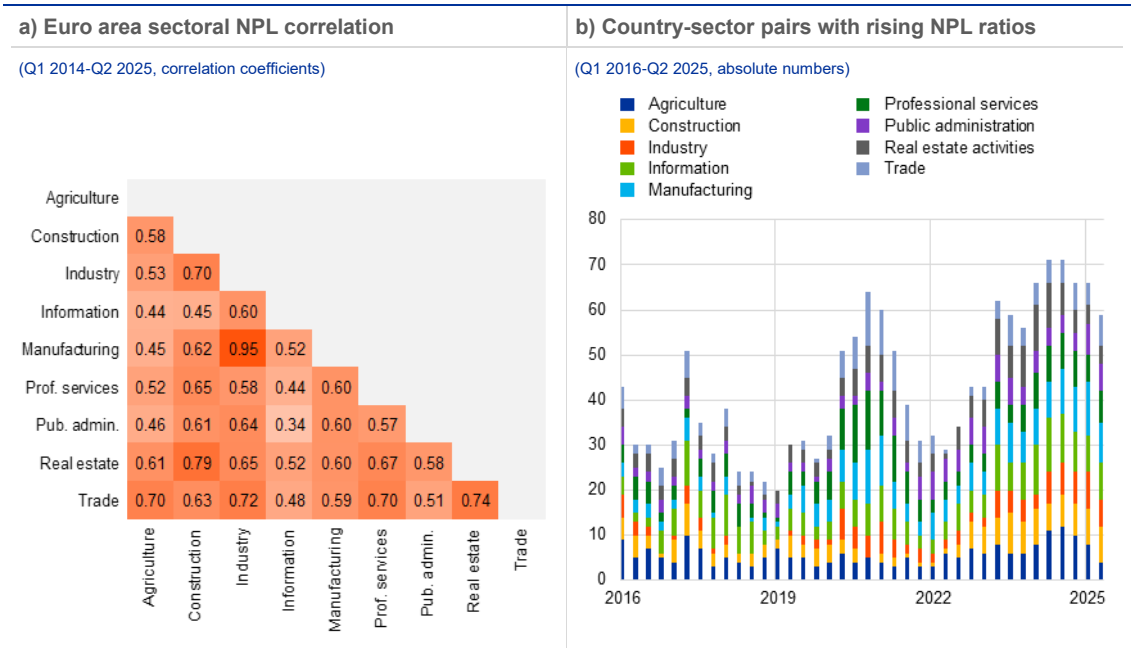
[27] At this preliminary stage, a major recession could be triggered either by the alignment of sector-specific risks or by an aggregate shock causing such an alignment. Non-linear dynamics mean that even minor changes can have sizeable ripple effects.

[28] See Paravisini, D., Rappoport, V. and Schnabl, P., "Specialization in Bank Lending: Evidence from Exporting Firms", *The Journal of Finance*, Vol. 78, No 4, August 2023, pp. 2049-2085.

unmitigated, localised sectoral downturns could turn into systemic credit events, weakening balance sheets, constraining new lending and further amplifying any downturn.

Chart C

Rolling recessions can fuel sectoral credit risk clustering, with correlated NPL dynamics amplifying systemic vulnerabilities



Sources: ECB and ECB calculations.
Notes: Panel a: "Prof. services" stands for professional services; "Pub. admin." stands for public administration. The chart depicts correlations, averaged across all countries, between country-specific sector pairs using contemporaneous data. Sample consist of 18 euro area countries. Panel b: the chart shows the number of country-sector pairs with rising NPL ratios.

Risk surveillance frameworks and policy tools need to adequately capture sectoral patterns of vulnerability to address risks stemming from rolling recessions. Such sectoral downturns can create pockets of sectoral fragility, which may synchronise and turn into broad-based downturns with highly correlated credit losses across sectors. Mitigating these risks means refining risk surveillance practices and policy tools. This includes moving beyond tracking aggregate indicators to analysing data by sector, region and borrower type, while enhancing the availability and quality of granular data.

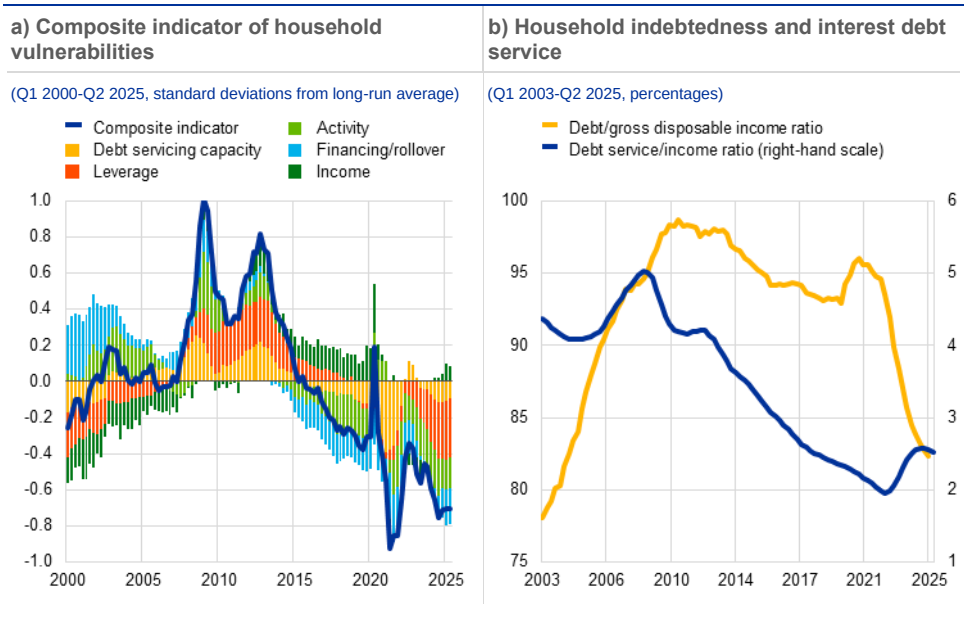
1.4 Elevated savings bolster household resilience

Household vulnerabilities are still low by historical standards. The ECB's composite indicator of household vulnerabilities points towards high household resilience, underpinned by lower debt levels, a strong labour market and easier financing conditions. More recently, households' debt servicing capacity has improved at the margin as interest rates have declined since inflation peaked. Meanwhile, lower income growth has tended to cause a marginal rise in the composite vulnerability indicator (**Chart 1.7**, panel a). Households' improved debt servicing capacity is also evidenced by the continued, albeit slower, decline in the ratio of debt to gross

disposable income. Falling interest rates are gradually allowing the debt service/income ratio to stabilise at modest levels, albeit with some delay (**Chart 1.7**, panel b).

Chart 1.7

The overall financial situation of households remains strong as they continue to deleverage

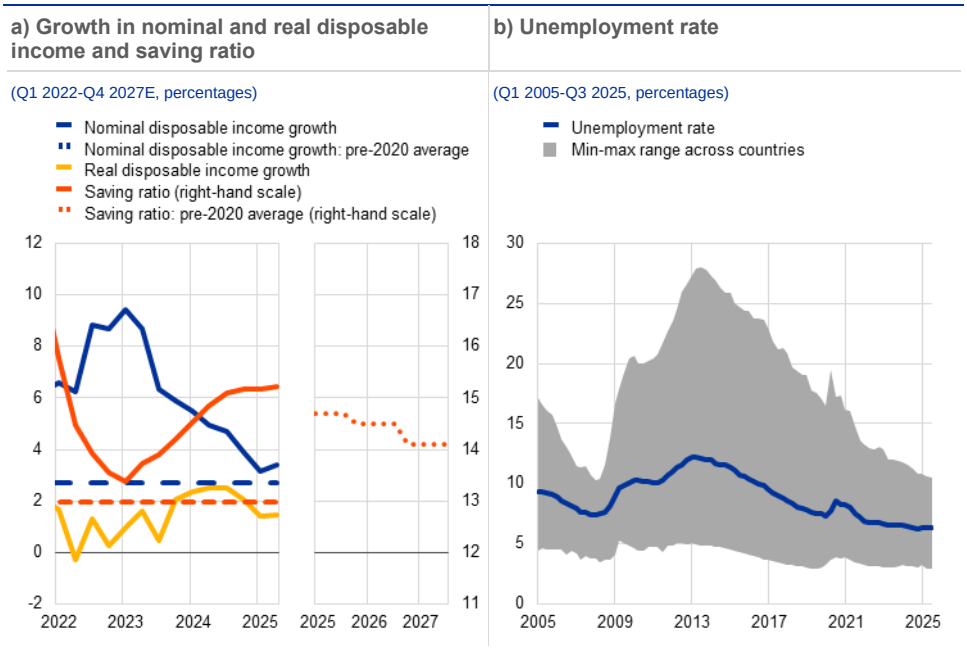


Sources: Eurostat, ECB and ECB calculations.
Notes: Panel a: the composite indicator is based on a broad set of indicators along five dimensions: (i) debt servicing capacity (measured by gross interest payments/income ratio, saving ratio and expectation of personal financial situation); (ii) leverage (gross debt/income and gross debt/total assets ratios); (iii) financing (bank lending rate, short-term debt/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/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.

Nominal disposable income growth has normalised recently while the saving ratio has remained elevated by historical standards. After the strong catch-up dynamics seen following the period of higher inflation, nominal disposable income growth returned to pre-pandemic levels in the first quarter of 2025. At the same time, households' saving ratios stabilised at a high level (**Chart 1.8**, panel a), despite the lower rates of return offered by typical retail saving instruments such as time deposits. This likely reflects precautionary behaviour in response to elevated global uncertainty and anticipation of possible future higher taxes and worsening financial situation. Looking forward, growth in household consumption is expected to pick up and saving ratios to move closer to historical averages. That said, domestic or foreign shocks – such as a further escalation of trade tensions or stronger appreciation of the euro – could dampen consumer confidence, which is already below historical averages.

Chart 1.8

Households remain very cautious with regard to spending despite a solid labour market and high levels of income growth over the last two years



Sources: Eurostat and ECB.
Notes: Panel a: the dashed lines represent the pre-2020 averages for nominal disposal income growth and the saving ratio. The dotted line is the saving ratio shown in the September 2025 ECB staff macroeconomic projections for the euro area.

The labour market remains strong despite subtle signs of potential weakening. The aggregate unemployment rate in the euro area remains close to record lows, with noticeable convergence among countries (**Chart 1.8**, panel b). Unemployment rates have declined particularly sharply in those countries that suffered from pronounced weakness in their labour markets a decade ago. By contrast, unemployment rates in some countries with greater exposure to global trade are beginning to exhibit a modest trend upwards, albeit from a low starting point. Other labour market indicators, such as vacancy rates and hours worked, also point to a modest slowdown, particularly in specific sectors like manufacturing. However, it remains uncertain whether these dynamics are significant enough to trigger a broader economic downturn or whether they merely indicate a reallocation of activity between sectors. A broader economic downturn, if accompanied by a notable increase in unemployment, would materially worsen households' financial situations. This would have a disproportionate impact on less wealthy individuals, who rely almost exclusively on wage income. In such a scenario, downward pressure on residential real estate prices would most likely emerge, and banks' credit risk would rise beyond its current levels.

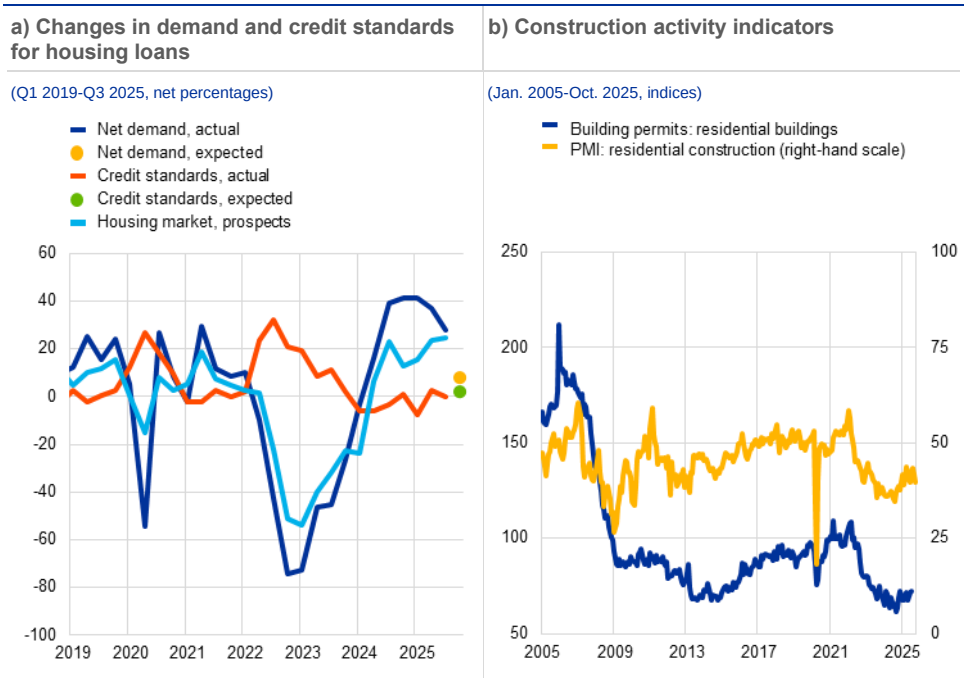
1.5 As a recovery in real estate markets gains traction, tail risks remain elevated in some countries and segments

Demand for residential real estate (RRE) remained robust in the third quarter of 2025, while construction activity continued to be subdued. The sustained demand seen for mortgages was driven largely by the prevailing levels of interest

rates and improved market prospects for the housing sector. This occurred as credit standards remained largely unchanged during the period, following on from a slight tightening in the previous quarter. Banks anticipate that these dynamics will persist, with mortgage demand projected to rise further in the fourth quarter of 2025, albeit at a more moderate pace, and credit standards expected to tighten only modestly, supporting this trend (**Chart 1.9**, panel a). However, improved financial conditions have not yet translated into a meaningful recovery in housing supply. The Purchasing Managers' Index for residential construction in the euro area remains in contractionary territory, despite some recent improvements. In addition, the issuance of building permits for residential construction – a forward-looking indicator of supply – remains close to historical lows (**Chart 1.9**, panel b). The imbalance between strong demand and constrained supply is likely to exert upward pressure on RRE prices in the short term.

Chart 1.9

Financial conditions and the improved housing market outlook are boosting demand for residential real estate, while housing supply remains subdued



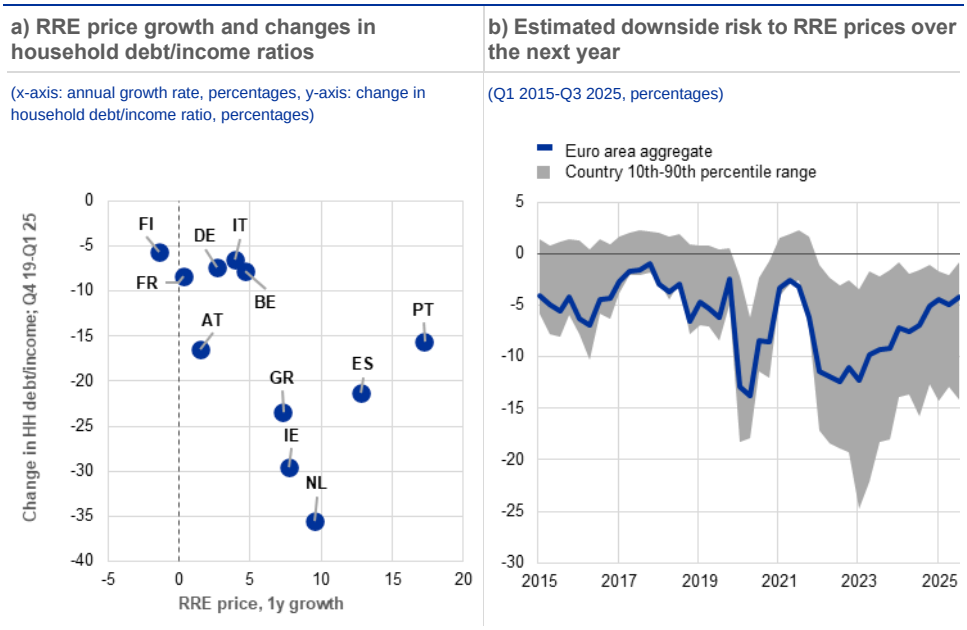
Sources: ECB (BLS), Eurostat and S&P Global Market Intelligence.
Note: Panel b: the latest observation for data on building permits is for July 2025.

Growth in RRE prices has continued to vary across euro area countries, with tail risks remaining elevated in some jurisdictions. While RRE prices rose on aggregate across the euro area in the second quarter of 2025, there was significant cross-country variation. Several euro area economies experienced robust growth in RRE prices, while more moderate levels were observed in others. The significant household deleveraging seen in a number of countries in recent years may be contributing to the present market upswing in some cases (**Chart 1.10**, panel a). Moreover, current price dynamics often correlate with credit growth, which has accelerated markedly in more buoyant markets. Aggregate tail risks to housing prices declined slightly in the third quarter of 2025, largely reflecting improved financial

conditions (**Chart 1.10**, panel b). Nonetheless, these risks remain elevated in some countries and could increase in markets in which declining affordability could exacerbate vulnerabilities over the medium term.

Chart 1.10

Housing prices exhibit robust growth in several countries, while tail risks remain elevated in some markets

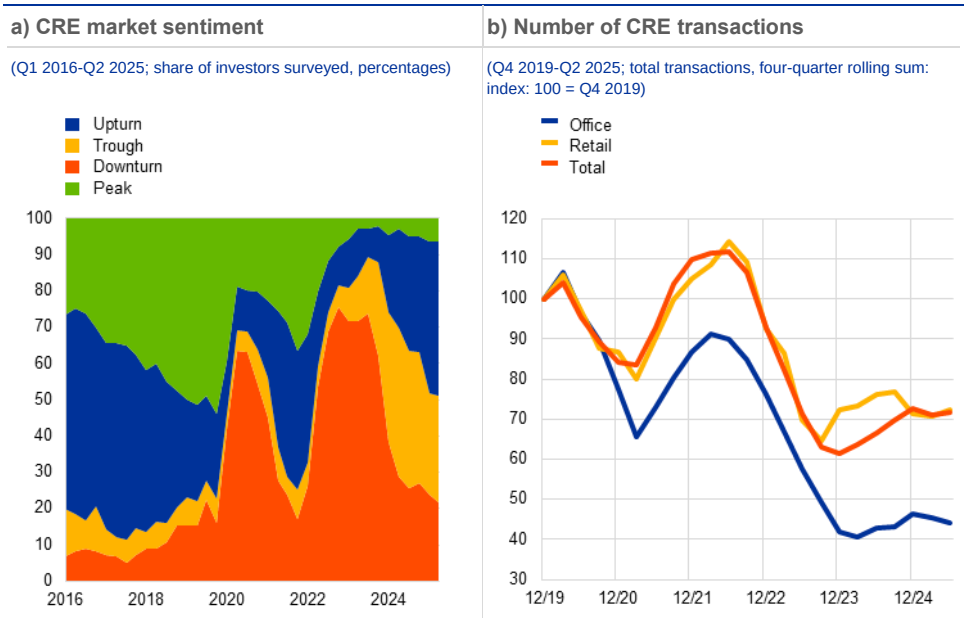


Sources: ECB and ECB calculations.
Notes: Panel a: the chart includes only countries with household debt/income data available for Q1 2025. The one-year RRE price growth data refer to Q2 2025 for all countries except for Austria, which displays data as of Q3 2025. HH stands for household.
Panel b: the chart shows the results obtained from an RRE price-at-risk model based on a panel quantile regression on a sample of 19 euro area countries. The chart shows the fifth percentile of the predicted RRE price growth for the euro area aggregate and the 10-90th percentile range of this estimate across individual euro area countries. For further details, see the article entitled "The analytical toolkit for the assessment of residential real estate vulnerabilities", *Macroprudential Bulletin*, Issue 19, ECB, October 2022.

Investor sentiment on commercial real estate (CRE) has improved, indicating a stabilisation in the market, although risks remain. Investor sentiment data continue to show a sharp decline in the share of investors who believe the market is in a downturn compared with the period of monetary tightening (**Chart 1.11**, panel a). As is the case for residential markets, investors' views on the current stage of the cycle vary on clear geographical lines. For those countries most affected by the recent downturn (Germany and Austria), investors see the market as having reached its trough. For those countries less affected (Greece, Spain and Italy), investors typically see the market as being in an upswing. Despite the stabilisation, activity remains subdued, and the number of transactions conducted in euro area markets is still about 30% below its 2019 peak (**Chart 1.11**, panel b). Market intelligence indicates that this may be down to ongoing investor uncertainty. As CRE markets are exposed to both international capital flows and local economic conditions, they are highly vulnerable to the ongoing macroeconomic and geopolitical uncertainty. Activity is particularly subdued in office markets, where the shift towards hybrid working practices continues to pose a challenge. As previous editions of the Financial Stability Review have noted, the outlook for the lower-quality end of the market is particularly poor.

Chart 1.11

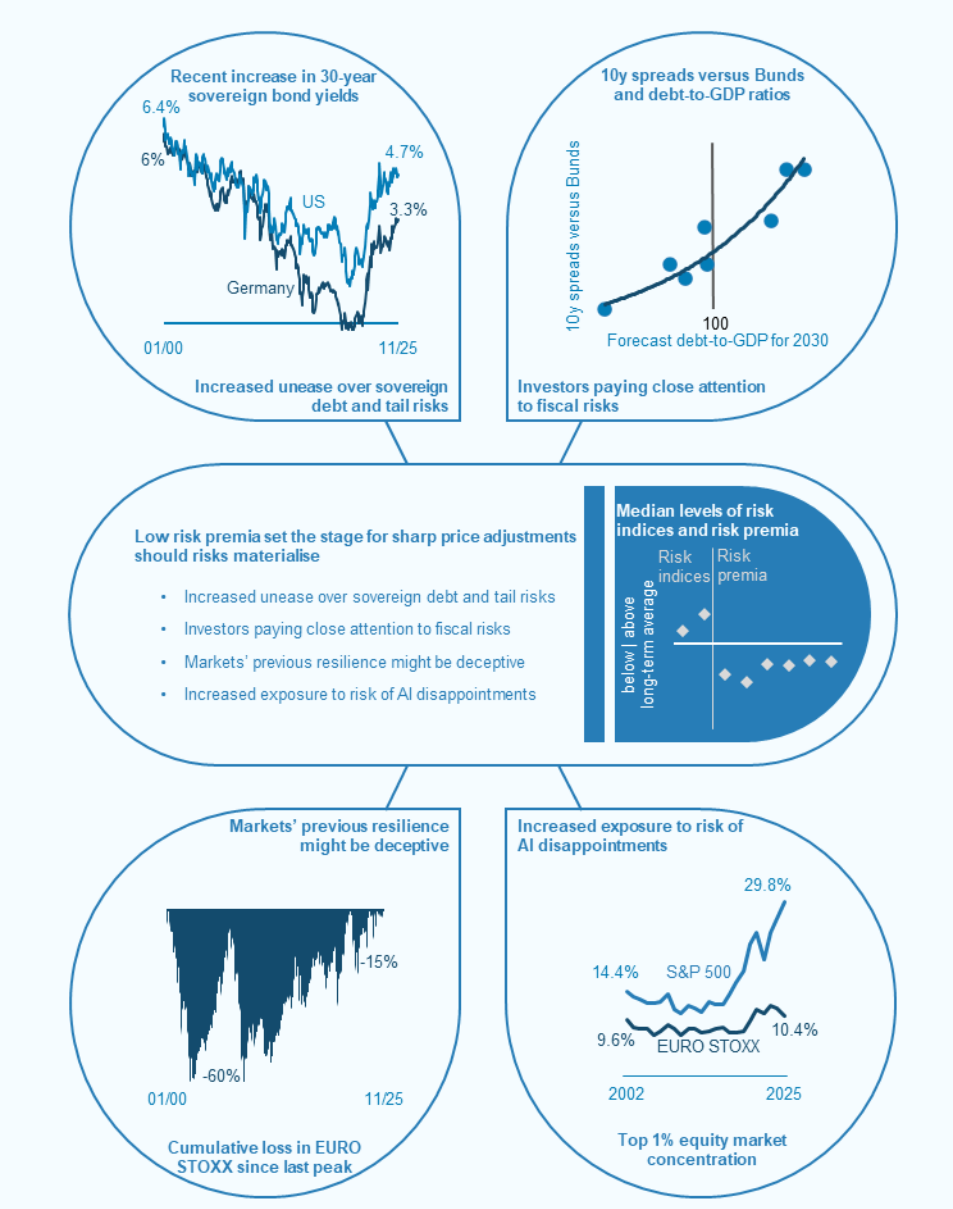
Euro area CRE markets show signs of stabilisation but market activity remains subdued, particularly among offices, amid broader investor uncertainty



Sources: RICS, MSCI and ECB calculations.

A recovery in real estate markets is under way, but risks to financial stability could still materialise and should be monitored closely. Real estate markets are highly sensitive to developments in the broader real economy and to changes in medium to long-term interest rates. Accordingly, a sharp deterioration in the economic outlook or an unexpected rise in interest rates could cause prices to start falling again. This is particularly the case in countries where housing affordability is low or declining and countries that have a large commercial office segment coupled with still-high vacancy rates. This makes it important to continue closely monitoring the associated risks, taking current economic policy uncertainty and geopolitical risks into consideration. Against this background, maintaining resilience in the banking sector is key to limiting financial stability risks stemming from property markets. This is being achieved by applying adequate releasable buffers and appropriately calibrated borrower-based measures to preserve sound lending standards (see **Section 3.5**).

2 Financial markets



2.1 Steepening yield curves signal growing unease over sovereign debt trajectories

After April's tariff turmoil, sovereign bond markets were dominated by worries over fiscal debt and tail risks, while risk assets mostly stayed calm. Yields on ultra-long sovereign bonds have continued to rise globally amid unease over fiscal sustainability and changes in supply-demand dynamics in sovereign bond markets.[29]

[29] Ultra-long bonds commonly refer to bonds with a maturity of 30 years or more.

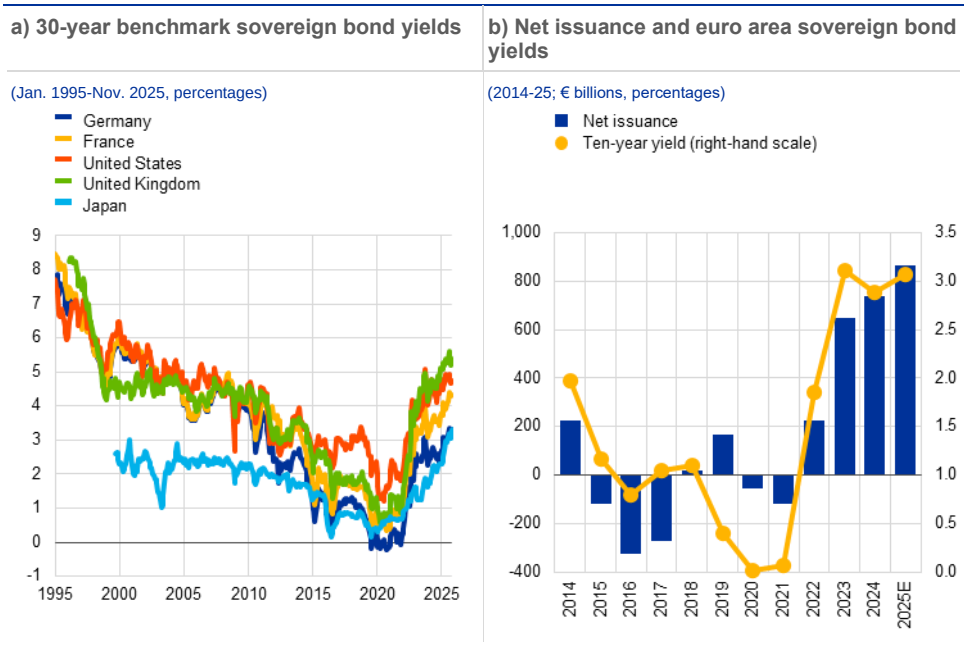
Despite some volatility, the price of gold has risen significantly, which is consistent with increased demand for tail risk hedging, among other factors. At the same time, valuations in most risky asset markets are still high. This could be an indicator of strong optimism, but it could also reflect the fear of missing out on a rally and the difficulties associated with pricing financial assets in an environment characterised by elevated uncertainty and several concurrent structural shifts (see **Section 2.2**). One such shift under way is being caused by AI, with its promise to boost productivity. While there is considerable potential for upside and the high valuations of AI-related firms are underpinned by exceptionally strong earnings, any setbacks in AI advances could lead to sharp asset price adjustments, including in the opaque private markets (see **Section 2.3**).

Yields on ultra-long sovereign bonds have risen sharply across the globe, reflecting growing concerns over fiscal and debt sustainability. Since the beginning of the year, euro area GDP-weighted 30-year yields have risen by roughly 50 basis points, whereas two-year yields have declined by around 10 basis points.[30] While at first the steepening of the yield curve was broad based across maturities, the most recent move has been concentrated at the ultra-long end. Steepening yield curves are a global phenomenon, with 30-year yields reaching multi-year highs across major advanced economies including the United States, the United Kingdom and Japan (**Chart 2.1**, panel a). Investors are demanding higher term premia to compensate for fiscal and debt sustainability concerns, according to market contacts. The outsized rise in 30-year yields suggests that one-off factors, such as the Dutch pension fund reform and regulatory changes in Japan, which disproportionately affect ultra-long maturities, could have played a role as well. The latter is, however, likely to be less significant, given the strong global factor underlying the rise in 30-year yields in the euro area and the high correlation of the change in 30-year yields with changes in the debt outlook.

[30] Based on GDP-weighted average yields for the four biggest euro area economies.

Chart 2.1

Yield curves have steepened on the back of rising ultra-long yields, while financing needs are high



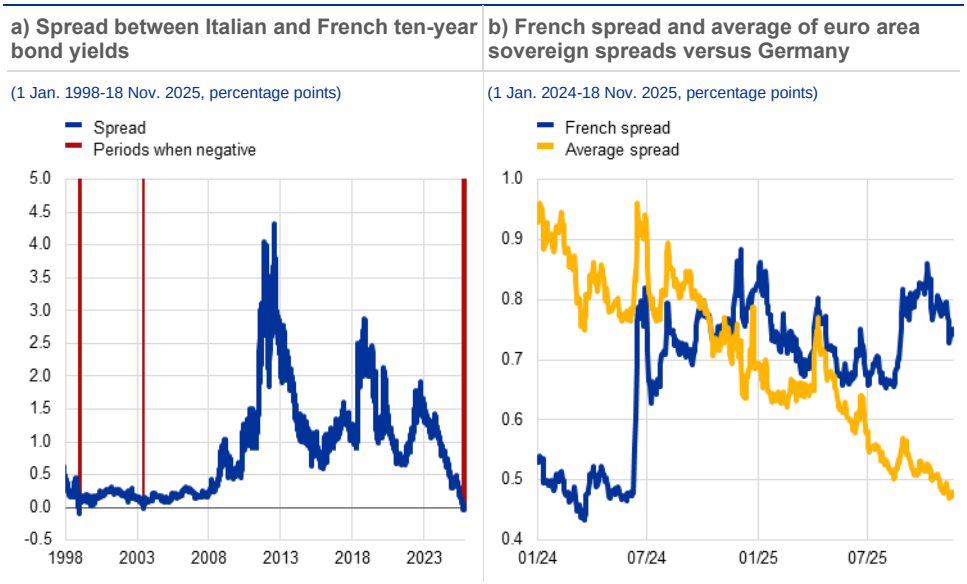
Sources: Bloomberg Finance L.P., ECB, national central banks and ECB calculations.
Notes: Panel a: sovereign bond yields are shown at monthly frequency (month-end). The latest observations are for 18 November 2025. Panel b: net issuance is defined as gross issuance minus redemptions of central government bonds by euro area national governments and minus Eurosystem purchases. Yield data refer to the GDP-weighted average ten-year yield of euro area sovereign bonds, averaged over the respective year. The 2025 yield value represents the average up to 18 November 2025.

Changes in supply-demand dynamics have also contributed to the rise in yields. On the supply side, euro area governments face elevated financing needs (**Chart 2.1**, panel b). These are being driven by expectations of rising defence spending amid geopolitical tensions, the structural requirements of the green and digital transitions and infrastructure investment. At the same time, demand patterns are changing because of shifts in the investor base. While quantitative tightening has already removed the largest price-insensitive buyer from sovereign bond markets, foreign investors and other price-sensitive investors have become more prominent, especially since 2022. Going forward, the reform of the Dutch pension system may also affect demand dynamics. Dutch pension funds, which account for around 65% of euro area pension funds' sovereign bond holdings, are expected to reduce their long-term euro area sovereign bond positions in the coming years, following the reform (see **Chapter 4**). This combination of fundamental concerns over sovereign risks and the growing funding needs of governments leaves sovereign bond markets vulnerable to further repricing. The presence of hedge funds in sovereign bond markets can significantly amplify financial shocks when leveraged positions need to be unwound. [31] These positions are particularly exposed to deteriorating funding conditions in the repo market and heightened volatility in bond markets (see **Section 4.2**).

[31] See Ferrara, F.M. et al., "Hedge funds: good or bad for market functioning?", *The ECB Blog*, ECB, 13 September 2024.

Chart 2.2

The French yield has risen above the Italian yield amid the convergence of bond spreads in the euro area



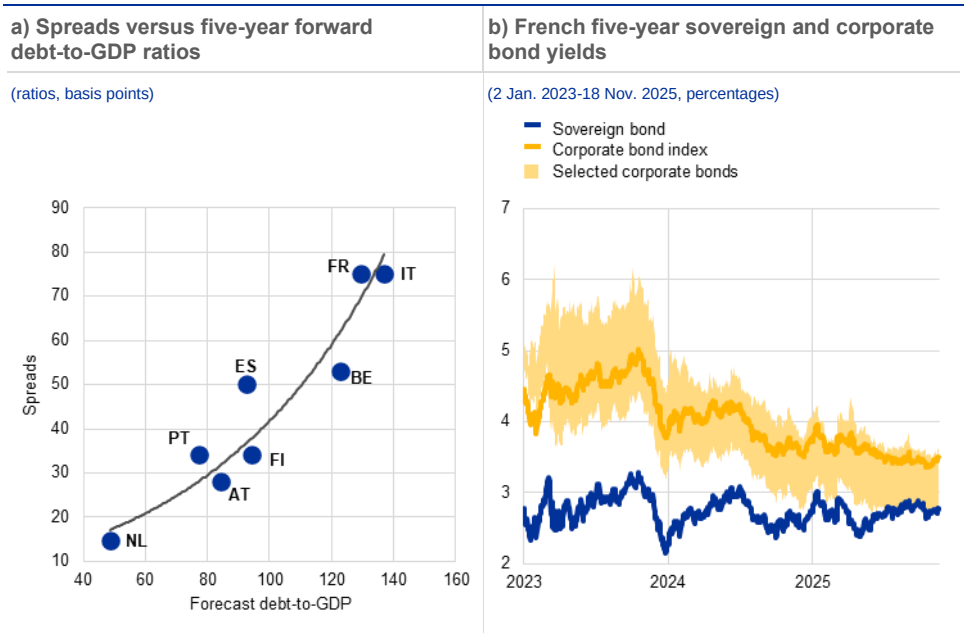
Sources: Bloomberg Finance L.P., ECB and ECB calculations.
Notes: Panel a: Italian and French spreads are the respective ten-year sovereign bond yields versus the German Bund yield. Panel b: average spread is the GDP-weighted average of the Belgian, Irish, Greek, Spanish, Italian, Dutch, Austrian, Portuguese and Finnish sovereign bond yields versus the German Bund yield. The spreads shown are for ten-year sovereign bonds.

Debt sustainability concerns have resurfaced in some countries amid political uncertainty, but the broader convergence of bond spreads is a positive signal.

Following the collapse of the French government in September, the spread between French and German sovereign bonds widened, but has remained within the range seen over the last year, and markets have remained functional and liquid. By contrast, yields on Italian sovereign bonds have declined in relative terms to the extent that Italian yields fell below French yields for the first time since 2003 (**Chart 2.2**, panel a). This may be part of a broader convergence between previously higher-rated and lower-rated sovereigns in the euro area, with average euro area sovereign bond spreads (excluding France) on a downward trend (**Chart 2.2**, panel b). This compression of spreads has recently been driven less by changes in German yields and more by declining yields in other countries. This suggests that there is no contagion at this stage from developments in France to other euro area sovereign bonds. However, disappointments over fiscal consolidation efforts, weak demand at auctions or further political instability could trigger a broader repricing of sovereign risk in the euro area, especially given the currently tight levels of spreads.

Chart 2.3

Sovereign bond spreads are sensitive to changes in sovereign debt trajectories

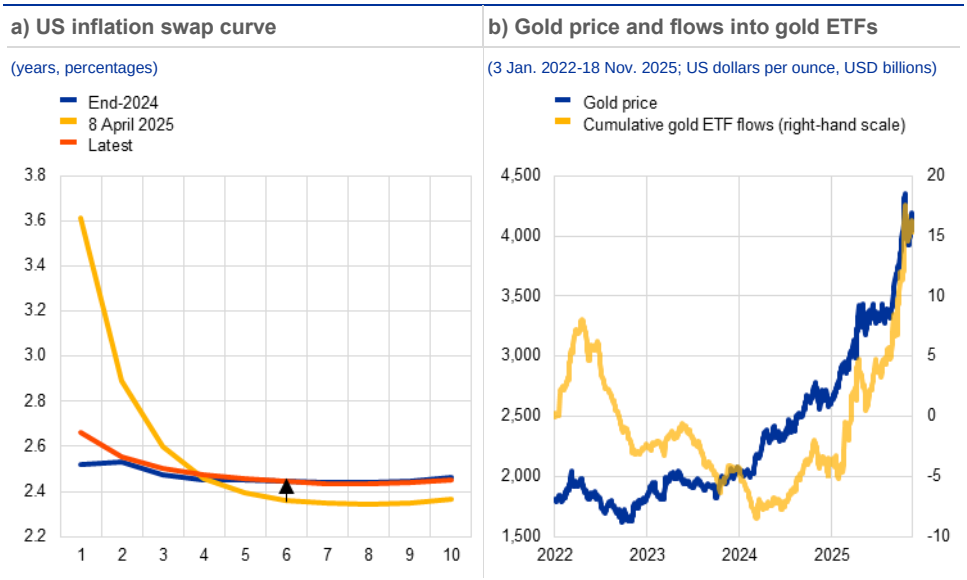


Sources: Bloomberg Finance L.P., IMF and ECB calculations.
Notes: Panel a: spread is versus Germany (ten-year yield). Debt-to-GDP ratios are IMF projections for the year 2030 as of October 2025. The latest observations are for 18 November 2025. Panel b: "Corporate bond index" refers to the yield of the Bloomberg France Corporate Index. "Selected corporate bonds" is the range of yield-to-worst values for six different bonds of French issuers. Bonds were selected by filtering the 20 bonds in the Bloomberg France Corporate Index with the highest amount outstanding covering euro-denominated bonds with a residual maturity of between three and seven years.

Sovereign risk pricing appears to be broadly aligned with fiscal fundamentals. Expected trajectories for debt-to-GDP ratios correlate strongly with the current sovereign bond spread levels seen across the euro area (**Chart 2.3**, panel a). Moreover, for many countries the compression of sovereign bond spreads is on the back of improvements expected in budget balances over the next few years. This suggests that bond investors are paying close attention to the fiscal outlook. Current pricing may, however, provide limited compensation for adverse scenarios. At the same time, the yields of selected high-grade French corporates have recently traded below those for French sovereign bonds (**Chart 2.3**, panel b). While this partly reflects a robust credit market, the pattern is also consistent with international investors seeking euro-wide exposure via large, diversified corporates as opposed to single-country exposures via sovereign holdings.

Chart 2.4

Gold price rally may reflect rise in tail risk while swaps indicate little concern about upside inflation risks in the United States



Source: Bloomberg Finance L.P.
Notes: Panel a: x-axis is tenor of inflation swaps in years from the selected date point. The latest observation is for 18 November 2025. Panel b: for gold ETF flows, the largest gold ETF was used (Bloomberg ticker: GLD US Equity). ETF stands for exchange-traded funds.

The risks of spillovers from US Treasury markets to euro area sovereign bond markets are high, amid growing concerns over US fiscal sustainability and the changing role of the US dollar in global financial markets. Expectations that large US budget deficits will persist have intensified worries about long-term US fiscal sustainability. Surveys of market participants have also revealed increasing concerns over tail risks. The most frequently cited risks to financial stability include the possibility that the Federal Reserve System's independence could be reduced and the diminishing safe-haven status of the dollar. Since the tariff announcements in April, market dynamics have been suggesting a potential shift in the US dollar's role in global financial markets (see **Special Feature A**). Despite the rally in US equity markets, the US dollar has depreciated by around 10% against the euro so far this year. Increased foreign exchange hedging activity indicates that international investors are losing their appetite for unhedged exposure to US dollar-denominated assets (see **Chapter 4, Chart 4.3**, panel b). The slight rise in longer-term inflation swap rates is signalling that markets may show little concern about upside inflation risks (**Chart 2.4**, panel a). At the same time, despite the slight adjustment seen recently, the price of gold remains historically high, which is consistent with tail risk hedging. Furthermore, market contacts also attribute the rise in the gold price to elevated geopolitical risk, persistent policy uncertainty, central bank purchases and rising demand from retail investors. The latter is reflected by rising inflows into exchange-traded funds that invest in gold and may signal increasingly speculative behaviour (**Chart 2.4**, panel b).

2.2 Compressed risk pricing in equity and corporate bond markets

Valuations in risky assets remain stretched, which leaves room for sudden adjustments. Having recovered strongly from their lows in early April, euro area equity and corporate bond markets have seen further gains. The strong overall performance of risky assets was driven by de-escalating trade tensions, solid corporate earnings and expectations of (further) monetary policy easing across major developed markets. In the United States, policy rates are expected to fall sharply and the end of quantitative tightening has been announced, while the probability of recession has recently declined.[32] This may provide substantial support to valuations of risky assets, as the positive effect on valuations from lower discount rates is not expected to be offset by significantly lower growth. These developments have led to equity risk premia, credit spreads and implied volatility in risky asset classes and oil prices staying mostly at or below long-term averages since the May 2025 edition of the Financial Stability Review was published. Equity market volatility has seen several short-lived spikes and stood at levels above the long-term average at the cut-off date, but equity risk premia and corporate bond spreads remain well below their long-term averages (**Chart 2.5**). While geopolitical risk and trade policy uncertainty declined, they could quickly re-emerge and much of the impact of tariffs may still be ahead, which could challenge elevated valuations. Compressed spreads in euro area high-yield bonds also stand in contrast to a significant level of issuance this year and the uptick in default rates seen since April (see **Overview**).

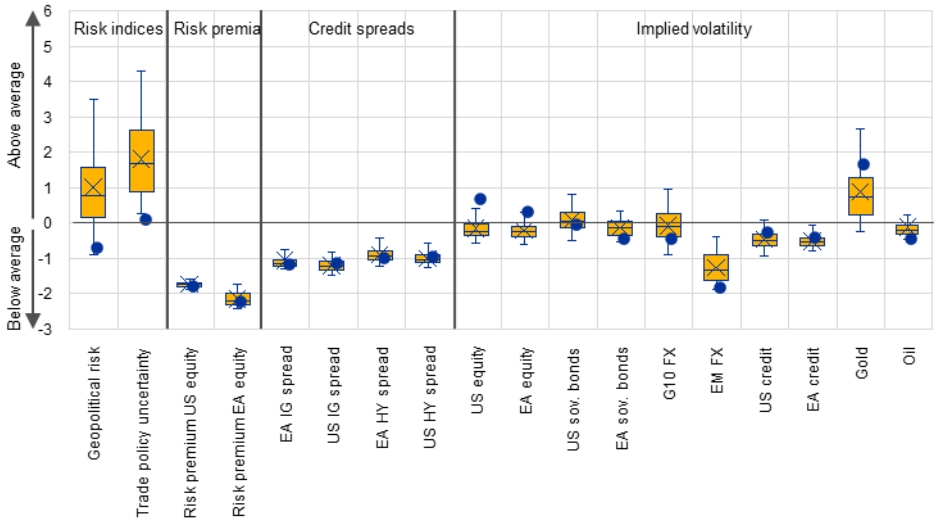
[32] According to Bloomberg, based on the median forecast from regular bank surveys, the probability of recession in the United States had fallen to 30% by November, back to the levels prevailing during the tariff-related market turmoil in April. This is down from the 40% seen when the May 2025 edition of the Financial Stability Review was published.

Chart 2.5

Equity risk premia and credit spreads remain well below their long-term averages, while implied equity market volatility has recently increased

Distribution of the deviation from ten-year average for risk, financial assets valuation and volatility indicators since the May 2025 edition of the Financial Stability Review was published

(19 May-18 Nov. 2025, z-scores)

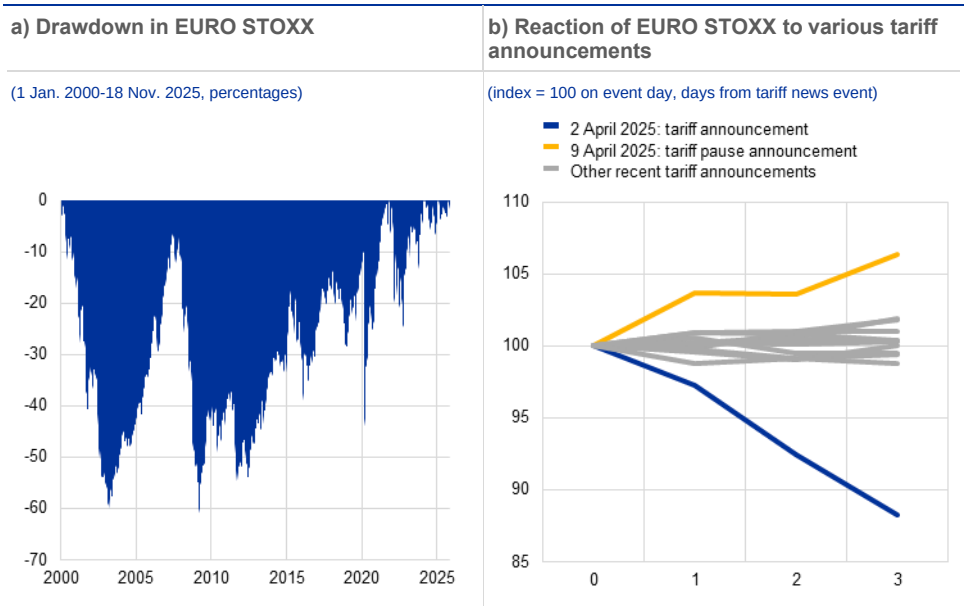


Sources: Bloomberg Finance L.P. and ECB calculations.
Notes: While z-scores are computed over a ten-year period (June 2016 to 18 November 2025), the depicted boxplots show z-score values only for the period since the May 2025 edition of the Financial Stability Review was published. X denotes average values; - denotes median values; blue dots denote the latest values. EA stands for euro area; IG stands for investment grade; HY stands for high yield; FX stands for foreign exchange; EM stands for emerging markets. Equity risk premia are calculated as earnings yield minus ten-year sovereign bond yields.

Along with high levels of optimism, valuations in markets might also reflect the fear of missing out on gains from a rally in risky assets and difficulties in pricing complex risks. Equity markets have shown remarkable resilience to shocks in recent years, as evidenced by faster recoveries and smaller drawdowns in the euro area (**Chart 2.6**, panel a), with similar findings for the United States. This might have increased the fear of missing out on quick recoveries after a shock or on a continued rally. Moreover, markets appear to have become less sensitive to tariff-related news, as illustrated by the reaction of the broad euro area equity index to recent tariff announcements (**Chart 2.6**, panel b). By contrast, assets directly affected by individual tariff announcements have continued to react, as evidenced by the sharp movements in copper prices seen in July. Another factor explaining the calmness in markets is that at this time, it is particularly difficult to assess the likelihood of risks materialising and their related impact. Uncertainties surrounding several concurrent structural shifts in geopolitics, artificial intelligence, energy and defence, for example, remain elevated and might not be reflected in prevailing market pricing. Additionally, higher tariffs have not so far had any strong adverse impact on global growth or inflation, although these effects could materialise at a later stage.

Chart 2.6

Recent equity market downturns have been short-lived, which might have increased the fear of missing out on a rally and reduced markets' sensitivity to adverse news



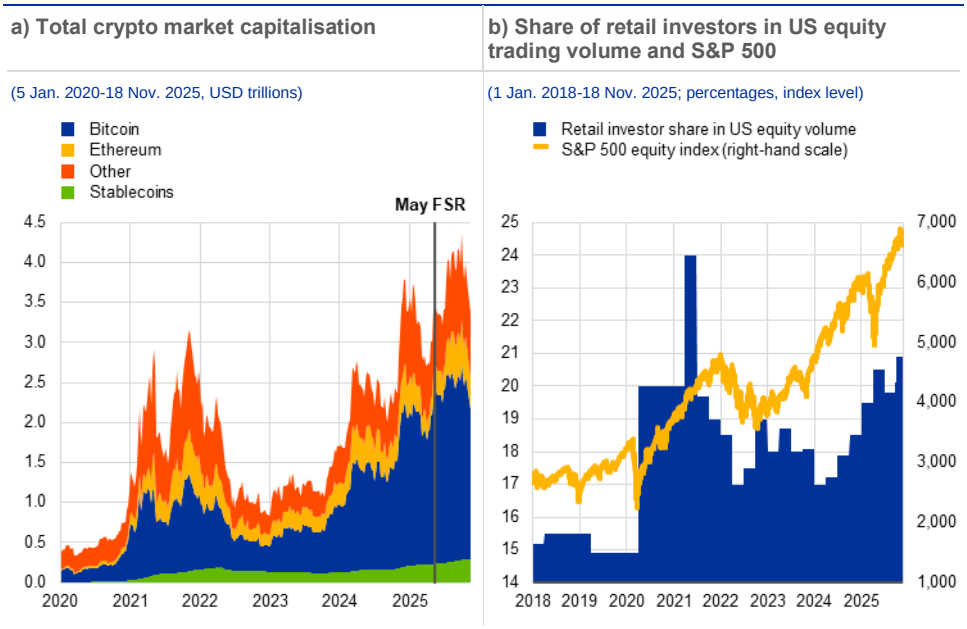
Sources: Bloomberg Finance L.P., LSEG and ECB calculations.
Notes: Panel a: drawdown is defined as the cumulative loss since the last peak. Panel b: the chart shows the cumulative equity market reaction to major tariff-related news events until 18 November 2025. Indices are normalised to 100 at the day of the announcement (T), with subsequent days (T+1, T+2, T+3) rescaled relative to that baseline. Besides the tariff announcements shown for the selected week in April 2025, other recent tariff announcements, shown in grey, include the tariffs announced on Canada and Mexico, those tariffs taking effect, the global implementation of steel and aluminium tariffs, subsequent increases in steel and aluminium duties, various tariff deadlines, extensions and trade deals, the announcement of 30% tariffs on imports from the EU, effective on 18 August 2025, the US-EU trade agreement and the revision of reciprocal tariff rates, including higher tariffs on India and the announcement of 130% tariffs on China.

Crypto-asset valuations have profited from broadening investor interest, including from traditional finance, but remain highly volatile. Crypto market capitalisation breached the USD 4 trillion mark for the first time in July (**Chart 2.7**, panel a). This was driven by a more favourable regulatory climate and growing interest from both retail and institutional investors.[33] In addition, there is evidence for rising speculative leverage, which might have contributed to a sharp adjustment precipitated by escalating trade tensions between the United States and China in October of this year. Since then, market capitalisation has declined to USD 3.3 trillion, roughly the same level that prevailed when the May 2025 edition of the Financial Stability Review was published. Stablecoins, a sub-segment of the crypto universe, have received significant attention in recent months on the back of global regulatory developments. Although comparatively small in amount (USD 290 billion), stablecoins fulfil a central role in the crypto universe, and their strong interconnectedness with the traditional financial system stands out (see **Box 5**). Financial stability risks from this market segment seem to be limited in the euro area, but further monitoring is still warranted.

[33] The growing interconnectedness between the crypto-asset ecosystem and traditional finance is opening up new channels of potential contagion, which will require close monitoring. However, the financial stability risks to the euro area currently appear to be limited. See the special feature entitled "Just another crypto boom? Mind the blind spots", *Financial Stability Review*, ECB, May 2025.

Chart 2.7

Crypto markets reach short-lived new highs, driven by institutional and retail investors, the latter also increasing their share in US equity turnover



Sources: CoinDesk Data, IntoTheBlock, Bloomberg Finance L.P. and ECB calculations.
Note: Panel a: data are shown at weekly frequency. The latest observations are for 18 November 2025. Panel b: shows the share of retail investors in US equity trading volumes as quarterly data forward-filled to daily frequency.

Retail investors can help stabilise the markets, but some retail segments in the United States are showing signs of exuberance, with potential spillovers to the euro area. Evidence from the euro area and the United States suggests that demand from retail investors has remained steady, even during market sell-offs. In the United States, retail investor participation in equity markets has shown a sustained increase since the COVID-19 pandemic. Retail investors accounted for an average of 14% in total equity trading volume between 2010 and 2019, which increased to an average of 19% since 2020.[34] The share increased – or at least remained stable – when equity prices fell (**Chart 2.7**, panel b), which might indicate that retail investors have been aiming to benefit from low prices (a "buy-the-dip" strategy). While similar data for the euro area are not readily available, flows into euro area-domiciled funds during the market sell-off in April 2025 point to similar dynamics, which might point towards a stabilising role played by retail investors in financial markets (see **Box 2**). But there are also signs of exuberance in some retail investor segments, including US retail

[34] According to data from Bloomberg. Data for the euro area equity market are not available, but ECB statistics show that around 8.7% of euro area equity is held by the euro area household sector. Mobilising retail savings more effectively would help to advance the savings and investments union (see **Section 4.4**).

stocks and 0DTE contracts.[35] While quite specific to the United States, these developments are relevant for the euro area, as overheating or sudden adjustments in US markets can spill over to euro area markets.

High valuations set the stage for sharp and sudden moves, should risks materialise. Seemingly calm markets might not adjust gradually to shifting probabilities of risk scenarios, but could instead react non-linearly, with sharp price declines when risks materialise. Currently, high valuations leave more room for negative surprises to have larger effects on financial markets than for positive surprises to do so, as there are several sources of risk. Despite declining risk indices, the probability of negative macro-financial shocks remains elevated and the impact of higher tariffs on inflation and growth is yet to show. Geopolitical tensions could escalate further, and policy uncertainty could re-emerge suddenly. Corporate bond markets are vulnerable to shifts in risk sentiment, as they show tight risk premia despite deteriorating credit risk. In addition, high valuations are partly driven by strong expectations in relation to AI-boosted economic growth and related financing flows. These investments might turn out to be less profitable than expected. The recent pick up in equity market volatility could be a first sign of a turn in risk sentiment.

Box 2
The role of household investors in market downturns

Prepared by Paolo Alberto Baudino, Julian Metzler, Manuela Storz and Fabian Wagner

Episodes of high volatility in financial markets have raised concerns about the resilience of investment funds to liquidity shocks. Investment funds running a strategy focused on risky assets such as equities and high-yield bonds may suffer from large investor outflows during episodes of high volatility and declining market prices. Funds that operate with significant liquidity mismatches may thus be forced to sell less-liquid assets at unfavourable conditions.[36] The structure of the investor base can play a significant role in fund fragility during such stress episodes.[37] This box zooms in on the importance of household investors as a stabilising factor for investment fund liquidity during market downturns, with a focus on the April 2025 market turmoil.

Over the last decade, household investors have become the largest domestic investor group in euro area equity and high-yield bond funds, which means that they may increasingly be driving fund flow dynamics. The share of households holding euro area-domiciled equity and high-yield bond funds has increased by approximately 25% since 2017 (**Chart A**, panel a). Today, households' holdings match those of the major domestic institutional investors combined, making

[35] US retail stocks (proxied by the Goldman Sachs Retail Favorites Index) and so-called meme stocks (proxied by the UBS Meme Stock Index) have outperformed the broad market since the start of the year by 28% and 24% respectively. Also, the share of zero days to expiration (0DTE) contracts in total S&P 500 option volumes has increased markedly, rising from 15% in January 2019 to reach 61% in October 2025. Retail investors significantly increased their share in these very short-dated contracts, possibly engaging in speculative trading strategies. Cboe estimates that retail investors account for 50-60% of SPX 0DTE trading; see "0DTEs Decoded: Positioning, Trends, and Market Impact", Cboe, 2 May 2025. In a similar vein, payment for order flow, indicating remuneration for neo-brokers predominantly serving retail clients, has increased in recent years. This further underscores the increasing role of retail activity in market dynamics.

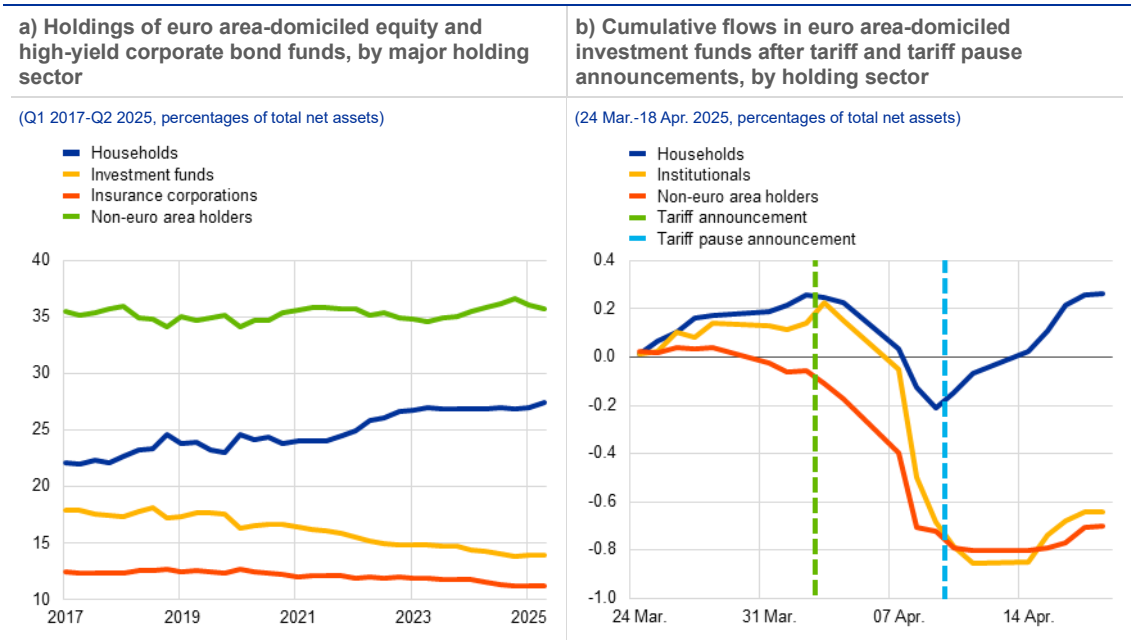
[36] For procyclical outflows from euro area investment funds after tariff announcements, see the chapter entitled "Non-bank financial sector", *Financial Stability Review*, ECB, May 2025.

[37] See Allaire, N., Breckenfelder, J. and Hoerova, M., "Fund fragility: the role of investor base", *Working Paper Series*, No 2874, ECB, 2023.

them the largest type of domestic investor. Investor groups differ in their investment preferences and constraints, which has an impact on fund flow dynamics. Households typically pursue very long-term investment gains, so their investment behaviour is less responsive to temporary market shifts.[38] Moreover, the absence of leverage makes households' portfolios less prone to liquidity shocks, while institutional investors may have to liquidate positions in times of sudden market downturns to service margin calls or reduce leverage.

Chart A

Households have become important investors in euro area investment funds over the past decade and demonstrated resilience during the recent tariff-related turmoil



Sources: ECB (SHS), EPFR Global and ECB calculations.
Notes: Panel b: cumulative flows are obtained at fund-share level for euro area-domiciled investment from EPFR Global at a daily frequency. We obtain information about the holder structure of fund shares from the SHS dataset. For each quarter, the investor group that holds the majority of the outstanding fund shares will be classified as the investor base for that fund share. The category "Institutionals" includes holdings of fund shares by investment funds, pension funds, insurance corporations, banks, public institutions and other financial institutions. We calculate the holdings of foreign investors as the residual between total net assets of the respective share class and euro area holdings from the SHS dataset (households + institutionals). Foreign sector holdings may be overstated under this approach, as the SHS dataset does not capture euro area holdings held via non-euro area custodians. However, Beck et al.* find that such holdings are likely very limited, and that the majority of assets held via non-euro area custodians can be attributed to non-euro area investors.
*) Beck, R., Coppola, A., Lewis, A., Maggiori, M., Schmitz, M. and Schreger, J., "The Geography of Capital Allocation in the Euro Area", *NBER Working Papers*, No 32275, National Bureau of Economic Research, 2024.

Differences in investment behaviour across investor groups may be particularly pronounced in times of market downturns that trigger equity and bond sell-offs. After the global tariff announcement by the US Administration in April this year, redemptions of fund shares by institutional and foreign investors were more pronounced than those by households. Households also showed a stronger tendency to re-invest once it was announced that tariffs would not be implemented immediately (**Chart A**, panel b).

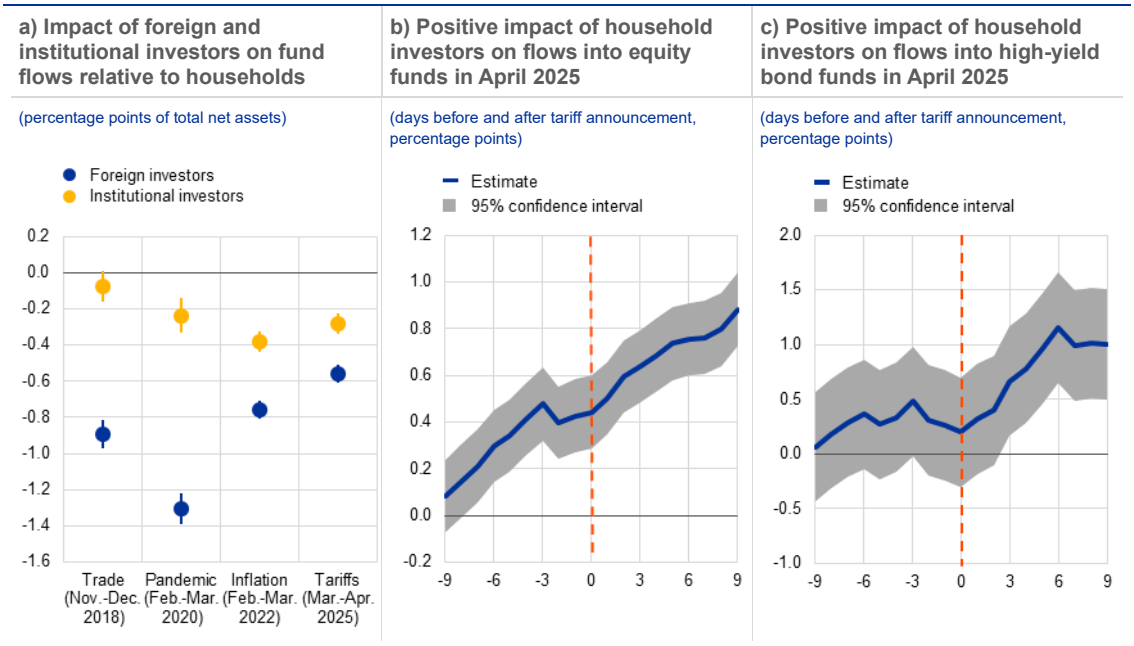
During recent episodes of market stress, households have sold lower volumes of equity and high-yield corporate bond fund shares than foreign and institutional investors. Regression analysis at the individual fund level suggests that outflows were significantly larger for funds primarily held by foreign or institutional investors than for funds primarily held by households. This holds true

[38] Based on monthly data since 2018 for euro area equity and high-yield corporate bond funds, households' investments are approximately 40% less sensitive to changes in fund performance relative to other investors.

for all four episodes considered: the China-US trade tensions of 2018, the outbreak of the COVID-19 pandemic, market reactions to the 2022 Russian invasion of Ukraine and ensuing inflation spikes, and the most recent tariff announcement by the US Administration in April 2025. In the context of the 2018 trade tensions, for example, outflows from funds mainly held by foreign investors were about 0.9 percentage points of total net fund assets higher than those from funds mainly held by households (**Chart B**, panel a).

Chart B

Households' behaviour in euro area investment funds is less procyclical during market downturns than that of institutional investors



Sources: ECB (SHS), EPFR Global and ECB calculations.
Notes: For the regressions, we follow Allaire et al.* For all three panels, fund shares are classified as having a household investor base, an institutional investor base or a foreign investor base, in line with the approach adopted in Chart A, panel b. The regressions are set up as: $\Delta\text{flows}_{i,t} = \beta_0 + \beta_1 S_{k,t} \times I_i + \mu_{i,t} + \varepsilon_{i,t}$, where $\Delta\text{flows}_{i,t}$ is the cumulative daily flow in fund share i at time t relative to ten days before the tariff announcement, expressed as a percentage of fund share i's total net assets under management. $S_{k,t}$ is a dummy that takes the value 1 in a stress period k. For panel a, k describes being before or after the breakout point of a stress episode, while for panels b and c, $S_{k,t}$ is a daily dummy variable. For panel a, I_i takes the value 1 if the investor type is either foreign or institutional, making households the baseline investor group. For panels b and c, I_i takes the value 1 if the investor type is households, making all other investor groups the baseline. We capture fund share and time specific fixed effects with $\mu_{i,t}$.
All regressions are estimated within a period of ten days before and after the breakout of an episode of market stress. The time periods considered are (i) the trade tensions between China and the United States in November/December 2018, (ii) the outbreak of the COVID-19 pandemic in February and March 2020, (iii) Russia's invasion of Ukraine and the resulting energy price inflation during February and March 2022, and (iv) the announcement of global tariffs by the US Administration during March and April 2025. The precise cut-off dates used for the regressions were determined by volatility in total fund flows.
*) Allaire, N., Breckenfelder, J. and Hoerova, M., "Fund fragility: the role of investor base", *Working Paper Series*, No 2874, ECB, 2023.

A larger household investor base provided significantly better funding stability for euro area investment funds than other investor groups during the tariff turmoil seen in spring 2025. The differential impact of a prevailing household investor base proved to be positive for investment fund flows during the recent market turmoil. Household flows into investment funds holding global equities were significantly more positive than those of other investors both before and after the tariff announcement (**Chart B**, panel b). The household sector also provided more resilience to the funding stability of high-yield corporate bond funds during the April 2025 market stress (**Chart B**, panel c).

The stability benefit of a household investor base is not observed for households investing through more complex fund of funds structures. During the April tariff turmoil, euro area-domiciled investment funds held by funds of funds faced similar flow dynamics, irrespective of

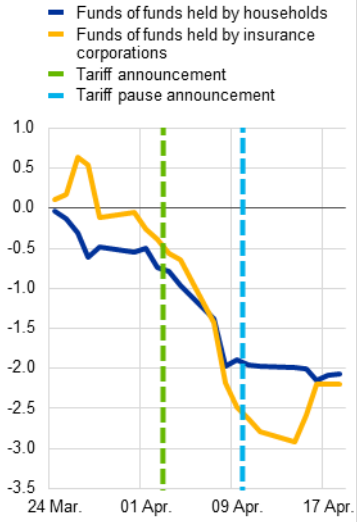
the ultimate investor base (**Chart C**, panel a). Such funds of funds may make more frequent use of active fund management tools and leverage, increasing their procyclicality.

Chart C

Further deconstructing household investor dynamics reveals pockets of procyclicality through indirect investment both via funds of funds and by speculative retail investors

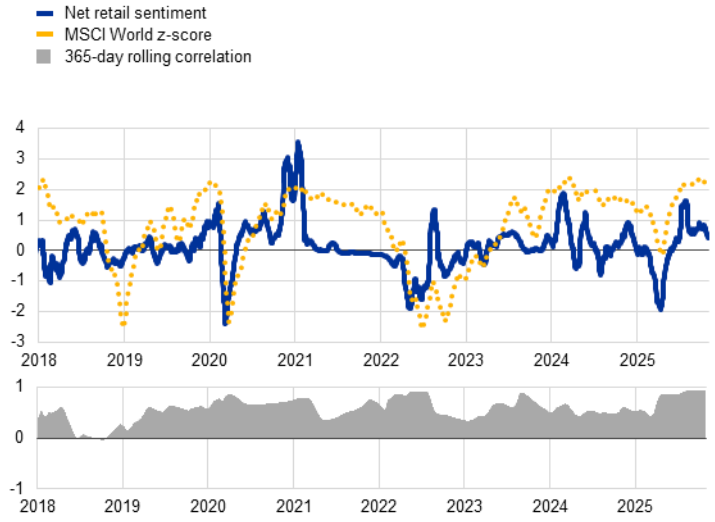
a) Cumulative flows into euro area-domiciled investment funds held by funds of funds, by ultimate holder structure

(24 Mar.-18 Apr. 2025, percentages of total net assets)



b) Retail investor sentiment and its correlation with global equity markets

(1 Jan. 2018-31 Oct. 2025; upper panel: difference between positive and negative sentiment z-scores and MSCI World z-scores, lower panel: correlation coefficients)



Sources: ECB (CSDB, SHS), EPFR Global, LSEG Lipper, Reddit (Academic Torrents), OpenAI, Bloomberg Finance L.P. and ECB calculations.
Notes: Panel a: funds of funds are identified via LSEG Lipper as investment funds that hold euro area equity or high-yield corporate bond funds included in the regression sample. To capture the main indirect holders, we focus on equity and high-yield bond funds whose shares are predominantly held by other investment funds. We then apply a look-through approach, using granular portfolio data to identify which funds hold these shares. For each equity or high-yield fund, we then aggregate the investor base of the funds of funds that invest in it, weighting each fund by the size of its holdings. This provides a proxy for the investor base of euro area equity and high-yield corporate bond funds in the sample. The analysis is restricted to cases where at least 25% of a fund's indirect investor base can be identified using LSEG Lipper portfolio data. Panel b: net retail sentiment is constructed from post titles on Reddit's r/wallstreetbets subreddit from 2018 onwards. Posts are classified into market-related topics (equities, funds, macro, options, commodities, geopolitics, tariffs and crypto) using OpenAI's GPT-4o model, with unrelated content, such as community posts, excluded. The dataset comprises around 1.8 million posts which the AI model labels as positive, negative or neutral. Net sentiment is defined as the difference between the 365-day z-scores of positive and negative posts, where each post is weighted by the logarithm of its comments and upvotes to proxy its relative importance in the forum. The MSCI World series shows the 365-day z-score of daily index levels. The lower panel reports the 365-day rolling correlation between net retail sentiment and MSCI World z-scores.

Speculative retail activity may contribute to pockets of procyclicality within household investment patterns during periods of increased market volatility. While many households invest their savings regularly in equity and bond funds independently of market developments, some pursue more speculative strategies that are more sensitive to short-term market swings. A novel sentiment indicator derived from Reddit discussions on financial assets shows that retail investor sentiment tends to move in line with global equity prices. This correlation strengthens during episodes of market stress, suggesting that retail speculators may display procyclical dynamics and reflect aspects of herding behaviour, whereas the link is weaker in more tranquil periods (**Chart C**, panel b). This highlights the potential for speculative retail activity to reinforce market dynamics. However, the footprint of retail speculators in euro area markets remains limited at present.

Greater household participation in euro area financial markets, including in the context of advancing the savings and investments union, can be beneficial for financial stability. Prudential policy arrangements to limit vulnerabilities from liquidity mismatch should take the role of investor behaviour into account. Recent market stress episodes have shown the positive impact a

broad household investor base can have on fund resilience, while risks from speculative retail traders remain limited. Accordingly, swift progress on the savings and investments union could strengthen investment funds' funding stability in periods of stress by broadening households' access to euro area markets.

2.3 Risk of spillovers across markets as concentration and exposures increase

The recovery seen in US equity markets since their lows in April has been primarily driven by technology and other AI-related firms, leading to new highs in market concentration. The stock prices of the seven dominant US technology companies, known collectively as the "Magnificent 7", have increased by 58% since 8 April. By contrast, the rest of the S&P 500 (i.e. excluding the "Magnificent 7") has gained only 24%. This has led to a further increase in US equity market concentration, with the top 1% companies of the S&P 500 now accounting for around 30% of market capitalisation (**Chart 2.8**, panel a). A further breakdown by sector of the largest companies reveals that sectoral diversification has decreased over the last decade while the IT sector has significantly gained in prominence. Whereas concentration in the EURO STOXX remains around 10% for the top 1%, the IT sector has also gained a higher share in this index.

Parallels with the early 2000s are fuelling concerns that an asset price bubble may be building, but the current high valuations appear to be underpinned by exceptionally robust earnings performance. Survey results show that market participants are split as to whether AI stocks are in a bubble, but they see this as the most prominent tail risk.[39] While some metrics suggest that valuations are similarly elevated, today's largest companies have more diversified business models than those of the early 2000s. High valuations and the resulting equity market concentration appear to be underpinned by exceptional earnings growth (**Chart 2.8**, panel b). In turn, earnings are predicated on expectations that AI advancements will boost economic growth. In addition to high market concentration, the interconnection between AI-related firms has also reportedly increased. The currently high earnings growth of the largest companies may therefore also be supported by their interrelated business activities, which could amplify spillover effects if risks were to materialise.

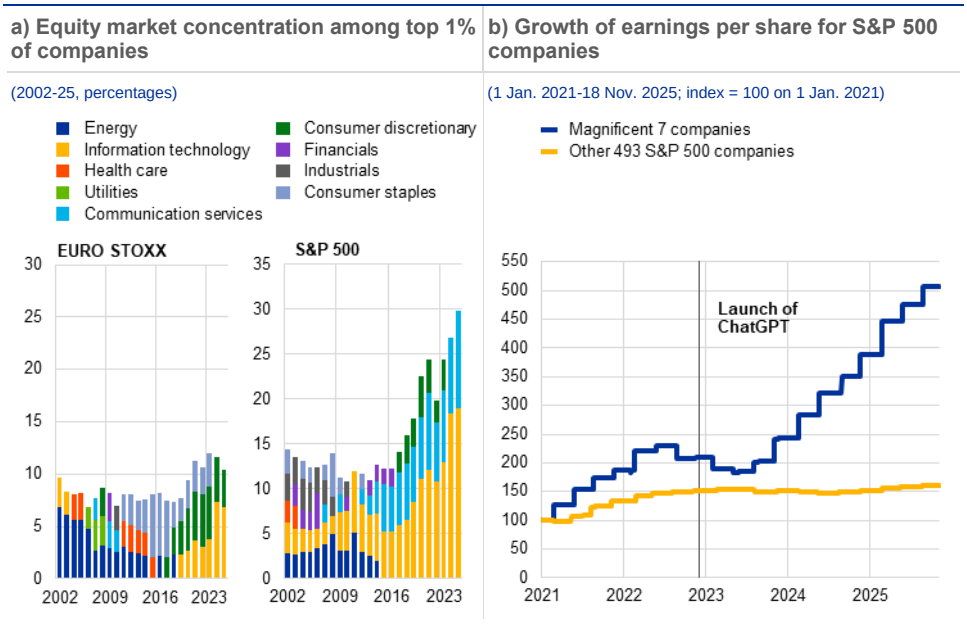
Disappointing news relating to AI progress might lead to direct and indirect spillovers to the euro area financial system. The non-bank financial intermediation sector in the euro area remains highly exposed to US securities and would therefore suffer directly from valuation losses (see **Overview**). Irrespective of whether the "AI rally" has created an asset price bubble, idiosyncratic events in related stocks could

[39] In the November Bank of America global fund manager survey, 53% of respondents (54% in October, 42% in September, 41% in August and 36.5% in July) stated that "AI stocks are now in a bubble", while 39% (38% in October, 48% in September, 52% in August and 54% in July) stated that there is no AI bubble. In the November survey, 45% of respondents indicated that they view an "AI bubble" as the biggest tail risk (up from 33% in October, which was the first time an "AI bubble" had ranked as the biggest tail risk in the history of the survey).

weigh on global risk sentiment, given their high market capitalisation. This might lead to an overall increase in global risk aversion with spillovers to euro area equity markets, even though they are less focused on the technology sector. At the same time, euro area equity markets might also profit from investment flows being redirected to markets that are less focused on technology.

Chart 2.8

Concentration in US equity markets has reached new highs, with valuations backed by outstanding earnings growth and expectations that AI will boost productivity



Sources: Bloomberg Finance L.P. and ECB calculations.
Notes: Panel a: the columns show the share of the top 1% of EURO STOXX and S&P 500 companies (i.e. the top three and five companies respectively), by market capitalisation, in the total market capitalisation of the indices, broken down by Global Industry Classification Standards (GICS). The latest observations are for 18 November 2025. Panel b: the blue line shows earnings per share of the "Magnificent 7" technology firms (Alphabet, Amazon, Apple, Meta, Microsoft, Nvidia and Tesla), which has been indexed to 100 on 1 January 2021. The yellow line shows the same measure for the remaining S&P 500 companies, i.e. all S&P 500 companies excluding the seven technology firms listed above. The black vertical line marks 30 November 2022, the day ChatGPT was launched to the public by OpenAI.

While a large part of the current AI-induced capital spending boom is funded from profits, private markets and bond markets have started to play a growing role in financing AI-related companies and infrastructure. While private markets would appear to be particularly suitable for financing AI developments owing to their capacity to undertake riskier and long-term investments, current and future financing flows from private markets and bond markets add to the financial system's overall exposure to any disappointments relating to AI.[40] While AI-related investments in private markets are expected to accelerate further, the share of the IT sector in global private equity, private debt and venture capital transactions has already significantly increased since 2010 (**Chart 2.9**). In addition, the IT share in private debt transactions is much higher than the IT share in public bond markets.[41] Moreover, there is

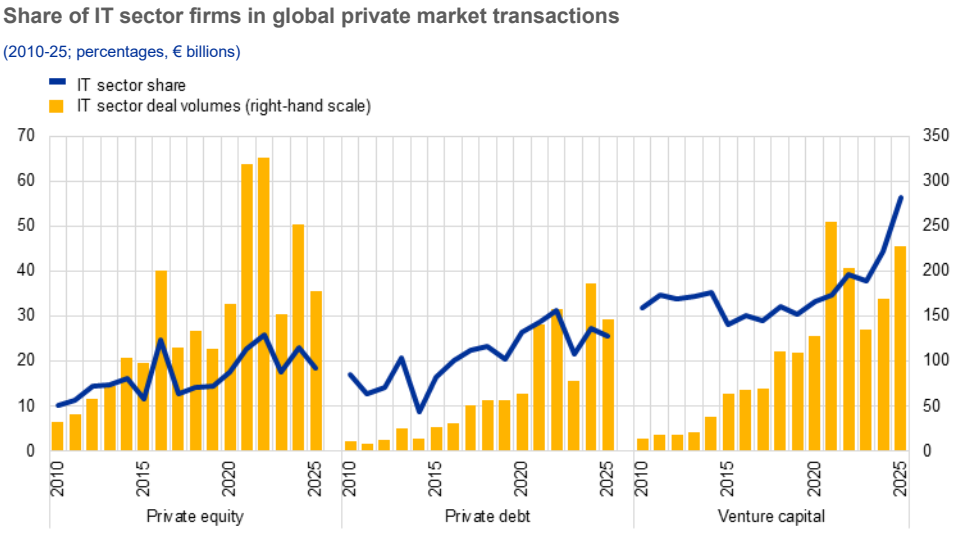
[40] Adverse news might range from signs that expected productivity gains are not materialising to disappointments over earnings at a time when expectations are already high. It might also include evidence of bottlenecks in energy and infrastructure capacities which could slow down AI growth.

[41] While some bond issuances by US big tech companies have drawn attention over recent months, the IT sector share in MSCI Euro and US investment-grade and high-yield bond indices only ranged between 1.8% and 8.3% in October 2025.

evidence that issuance of bonds by AI-related firms in the United States has picked up significantly. Overall, this signals a growing role of debt in the financing of AI-related capital spending. The strong acceleration of growth in the IT share in venture capital transactions in recent years is also indicative of an AI-related focus.

Chart 2.9

Private markets are significantly exposed to the IT sector and might be affected by adverse news relating to AI

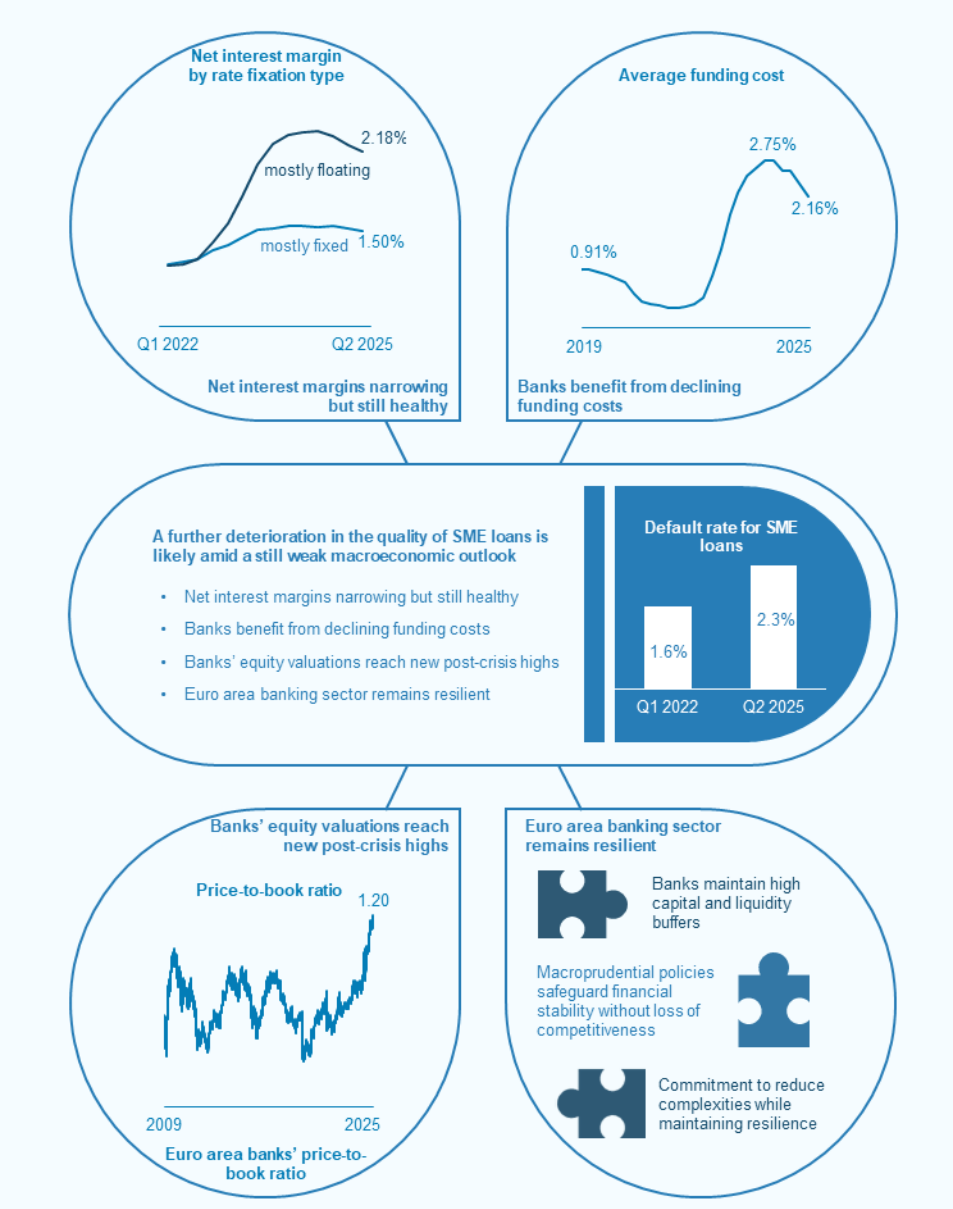


Sources: PitchBook Data Inc. and ECB calculations.
Notes: IT sector share is depicted separately for each of the three private market subsegments. The industry classification system developed by PitchBook is very similar to GICS. Industry sectors include business to business (B2B), business to consumer (B2C), energy, financial services, health care, information technology, and materials and resources. Since only the primary industry sector is used, B2B and B2C might include other IT-related companies. This means that the displayed IT sector share is a lower bound. The latest observations are for 18 November 2025.

While concerns around risks in private markets are growing, the likelihood of further contagion across the wider financial system from stress in private markets remains difficult to assess. Private markets are characterised by significant cross-border flows and a high level of opaqueness. This was highlighted by the default of the US private credit borrower First Brands in September, which caused significant losses for several financial entities in the United States and Switzerland. In addition, the difficulties private equity funds face in exiting their investments may reflect a disconnect between the currently unrealised, and possibly inflated, valuations of private equity-backed companies and the prices that can actually be achieved when they are sold. This can lead to unforeseen losses for private equity investors. The opaqueness in private markets hinders a fully-fledged risk assessment and should be addressed from a policy perspective (see **Section 4.4**).[42] Recent trends, such as the potential opening up of US pension funds to investments in private markets and retail investors gaining access to private markets (e.g. via neo-broker platforms), allow for more varied sources of funding on the positive side. An increase in retail investment flows does, however, raise concerns about increasing liquidity mismatches.

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

3 Euro area banking sector



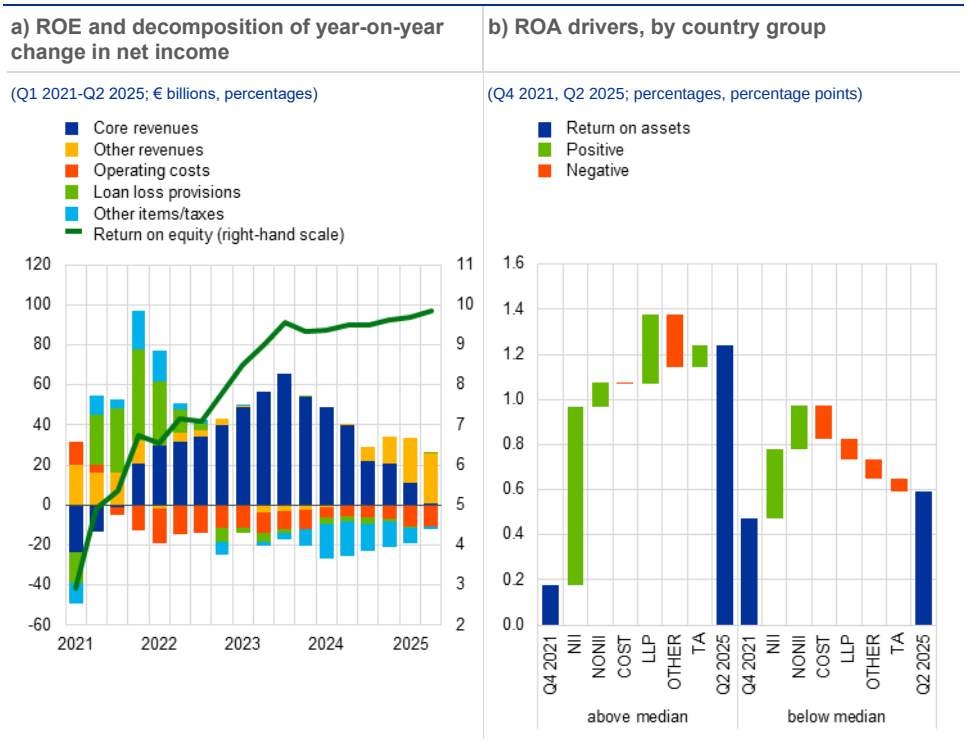
3.1 An improving near-term outlook for banking sector profitability, although some downside risks remain

The profitability of euro area banks remained broadly stable in the first two quarters of 2025, although cross-country disparities persist. The trailing return on equity (ROE) of significant institutions rose slightly to 9.8% in the second quarter of 2025 from 9.6% in the fourth quarter of 2024 (**Chart 3.1**, panel a). However, revenue growth in recent quarters has mainly been driven by non-core revenues such as trading and investment income. Core revenues were flat in the second quarter of

2025, as a moderate decline in net interest income was offset by continued growth in net fee and commission income. The dispersion of profitability across countries remains significant. Banks in countries which have enjoyed larger profitability gains since late 2021 have mainly benefited from a greater capacity to generate net interest income than their peers in countries with relatively smaller profitability improvements (**Chart 3.1**, panel b). In addition, a decline in loan loss provisions, partly driven by disposals of non-performing loans, has made a significant positive contribution to profitability for banks in the first group of countries. This contrasts with rising provisions having a moderate negative impact in the underperforming country group. This group mainly consists of countries that have seen non-performing loans increase since 2021, albeit from low starting levels. Furthermore, banks here have been less effective in cost control.

Chart 3.1

Headline profitability remains strong, but the growth of core revenues has come to a halt and cross-country differences in profitability levels persist



Sources: ECB (supervisory data) and ECB calculations.
Notes: Based on a sample of 87 significant institutions. Panel a: based on four-quarter trailing figures. Core revenues consist of net interest income and net fee and commission income. Panel b: country groups are based on whether the change in country-level return on assets (ROA) between Q4 2021 and Q2 2025 was above or below the median change. NII stands for net interest income; NONII stands for non-interest income; COST stands for operating costs; LLP stands for loan loss provisions; TA stands for total assets. OTHER includes impairment on non-financial assets, negative goodwill, results from discontinued operations, extraordinary profit or loss and tax expenses, among other things.

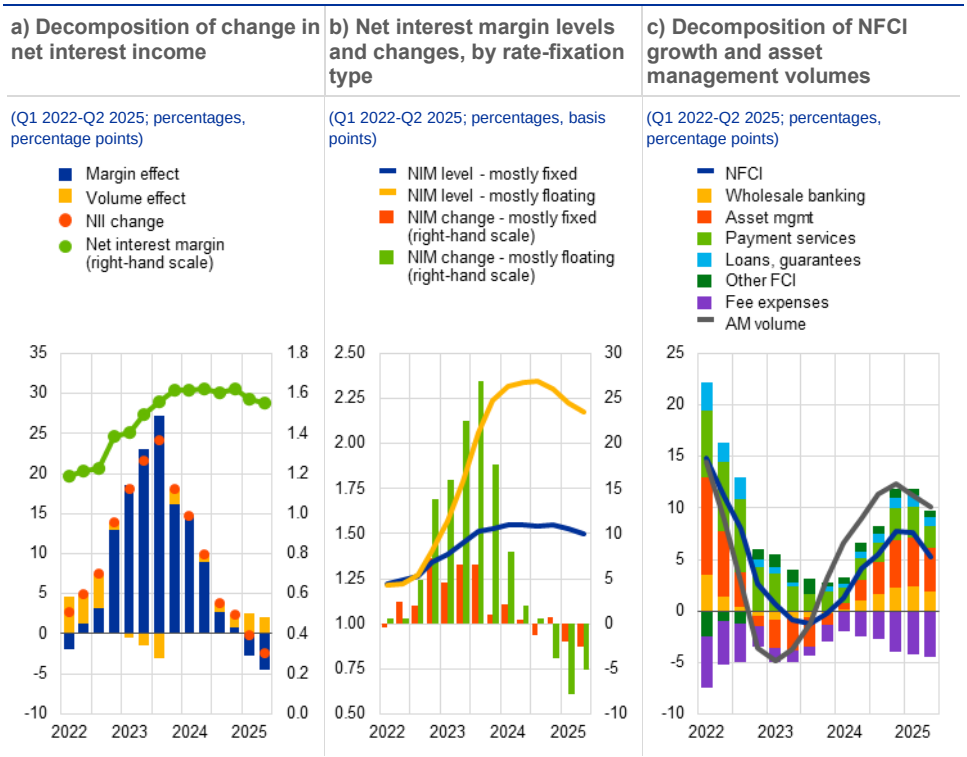
Net interest income growth has dipped into negative territory. The contraction of net interest income has been driven by a further compression in net interest margins (**Chart 3.2**, panel a), although net interest margin developments at bank level have continued to vary, depending on rate-fixation practices. In particular, margins declined less for banks with a higher share of fixed-rate loans, although the level remains higher for banks relying more on floating-rate loans (**Chart 3.2**, panel b). While

continued lending growth had a positive effect on net interest income, in the second quarter of 2025 it could only partially offset the headwinds from tightening margins.

Meanwhile, net fee and commission income has continued growing in recent quarters, albeit at a slowing pace. Following strong growth throughout 2024, the year-on-year rise in trailing net fee and commission income decelerated somewhat in the first two quarters of 2025. Lower growth rates of fee income earned from payment services, asset management and wholesale banking activities, as well as higher fee expenses, all contributed to the slowdown (**Chart 3.2** panel c). The smaller contribution of payment service fees was mainly due to the slower growth of credit card fees, while the growth of fees from asset management and wholesale banking was negatively affected by the slower growth of assets under management and higher market volatility respectively.

Chart 3.2

Net interest income declined due to negative margin effects, while the growth of fee income has slowed



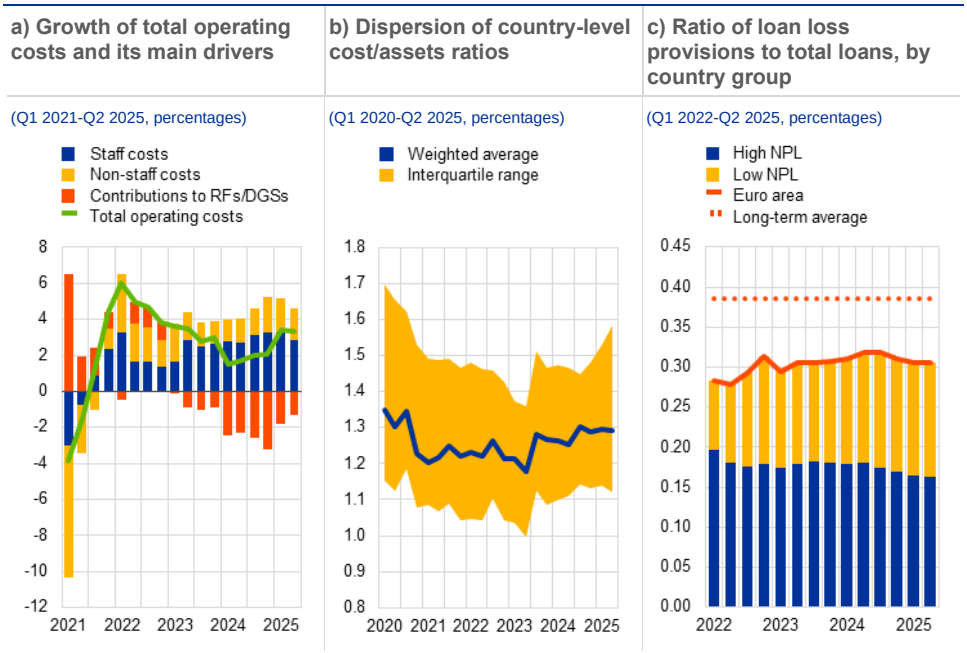
Sources: ECB (supervisory data) and ECB calculations.
Notes: Panel a: based on a balanced sample of 78 significant institutions. Net interest income (NII) change and its components refer to year-on-year changes. Panel b: based on a balanced sample of 73 significant institutions. Quarter-on-quarter changes. NIM stands for net interest margin. Banks are split into "mostly floating" and "mostly fixed" groups (53 and 20 banks respectively) based on whether they have a floating- or fixed-rate loan share above 50%. Panel c: based on a balanced sample of 87 significant institutions. Year-on-year growth of trailing net fee and commission income. NFCI stands for net fee and commission income; FCI stands for fee and commission income; AM stands for asset management.

Banks are maintaining their cost efficiency, although some diverging trends are evident across countries. The growth of total operating costs has picked up since early 2024, driven by both staff and non-staff costs. However, the rate of cost growth stabilised in the second quarter of 2025 as staff cost pressures eased somewhat, while contributions to resolution funds and deposit guarantee schemes continue to have a negative effect (**Chart 3.3**, panel a). Banks' cost efficiency, as measured by the

cost/assets ratio, has been broadly stable in the past few quarters, albeit with some divergence across countries, as less cost-efficient banking sectors have seen this ratio increase (**Chart 3.3**, panel b).

Chart 3.3

The growth of operating expenses has picked up somewhat since early 2024, while provisioning costs remain subdued



Sources: ECB (supervisory data, wage tracker) and ECB calculations.
Notes: Based on a balanced sample of 87 significant institutions. Panel a: year-on-year growth of trailing figures. Non-staff costs include other administrative costs and depreciation. RFs stands for resolutions funds; DGSs stands for deposit guarantee schemes. Panel c: loan loss provisions contain impairments on financial assets. Long-term average is calculated for Q4 2015-Q2 2025. Country groups are based on whether a country's NPL ratio was above/below the median country-level NPL ratio in Q4 2021.

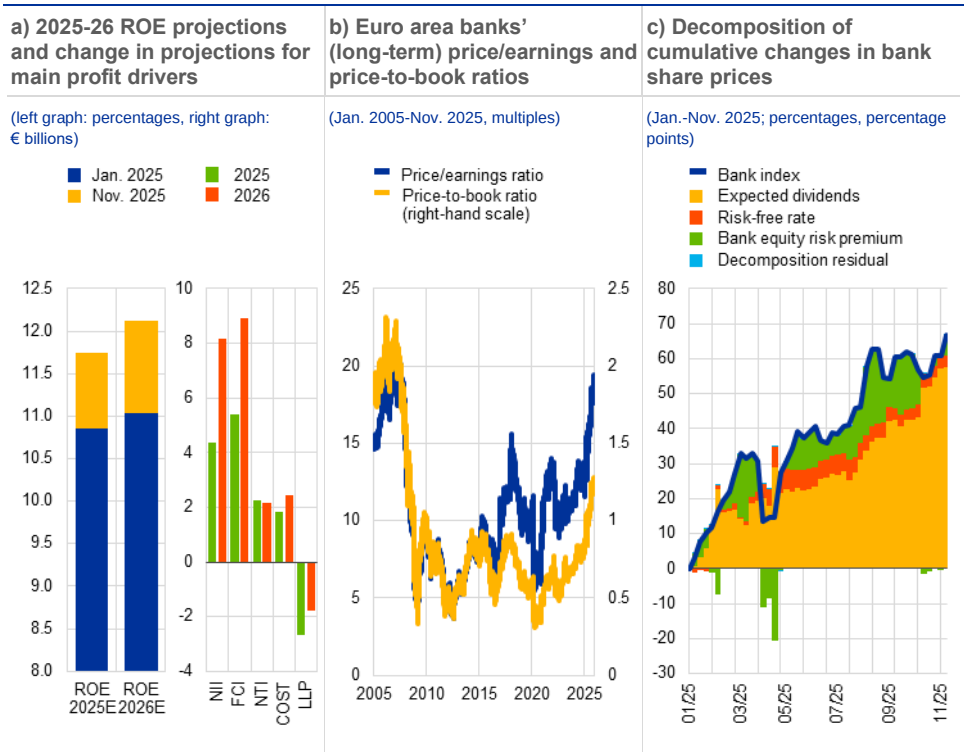
Banks' aggregate provisioning costs have remained broadly stable, despite provisioning trends varying across countries. The ratio of loan loss provisions to total loans has been hovering around 30 basis points over the last few quarters and remained significantly below its longer-term average for several years. However, the overall stability of provisioning costs masks contrasting developments. Provisioning costs in countries with higher initial non-performing loan (NPL) ratios have continued to decline while edging up in countries with historically lower NPL ratios (**Chart 3.3**, panel c). This mirrors diverging asset quality trends across these country groups (see **Section 3.3**).

The near-term outlook for banks' earnings has improved over the course of 2025, but some downside risks remain. Analysts' full-year ROE projections for 2025 and 2026 have been on an upward trend since the turn of the year (**Chart 3.4**, panel a, left graph), mainly driven by an upgrade of revenue expectations, in particular from non-interest income streams (**Chart 3.4**, panel a, right graph). The downward revision of loan loss provision estimates has also contributed to a better earnings outlook, albeit to a lesser extent. That said, these benign profitability projections remain subject to downside risks. Weaker than expected growth could cause provisioning costs to rise and contribute to weaker net interest income through

negative volume effects. Some components of non-interest income (e.g. fee income from asset management) could be adversely affected by abrupt increases in financial market volatility.

Chart 3.4

The near-term earnings outlook has improved during 2025, propelling banks' equity valuations to the highest level since before the global financial crisis



Sources: Bloomberg Finance L.P. and ECB calculations.
Notes: Panel a: based on median analyst projections aggregated for a sample of 23 listed banks. Right graph: changes in projections since the beginning of 2025. ROE stands for return on equity; NII stands for net interest income; FCI stands for fee and commission income; NTI stands for net trading income; COST stands for operating costs; LLP stands for loan loss provisions. Panel b: based on the EURO STOXX Banks index. The long-term price/earnings ratio is calculated as last price divided by the ten-year average real earnings per share. Panel c: decomposition of cumulative changes in the EURO STOXX Banks index based on the H-Model set out in Fuller and Hsia*.
*) Fuller, R.J. and Hsia, C.-C., "A Simplified Common Stock Valuation Model", *Financial Analysts Journal*, Vol. 40, No 5, 1984, pp. 49-56.

The equity valuations of euro area banks have been boosted by upgrades of their near-term profitability outlook, but remain vulnerable to negative earnings surprises. Since early 2025, the share prices of euro area banks have significantly outperformed the broader market. Both the price-to-book and the long-term price/earnings ratios of large listed euro area banks have reached their highest levels since before the 2008-09 global financial crisis (**Chart 3.4**, panel b). During 2025 rising share prices have been mainly driven by improving earnings and dividend expectations (**Chart 3.4**, panel c). In addition, reduced equity risk premia have supported the increase in bank share prices, as also seen in the decline in the cost of equity (**Chart 3.12**, panel a). Despite these aggregate improvements, there is still a marked dispersion of bank valuations. Around one-quarter of large listed banks (in the EURO STOXX Banks index) had a price-to-book ratio below 1 in mid-November, mainly due to weaker profitability prospects compared with their peers. Looking ahead, bank valuations are vulnerable to earnings disappointments, should revenues

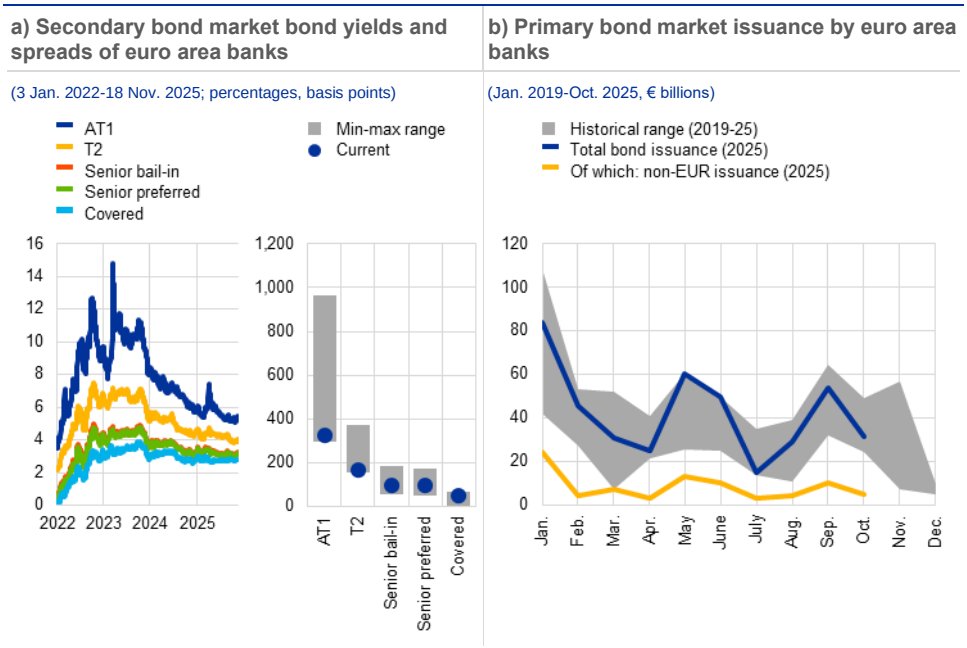
grow less than expected or loan loss provisions rise more than currently anticipated due to higher credit risk.

3.2 Banks are benefiting from favourable financing conditions

Bank bond financing conditions have continued to improve since the spring, as the effects of tariff announcements have waned. Secondary market yields have continued to move down from the levels seen in April. This has mainly been driven by a compression in credit spreads which, with the exception of covered bonds, now stand at the lowest level since the start of the hiking cycle and are particularly tight for the most junior instruments (**Chart 3.5**, panel a). Primary market issuance has also rebounded strongly after the widespread decline in issuance volumes between March and April. Year-to-date issuance is now largely in line with historical averages for bank bonds denominated in both euro and foreign currency (**Chart 3.5**, panel b). Banks are benefiting from tighter spreads, which partly reflect a fundamental reduction in credit risk thanks to higher capitalisation and resilient earnings. However, the low levels and limited dispersion of spreads across seniorities raise concerns about the potential effects of an abrupt market repricing (see **Chapter 2**).

Chart 3.5

Bank bond yields and spreads are compressed, and market issuance remains orderly



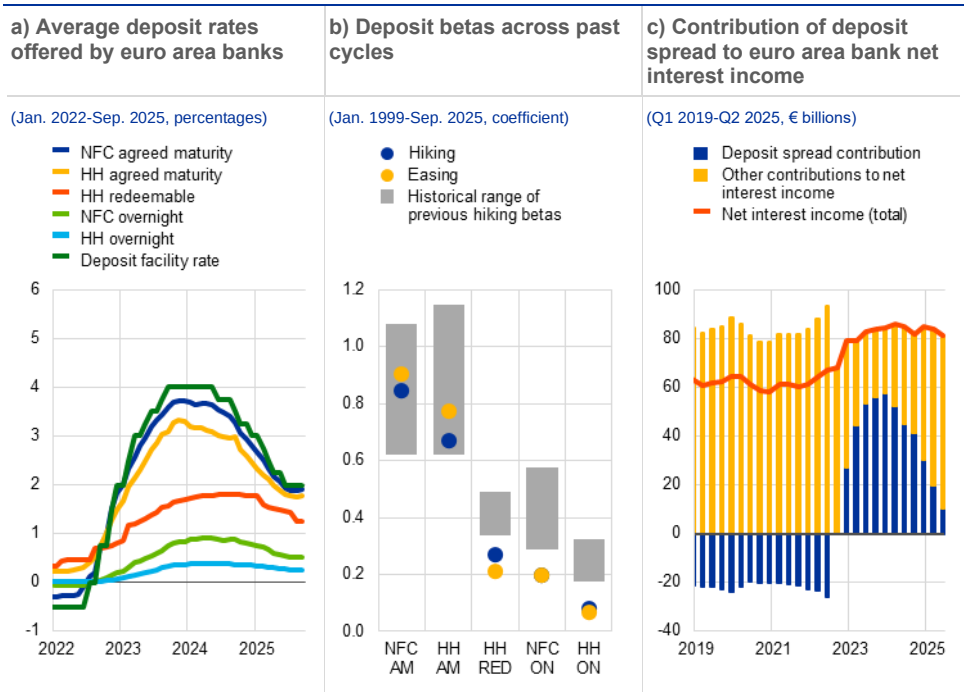
Sources: S&P Dow Jones Indices LLC and/or its affiliates, Dealogic and ECB calculations.
Notes: Panel a: "Current" indicates the latest observed spread. Panel b: "Historical range" indicates minimum and maximum of the total bond issuance in a given month, from 2019 to 2025.

Deposit rates have declined further, as banks maintain deposit franchise value which supports their net interest income. Following the first ECB interest rate cut in June 2024, banks started lowering deposit rates (**Chart 3.6**, panel a). The decline was stronger for term deposits, which have reacted in line with previous monetary policy cycles and shown greater sensitivity to rate cuts than rate hikes. By contrast, changes

to overnight deposit rates have been sluggish in either direction, and household deposit rates offered by many banks are still just marginally above zero.[43] Although the pass-through is slowly increasing over time, overall deposit rate sensitivity has been weaker during this cycle than in previous ones (**Chart 3.6**, panel b).[44] With the rise in interest rates, the deposit franchise has again become an important source of income, especially during the hiking phase of the cycle. Even now, with policy rates at half their peak levels, banks' deposit funding substantially supports their income and is likely to remain a source of profit as long as interest rates remain moderately positive (**Chart 3.6**, panel c).[45]

Chart 3.6

Deposit rates have fallen, supporting banks' net interest income



Sources: ECB (MIR, BSI, supervisory data) and ECB calculations
Notes: NFC stands for non-financial corporation; HH stands for household. Panel a: rates on new business. Panel b: change in rate on new business divided by change in the deposit facility rate, Deposit betas for the hiking cycle are calculated on the period from January 2022 to November 2023 for term and redeemable-at-notice deposits and from January 2022 to May 2024 for overnight deposits, reflecting the peak of different deposit rates. Easing betas for agreed maturity (AM)/redeemable-at-notice (RED) and for overnight (ON) deposits consider the period from November 2023 and May 2024 until September 2025 respectively. "Historical range of previous hiking betas" refers to the peak betas reached during previous hiking cycles in November 2000, November 2005 and September 2011. Panel c: the deposit spread contribution is the hypothetical spread that banks could earn from placing funding obtained from household and NFC deposits on the overnight money market. It is computed as the total deposit volume in a given period multiplied by the euro short-term rate (€STR) minus the actual interest expense on household and NFC deposits in that period. "Other contributions to net interest income" is net interest income minus the hypothetical deposit spread income.

[43] However, a handful of banks are offering substantially higher overnight deposit rates. These banks use a funding mix skewed towards market-based sources and might therefore still benefit from attracting overnight household deposits, even at much higher rates.

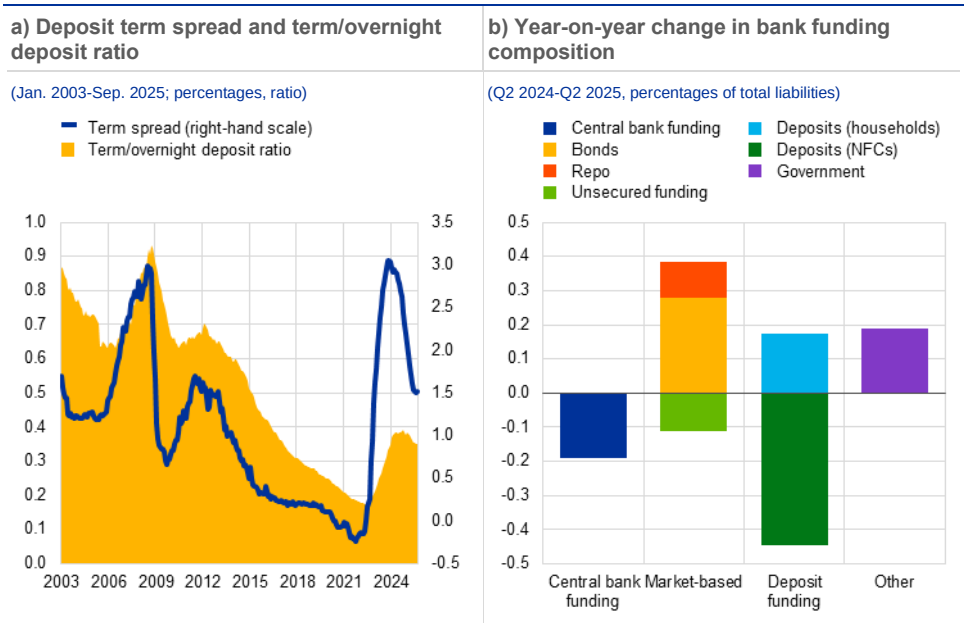
[44] This is mainly driven by the high share of household overnight deposits in total deposits. The sluggish pass-through on overnight deposits can be partly attributed to the zero lower bound on deposit rates during the negative interest rate environment, but also to limited competition for deposits in an abundant liquidity environment. Notwithstanding, the overall pass-through of monetary policy tightening through banks was strong and comparable to other cycles (see also the box entitled "Monetary dynamics during the tightening cycle", *Economic Bulletin,* Issue 8, ECB, 2023, and "Report on monetary policy tools, strategy and communication", *Occasional Paper Series,* No 372, ECB, 2025).

[45] See also the box entitled "The deposit franchise value of euro area banks", *Financial Stability Review*, ECB, May 2025.

Banks' deposit volumes are increasing, with renewed inflows into retail overnight deposits. With the start of the hiking cycle, banks increased deposit term spreads and depositors reacted by reallocating funds from overnight deposits to term deposits. However, following the first rate cut, deposit flows have reversed again, leading to a further accumulation of overnight deposits. As a result, the ratio of term to overnight deposits remains low by historical standards (**Chart 3.7**, panel a).[46] This benefits banks as it skews their funding composition towards the cheapest source of funding. However, the renewed growth in overnight deposits likely reflects a shift in the preference of the non-financial private sector for more liquid assets resulting from the increase in economic uncertainty. While competition for deposits is currently limited by the abundance of cheap overnight deposits, which reduces the risk of a of a sudden increase in the cost of deposit funding, economic uncertainty could create volatility in deposits and revive competition for deposits.

Chart 3.7

Banks' funding structures have shifted towards overnight deposits and market-based funding



Sources: ECB (MIR, BSI, supervisory data) and ECB calculations.
Notes: Panel a: the term spread is the difference between the average term and overnight deposit rate. The term/overnight deposit ratio is the total stock of retail term deposits divided by overnight deposits. Panel b: total liabilities exclude equity financing, and government deposits with euro area banks are regional government and agency deposits.

A growing reliance on funding from non-bank financial intermediaries could become a vulnerability in times of market stress. Over the past year, banks have seen a strong increase in their market-based funding (**Chart 3.7**, panel b). This funding is usually provided by non-bank financial intermediaries which invest in bank bonds, deposit their funds in bank accounts and lend to banks in the repo market. This growing interlinkage leaves banks at higher risk of funding disruptions, should these

[46] Between 2008 and 2025, the share of household and NFC overnight deposits in banks' total funding rose from about 11% to 24% (source: ECB (BSI)). Three factors contributed to this development: (i) the financial assets of the non-financial private sector grew more than those of the financial sector, (ii) households and NFCs shifted their assets away from bonds towards deposits, and (iii) term deposits were substituted with overnight deposits (source: Eurostat).

counterparties be forced to deleverage in times of market stress (see **Special Feature B**). Moreover, repo market intermediation by euro area banks has also increased, more than doubling over the last four years. A substantial portion of these transactions is denominated in foreign currency and has a very short maturity, with limited substitutability of funding providers. This increases banks' reliance on their own foreign currency liquid asset holdings to manage potential funding disruptions and may amplify asset price gyrations (see **Box 3**).

Box 3

US dollar activities of European banks: business models and financial stability implications

Prepared by Maciej Grodzicki, Urtė Kalinauskaitė, Benjamin Klaus, Chloe Larkou, Francesca Lenoci and Allegra Pietsch

The US dollar assets and liabilities of euro area banks arise mainly from their capital market activities. Capital market activities are often characterised by short maturities and require daily marking to market and margining. These features may pose a liquidity risk to banks in the event of abrupt market movements. US dollar funding and hedging instruments provided by banks are also important for euro area corporates and non-bank financial institutions, especially when exchange rates move rapidly. This box presents the business rationale for euro area banks' US dollar activities and aims to assess the associated financial stability risks.

US dollar activities are concentrated among euro area global systemically important banks (G-SIBs), which intermediate US dollars to other European parties. In contrast to other major currencies, US dollar activities relate almost exclusively to wholesale business.[47] The breakdown of euro area banks' US dollar assets and liabilities reveals the high weight of capital market activities relative to loans and deposits from the non-financial sector (**Chart A**, panel a). Other financial assets and liabilities, which include primarily the positive fair value of derivatives, are the largest balance sheet position denominated in US dollars. They are followed by repo borrowing, debt securities funding, holdings of debt securities and deposits taken from banks and other financial institutions.

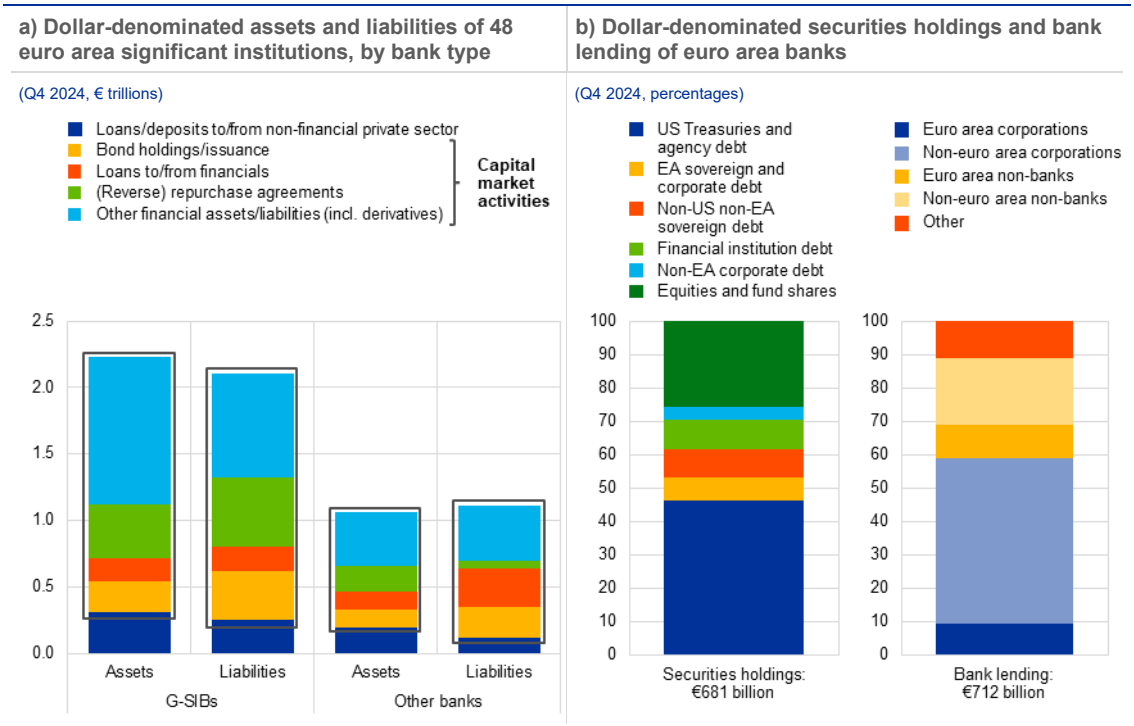
Banks' dollar-denominated credit exposures are largely limited to holding high-quality debt securities and lending to the non-financial corporate sector. Euro area banks' debt securities holdings denominated in US dollars consist mainly of US Treasuries and agency mortgage-backed securities, followed by debt issued by non-US governments and financial institutions. These securities qualify as high-quality liquid assets. Euro area banks' dollar-denominated lending is estimated to be close to €700 billion at the least (9.2% of the total loan book), with most of this going to non-euro area corporate and non-bank financial clients (**Chart A**, panel b).[48]

[47] Other significant currencies include the pound sterling and the currencies of various Nordic and central and eastern European states. Business in these currencies usually includes local retail and corporate banking. Wholesale activities have a more limited share than is the case for US dollar activities.

[48] These estimates are based on euro area credit register data, which do not include retail loans and loans booked at euro area banks' non-euro area subsidiaries. They therefore constitute a lower bound for total dollar-denominated lending.

Chart A

Capital markets business dominates in euro area banks' US dollar activities



Source: ECB (supervisory data, SHS, AnaCredit) and ECB calculations.
Notes: Panel a: based on annual funding plan reports by 48 banks, including five global systemically important banks (G-SIBs), for which US dollar-denominated liabilities account for over 5% of their total liabilities. The share of these banks in the total assets of significant institutions supervised by the ECB amounts to 56%. The data on repos use the liquidity coverage ratio template and capture only transactions with a residual maturity up to 30 days, while the data on reverse repo lending to financials use the net stable funding ratio template. "Other financial assets/liabilities" mainly includes trading assets and liabilities such as derivatives, equity and fund shares, and repo borrowing with a residual maturity of more than 30 days. "Other banks" includes, among others, euro area subsidiaries of US banking groups. Panel b: covers all euro area significant institutions, meaning numbers are larger than in panel a. Data exclude subsidiaries of non-euro area banks in the euro area and loans held in the foreign subsidiaries of euro area banking groups. The debt of supranational issuers is included in non-US non-euro area sovereign debt. Lending data are based on the AnaCredit dataset and exclude retail loans to households, loans to banks, reverse repo transactions and intragroup exposures. EA stands for euro area. "Non-banks" refers to non-bank financial intermediation entities.

The US dollar activities of euro area banks in capital markets represent a diverse set of financial services to the economy. Euro area banks, especially some of the G-SIBs, are present in US money markets, where they act as intermediaries by sourcing funding from money market funds and lending the proceeds to hedge funds on a secured basis.[49] Euro area investment funds, life insurers and pension funds invest in dollar-denominated assets, despite their euro-denominated obligations to fund-shareholders or policyholders. Euro area banks facilitate these counterparties' needs to mitigate the resulting currency risk by engaging in FX swaps, effectively receiving US dollars and paying euro to investment funds, insurance corporations and pension funds. Euro area banks partially hedge this currency risk by taking opposite positions with global banks (**Chart B**, panel a). These US dollar liabilities are not visible on bank balance sheets.[50] Euro area banks also provide currency hedges to euro area exporters and importers, although such hedging trades are on a smaller scale than those associated with euro area financial investors. For instance, as of July 2025, banks are facilitating US dollar payments to non-financial corporations via currency swaps, primarily to stabilise such corporations' import costs rather than to manage dollar-denominated revenue flows.

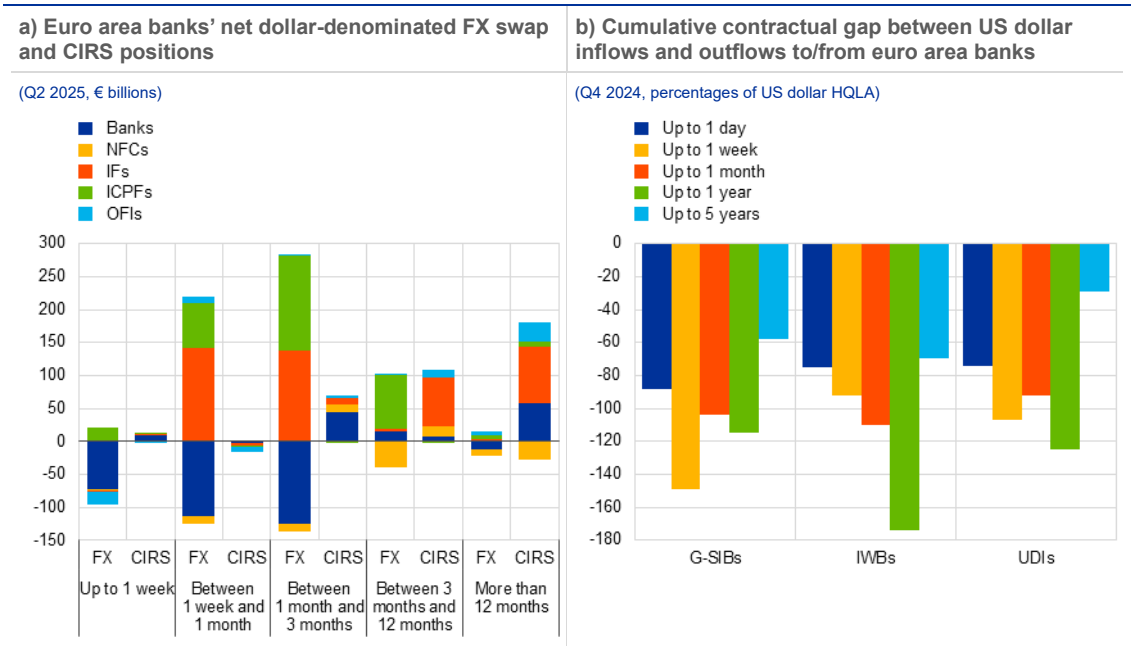
49 For more details on the repo and FX swap activities of euro area banks, see the box entitled "Euro area banks as intermediators of US dollar liquidity via repo and FX swap markets", *Financial Stability Review*, ECB, November 2024.

50 Banks may secure funding synthetically from other institutions via FX swaps, resulting in off-balance-sheet US dollar liabilities. Rolling over these positions can become challenging during periods of stress in FX swap markets.

While asset-liability mismatch appears to be limited in extent, banks are nonetheless taking liquidity risk due to mismatches between counterparties providing and receiving funding. Some banks mitigate liquidity risks further by running maturity-matched repo books and do not use volatile short-term repos to fund illiquid long-term assets. However, these strategies do not fully eliminate liquidity risk. While banks hold sizeable quantities of high-quality liquid assets, dollar outflows in an extreme scenario could exhaust their capacity to raise cash through repos, FX swaps and the sale of such assets.[51] The value of liquid assets may also decline in these circumstances, exacerbating liquidity pressures.[52] Although net outflows of US dollars could be covered by US dollar liquid assets in the long term, the net outflows are concentrated in the short term. Some banks may require additional funding in US dollars or rely on inflows of US dollars from maturing short-term assets to remain liquid during financial stress (**Chart B**, panel b). However, collecting these cash inflows would imply that they reduce US dollar funding to counterparties.

Chart B

Euro area banks' US dollar intermediation activities



Source: ECB (EMIR, sector enrichment based on Lenoci and Letizia*, supervisory data) and ECB calculations.
Notes: Panel a: foreign exchange (FX) swap and cross-currency interest rate swap (CIRS) positions of euro area banks with other counterparties, netted within maturity bucket. Within the same maturity bucket, euro area banks' derivatives positions with the same counterparty sector are netted against each other. A positive net position indicates that the euro area banks are committed to receiving US dollars and paying euro with a specific time bucket. "Banks" includes net derivatives positions with banks that are not supervised by the ECB. NFCs stands for non-financial corporations; IFs stands for investment funds, including money market mutual funds; ICPFs stands for insurance corporations and pension funds; OFIs stands for other financial intermediaries. Panel b: the periods denote the residual maturity of the contractual inflows and outflows. The net contractual gap is calculated as the sum of the net contractual outflows (gross inflows less gross outflows) scheduled over a given horizon and presented as a share of dollar-denominated HQLA. G-SIBs stands for global systemically important banks; IWBs stands for investment and wholesale banks; UDIs stands for universal and diversified institutions, which include universal banks and diversified lenders; HQLA stands for high-quality liquid assets.
*) See Lenoci, F.D. and Letizia, E., "Classifying Counterparty Sector in EMIR Data", in Consoli, S., Reforgiato Recupero, D. and Saisana, M. (eds.), *Data Science for Economics and Finance*, Springer, Cham, 2021.

Maintaining adequate balance sheet capacity is necessary to enable banks to act as shock absorbers. If euro area banks reduce their dollar intermediation, their counterparties could face

51 Tensions in FX swap markets may add to liquidity pressures arising from outflows, raise roll-over costs and tighten US dollar liquidity at the bank level, contributing to a tighter credit supply. See Eguren-Martin, F., Ossandon Busch, M. and Reinhardt, D., "Global Banks and Synthetic Funding: The Benefits of Foreign Relatives", *Journal of Money, Credit and Banking*, Vol. 56(1), 2024, pp. 115-152.

52 For example, the value of US Treasuries declined during the market turmoil triggered by the tariff announcements in April 2025.

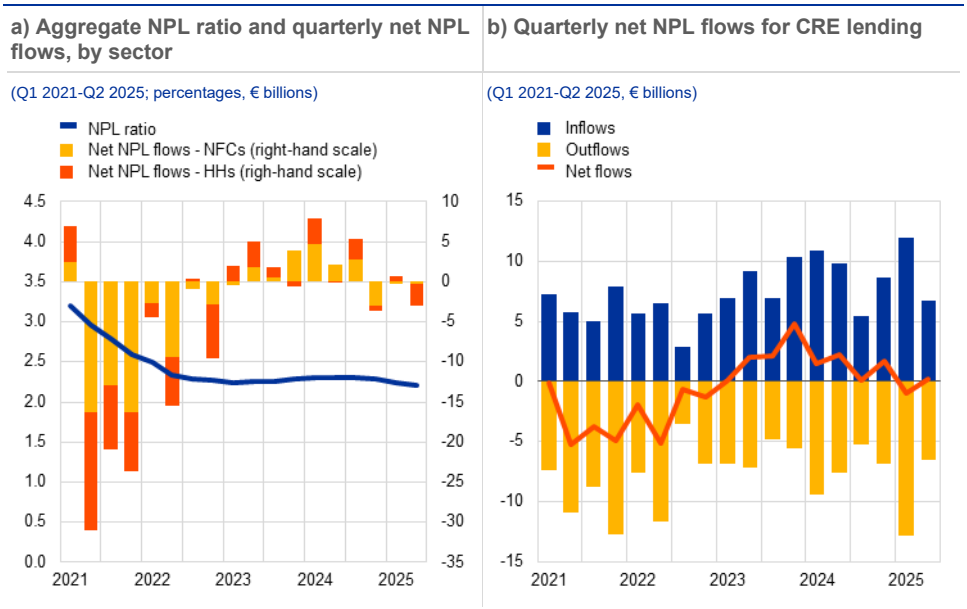
difficulties funding or hedging dollar-denominated investments and may need to sell such assets. Capital and US dollar liquidity buffers provide the balance sheet space required by banks to offer financial services in US dollars to their counterparties in times of financial stress. Capital headroom could be needed to absorb the increase in capital requirements associated with higher currency volatility and counterparty credit risk. Although liquidity risk may not materialise in banks' own balance sheets and there is no regulatory requirement for banks to match the currencies of liquid assets to the currencies of liabilities, banks should hold liquid US dollar assets to counterbalance outflows and act as a stabilising intermediary.

3.3 Asset quality remains sound in aggregate, but some sectors and countries have seen a slight deterioration

Despite a challenging macroeconomic environment, bank asset quality remains sound, with the aggregate non-performing loan (NPL) ratio close to historical lows. The aggregate NPL ratio dropped slightly in the first half of 2025. This was caused by declines in stocks of household NPLs (**Chart 3.8**, panel a) driven largely by improvements in the quality of residential real estate loans. Furthermore, the aggregate Stage 2 ratio also fell slightly (by around 0.3 percentage points) over the same period, while early arrears − loans that are less than 90 days past due − have shown modest improvements since the middle of 2024.

Chart 3.8

The aggregate NPL ratio has dropped slightly due mainly to falling NPL stocks in the household sector, while there are tentative signs of improvement in CRE loan quality

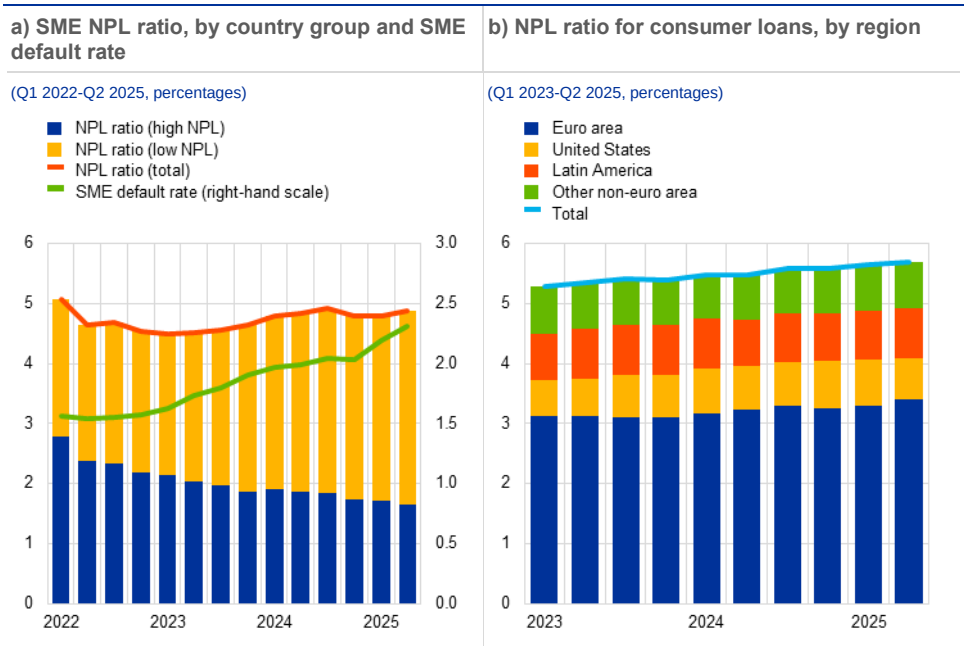


Sources: ECB (supervisory data) and ECB calculations.
Notes: based on full sample of significant institutions (113 banks as at Q2 2025). Panel a: NFCs stands for non-financial corporations; HHs stands for households. Panel b: excludes loans held for sale.

There have been tentative signs of improvement in the quality of commercial real estate (CRE) loans in recent quarters. After eight consecutive quarters of net NPL inflows in CRE lending, the last two quarters show net flows hovering around zero (**Chart 3.8**, panel b), which likely reflects a recovery in the CRE sector amid easing financial conditions (see **Section 1.5**). However, weakness in CRE portfolios persists in some countries where CRE NPL ratios have seen substantial increases year on year. Persistent vulnerabilities in the non-prime and office markets, which continue to face a challenging outlook, may lead to a reversal in this improvement.

Chart 3.9

SME and consumer loans continue to show signs of a mild deterioration in asset quality



Sources: ECB (supervisory data) and ECB calculations.
Notes: Panel a: based on a sample of 87 significant institutions for NPL ratios and 56 IRB-reporting significant institutions for default rates. Country groups are based on whether a country's SME NPL ratio was above/below the median value of country-level SME NPL ratios in Q4 2021. "NPL ratio (high NPL)" and "NPL ratio (low NPL)" show the contributions to the total SME NPL ratio of countries with high and low initial NPL ratios. Panel b: based on a sample of 65 significant institutions which report a geographical breakdown of their loan portfolios.

At the same time, SME loan portfolios continue to experience some limited deterioration. Default rates for lending to small and medium-sized enterprises (SMEs) have been increasing consistently for the past three years (**Chart 3.9**, panel a) in line with rising corporate insolvencies (see **Overview**). In aggregate, they now stand above pre-pandemic levels. However, these overall trends conceal significant cross-country differences. SMEs in Germany, Italy and the Netherlands have experienced rising default rates in recent years, in contrast with declines in several other countries. Similarly, while the aggregate NPL ratio for SME loans has only edged up slightly since late 2023, developments in NPL ratios have varied greatly across countries. In particular, increases in NPL stocks in countries with low NPL ratios at the end of 2021 have been almost fully offset by declines in countries with high initial NPL ratios (**Chart 3.9**, panel a), due for instance to disposals or write-offs. Going forward, banks in those countries which have recently experienced rising NPLs

and also have a weaker macroeconomic outlook face a risk of further deterioration in SME loan quality.

In the household sector, consumer lending has shown signs of a mild deterioration in asset quality in recent quarters. This is evidenced by a gradual, albeit contained, rise in aggregate NPL ratios for consumer loans since late 2023. By borrower location, the composition of consumer loan NPLs has shifted slightly towards euro area exposures since late 2023 (**Chart 3.9**, panel b). While aggregate unemployment remains low, these developments, along with the recent slowdown of real wage growth, suggest that a subset of consumers with lower incomes could become financially constrained. This is particularly the case if economic conditions were to weaken more than currently expected, possibly leading to a further deterioration of asset quality in this loan portfolio.

Corporate credit risk may yet materialise in the context of rising trade fragmentation, a still weak macroeconomic environment and elevated debt service costs. In particular, banks with higher exposures to firms operating in sectors more reliant on US export markets face greater credit risk. As of April 2025, 8% of euro area banks' NFC lending was directed towards sectors with a high reliance on the US market, but the share of lending at risk varied materially across sectors and countries. Banks with higher exposures to these sectors could face a deterioration in asset quality through both direct credit losses and second-round effects, such as knock-on impacts on suppliers, and a broader macroeconomic slowdown.[53] Furthermore, euro area corporates continue to face elevated, albeit somewhat declining, debt service costs. This may add to credit risk (see **Section 1.3**), in particular if coupled with weaker corporate profitability due to lower external demand.

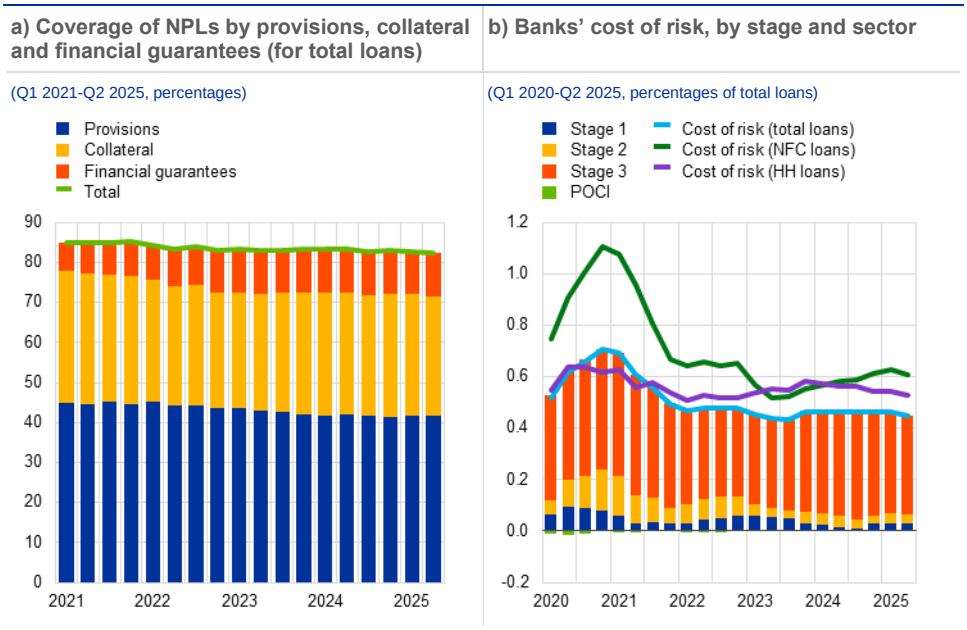
Provisioning coverage levels remain broadly stable, but an upward adjustment of provisions may be needed if credit risk deteriorates. The share of NPLs covered by provisions has shown signs of stabilisation in recent quarters, although both the provisioning and total coverage of NPLs (also including collateral and financial guarantees) remain below the levels seen at the end of 2021 (**Chart 3.10**, panel a). Banks' aggregate cost of risk dropped slightly in the second quarter of 2025, driven by lower Stage 3 provisions in line with a slight moderation of realised credit losses. At the same time, early-stage provisions − i.e. those for Stage 1 and Stage 2 loans − have edged up in recent quarters (**Chart 3.10**, panel b). This may be a sign that banks are taking account of the evolving macro-financial environment, which is characterised by heightened geopolitical risk and trade uncertainty. However, the volume of Stage 1 and Stage 2 provisions remains very low, indicating that banks are not expecting a substantial increase in credit losses over the medium term.
Cost-of-risk trends have also diverged somewhat across sectors since late 2023, with a gradual rise for NFC loans up to the first quarter of 2025 contrasting with a slight decline for household loans. Looking ahead, banks could see their provisioning costs rise, in particular in countries where the macroeconomic outlook is weaker.

---

[53] See the special feature entitled "Risks to euro area financial stability from trade tensions", *Financial Stability Review*, ECB, May 2025.

Chart 3.10

NPL coverage ratios have remained broadly unchanged in recent quarters, while stable cost-of-risk trends for total loans hide some divergence across sectors since late 2023



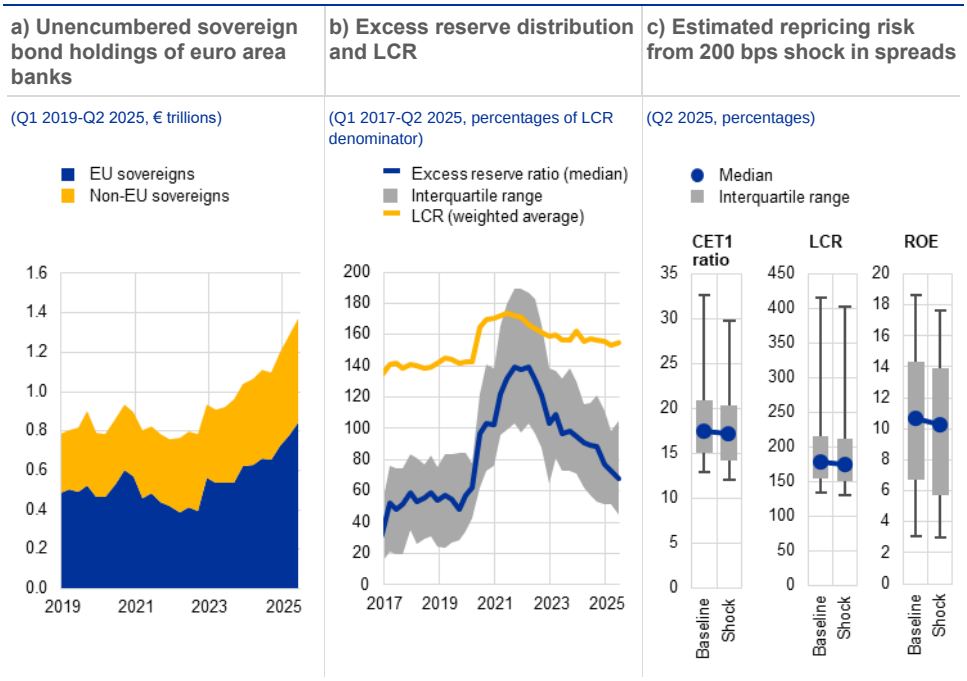
Sources: ECB (supervisory data) and ECB calculations.
Notes: Panel a: based on a sample of 87 significant institutions. Panel b: based on a sample of 80 IFRS-reporting significant institutions. Four-quarter trailing figures. POCI stands for purchased or originated credit-impaired financial assets; NFC stands for non-financial corporation; HH stands for household.

3.4 Liquidity and capital buffers remain ample

Sovereign bonds are replacing central bank reserves in banks' liquidity buffers. Banks have purchased larger amounts of bonds issued by EU sovereigns amid the normalisation of the ECB's balance sheet and the concomitant decline in excess reserves (**Chart 3.11**, panel a). As a result, banks' aggregate liquidity coverage ratios have remained largely stable of late. Notwithstanding their recent declines, holdings of excess reserves remain higher than pre-pandemic levels and are relatively evenly distributed across banks (**Chart 3.11**, panel b). From a repricing risk perspective, even a large and widespread increase in credit spreads on banks' sovereign bond portfolios would have a limited impact on their solvency, liquidity and profit metrics (**Chart 3.11**, panel c). But the effects could become more meaningful significant as banks absorb further sovereign bond issuance and their excess reserve buffers shrink.

Chart 3.11

Banks continue to absorb sovereign bonds, while excess liquidity remains ample



Sources: ECB (supervisory data, SHS) and ECB calculations.
Notes: Panel a: EU sovereigns include bonds issued by EU institutions (e.g. the European Investment Bank). Panel b: sample of 77 significant institutions. LCR stands for liquidity coverage ratio. Panel c: impact estimates represent losses in response to an interest rate shock of 200 basis points, for a sample of 87 significant institutions. LCR calculations only consider unencumbered Level 1 sovereign bonds (about 80% of total sovereign bond holdings); for CET1 ratios, only bonds accounted for at fair value (in other comprehensive income or through profit and loss) are included; for return on equity (ROE), the impact from bonds accounted for at fair value through profit and loss is included. The reported impact is gross of hedging, which means it may be overestimated.

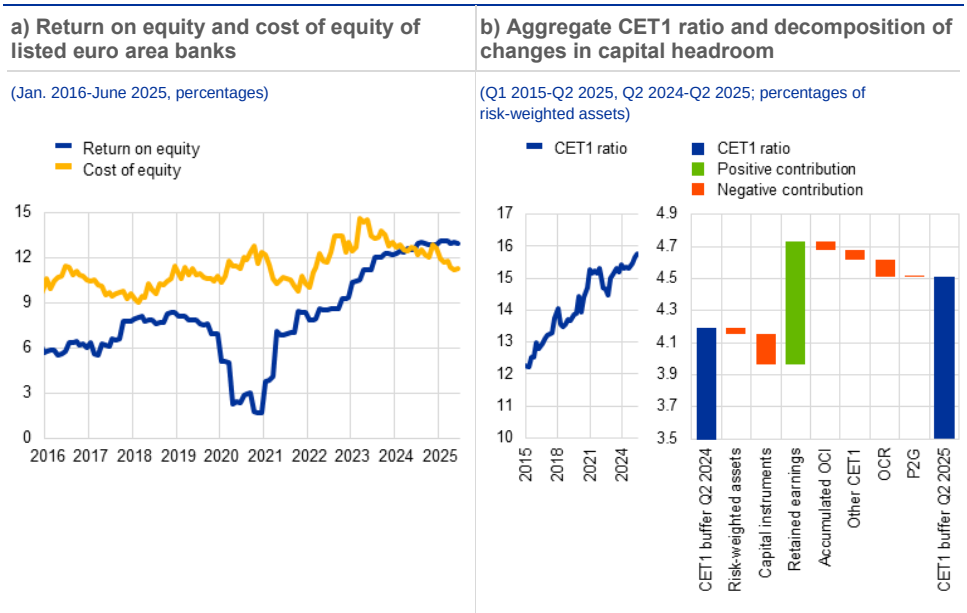
Banks' earnings now allow them to increase their capital while also meeting shareholder return requirements. For the first time in a decade, the return on equity of listed euro area banks has surpassed their cost of equity, driven by continually improving earnings and a decline in risk premia that has translated into lower returns required by shareholders (**Chart 3.12**, panel a, and **Section 3.1**). This allows banks to reconcile higher payouts with capital generation, as retained earnings have continued to bolster capital ratios and buffers (**Chart 3.12**, panel b).[54] Capital accumulation has increased the sector's resilience and enables banks to absorb shocks in an adverse macro-financial scenario, as confirmed by the results of the 2025 EU-wide stress test coordinated by the European Banking Authority and the ECB's macroprudential stress test extension report.[55] However, the aggregate picture masks the fact that a number of banks are still struggling to meet their cost of equity, given compressed earnings. Moreover, should the recent decline in core revenues indicate a turning point for profitability, some banks may once again face a trade-off between shareholder remuneration and the internal capital generation needed to meet credit demand.

54 See also the box entitled "Euro area bank fundamentals, valuations and cost of equity", *Financial Stability Review*, ECB, November 2023.

55 See "2025 EU-wide Stress Test", European Banking Authority, 1 August 2025, and "Macroprudential Bulletin", Issue 32, ECB, November 2025.

Chart 3.12

Banks' return on equity is now sufficient to increase capital while meeting shareholder return requirements



Sources: ECB (supervisory data), Bloomberg Finance L.P. and ECB calculations.
Notes: Panel a: for a balanced sample of 29 listed banks. Return on equity is the four-quarter trailing sum. The cost of equity of euro area banks is estimated based on Altavilla et al.* Panel b: OCI stands for other comprehensive income; OCR stands for overall capital requirement; P2G stands for Pillar 2 guidance. Capital instruments capture share buybacks, while retained earnings are calculated after dividend payouts.
*) Altavilla, C., Bochmann, P., De Ryck, J., Dumitru, A.-M., Grodzicki, M., Kick, H., Melo Fernandes, C., Mosthaf, J., O'Donnell, C. and Palligkinis, S., "Measuring the cost of equity of euro area banks", *Occasional Paper Series*, No 254, ECB, 2021.

3.5 Preserving bank resilience continues to be the primary goal of macroprudential policy in an uncertain environment

The euro area banking sector is resilient to adverse shocks, on the back of strong capital positions and effective macroprudential policies. The results of the 2025 EU-wide stress test show that euro area banks are generally well capitalised and capable of withstanding adverse shocks.[56] This can be attributed in part to the macroprudential policy measures implemented in recent years, which have helped to bolster the resilience of the banking sector. Since the previous edition of the Financial Stability Review, two more countries have increased their countercyclical capital buffers, bringing the level of releasable capital buffer requirements in banking union countries to 0.84% of risk-weighted assets.[57] These macroprudential buffers enhance the authorities' ability to strengthen banks' capacity to provide lending via buffer releases when facing adverse shocks, including those arising from the international economic environment.

56 See the final results of the 2025 stress test of euro area banks.

57 In July and October 2025, Spain and Greece increased their countercyclical capital buffer rates to 1.0% and 0.5% respectively, effective October 2026, with the aim of reaching the positive neutral target rates. Austria introduced a sectoral systemic risk buffer (sSyRB) of 1.0% for commercial real estate exposures in June, while Germany reduced its sSyRB on residential real estate exposures to 1.0% in April after reassessing risks. France deactivated its sSyRB in June for exposures to highly indebted non-financial corporations. Belgium announced the deactivation of its sSyRB on mortgage exposures and a simultaneous increase in its countercyclical capital buffer rate from 1.0% to 1.25%, effective July 2026.

Maintaining the current level of resilience in the banking sector is essential, as geopolitical and trade uncertainty remain elevated. Current releasable capital buffer requirements should be maintained to preserve bank resilience, while targeted increases in buffer rates could still be considered in countries with low releasable buffers, provided that the risk of procyclicality remains low.[58] At the same time, it is important to ensure that borrower-based measures are properly calibrated to maintain sound lending standards, particularly in countries experiencing strong increases in residential real estate prices. Finally, given the high degree of uncertainty, macroprudential policy must remain agile and adaptable to changing conditions.

Macroprudential policy should remain firmly focused on safeguarding financial stability, thereby benefiting the economy without compromising the banking sector's competitiveness as measured by profit efficiency.[59] While it has been argued that higher capital requirements restrict credit supply and weaken banks' competitiveness,[60] recent empirical evidence is not in line with this view. For example, post-pandemic studies suggest that increases in capital requirements have only modest effects on lending when banks are profitable and well capitalised.[61] Furthermore, empirical analyses have been conducted to estimate whether the overall capital requirement (OCR) and the CET1 capital ratio affect bank competitiveness, measured by how efficiently they generate profits. A bank is considered more profit efficient than its European peers if it earns higher profits using a similar mix of inputs. The evidence shows that the OCR does not have a significant impact on profit efficiency (**Chart 3.13**, panel a).[62] Moreover, higher CET1 capital ratios improve profit efficiency for banks that are not as well capitalised, as they benefit from lower funding costs and reduced earnings volatility (**Chart 3.13**, panel b).[63] By strengthening resilience and credit provision throughout the cycle and by limiting risk taking, macroprudential buffers help to ensure financial stability and thus boost banks' long-term competitiveness. Importantly, research also shows that appropriate macroprudential policy reduces the probability and impact of a banking crisis and

---

58 As noted in the Governing Council statement on macroprudential policies of 7 July 2025, a targeted recalibration or simplification of macroprudential measures may also be considered when such actions would not substantially reduce the overall resilience of the banking sector.

59 On the economic costs of systemic financial crises, see, for example, Lo Duca, M. et al., "A new database for financial crises in European countries – ECB/ESRB EU crises database", *Occasional Paper Series*, No 194, ECB, July 2017 (updated 2021).

60 For example, a 2023 report by the European Banking Federation and Oliver Wyman argues that euro area banks have to operate in a more stringent and more complex capital framework than their US counterparts, which contributes to their weaker competitiveness. The report estimates that easing capital requirements and streamlining supervision could unlock capacity amounting to an additional €4 trillion in bank lending, potentially boosting economic growth across Europe.

61 See, for example, Lang, J.H. and Menno, D., "The state-dependent impact of changes in bank capital requirements", *Working Paper Series*, No 2828, ECB, 2023, and 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.

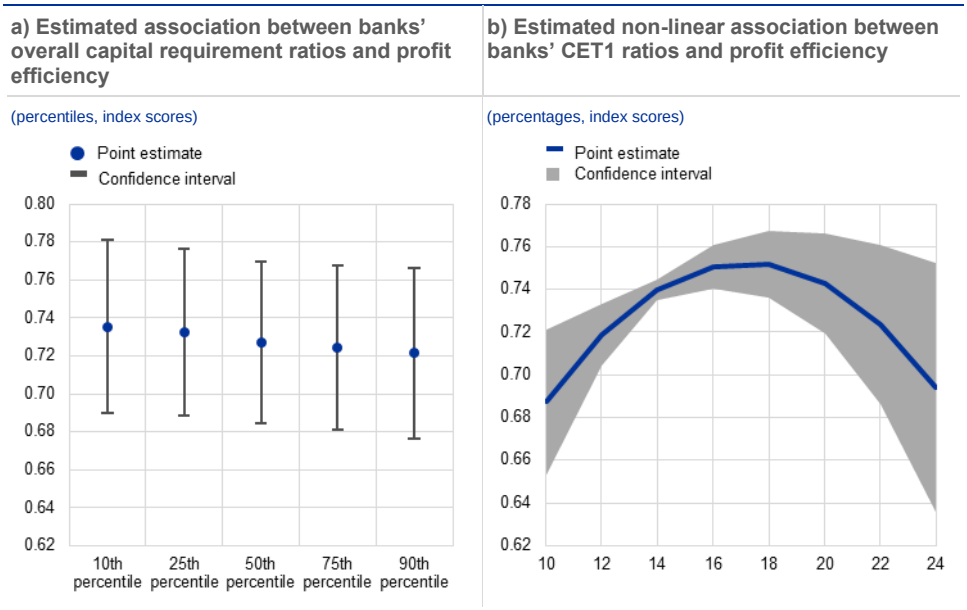
62 Confidence intervals for all point estimates in Chart 3.1, panel a) overlap almost fully, illustrating that there is no statistically significant relationship between the level of capital requirements and profit efficiency.

63 For more details, see Behn, M. and Reghezza, A., "Capital requirements: a pillar or a burden for bank competitiveness?", *Occasional Paper Series*, No 376, ECB, 2025.

attenuates real estate booms, both of which are harmful to economic productivity.[64] These findings underline the fact that effective macroprudential policy can help to enhance, rather than jeopardise, the euro area's competitiveness and productivity in the economy.

Chart 3.13

Bank competitiveness, as measured by profit efficiency, is unrelated to overall capital requirements, but higher CET1 ratios enhance competitiveness up to a certain point



Sources: ECB and ECB calculations.
Notes: Profit efficiency is defined as a bank's ability to produce the maximum output (profit) feasible given its inputs (costs). It is computed using data envelopment analysis. The methodology employs inputs (cost of equity, interest expenses, administrative expenses, provisioning costs and staff expenses) and outputs (interest and non-interest income) to compute profit efficiency scores. Profit efficiency scores range between zero and one. A higher score indicates a higher level of profit efficiency. The profit efficiency scores are then employed to study the relationship between profit efficiency, as a measure of competitiveness, and both overall capital requirements (OCR) and the CET1 ratio. Panel a) shows the estimated profit efficiency scores at various levels of banks' OCR ratios. These levels correspond to the descriptive statistics of the OCR ratio: 8%, 8.5%, 9.5%, 10% and 10.5%, which represent the 10th percentile, 25th percentile, median, 75th percentile and 90th percentile of the OCR distribution respectively. The confidence intervals are reported at the 95% level. The dependent variable is the profit score, and the regression controls for a large set of bank and country-specific characteristics, including the logarithm of total bank assets, the non-performing loans ratio, the cash and cash at the central bank/total assets ratio, the deposits/total assets ratio, the loan/total assets ratio, the industrial production index, the inflation rate, the slope of the yield curve and the total assets Herfindahl-Hirschman Index. Bank and quarter fixed effects are included in all regressions. The estimation sample is for Q4 2019-Q4 2024. Panel b) plots the estimated profit efficiency scores (blue line) along with a 95% confidence interval (grey shaded area) at various levels of bank CET1 ratios. The inverted U-shaped relationship is modelled using a quadratic interaction term for the CET1 ratio variable in the econometric specification. The regressions control for the same set of bank and country-specific characteristics as those described above.

Notable progress has been made regarding the Fundamental Review of the Trading Book and the review of the Crisis Management and Deposit Insurance (CMDI) framework. In June 2025 the European Commission adopted a new

[64] Banking crises severely hinder productivity through the imposition of credit constraints, disruption to innovation and the destruction of labour productivity via wage scarring, for example. See Oulton, N. and Sebastiá-Barriel, M., "Effects of Financial Crises on Productivity, Capital and Employment", *The Review of Income and Wealth Paper*, Vol. 63, Issue 1, 2017, pp. S90-S112, and Redmond, M. and Van Zandweghe, W., "The Lasting Damage from the Financial Crisis to U.S. Productivity", *Economic Review,* Federal Reserve Bank of Kansas City, Vol. 101, 2016. Similarly, booms – particularly those in real estate – negatively affect productivity by misallocating credit and other economic resources away from productive economic activity and towards speculation in real estate (see, for example, Müller, K. and Verner, E., "Credit Allocations and Macroeconomic Fluctuations", *The Review of Economic Studies,* Vol. 91, Issue 6, 2024, pp. 3645-3676; Basco, S. et al., "House Prices and Misallocation: The Impact of the Collateral Channel on Productivity", *The Economic Journal,* Vol. 135, 2025; and Chakraborty, I. et al., "Housing Price Booms and Crowding-Out Effects in Bank Lending", *The Review of Financial Studies,* Vol. 31, Issue 7, 2018, pp. 2806-2853, among others).

delegated act[65] postponing the application of the Fundamental Review of the Trading Book by one additional year, until 1 January 2027.[66] This decision was taken with a view to preserving an international level playing field, given that some major global jurisdictions have delayed the implementation of Basel III still further. At the same time, the European Parliament and the Council have reached agreement on the review of the CMDI framework. This marks a significant milestone on the path to completing the banking union and represents a step forward in strengthening the EU's bank resolution framework. The revised framework could significantly contribute to safeguarding financial stability and protecting depositors, while preventing the burden falling on taxpayers when banks fail. It will make it easier for the authorities to manage bank crises by improving access to resolution funding for smaller and medium-sized banks. The ECB has called for the revised framework to be adopted swiftly. Looking ahead, the conclusion of the CMDI review should allow further progress to be made towards completing the banking union (including the European deposit insurance scheme) and establishing an EU-level framework for liquidity in resolution.

The ECB is committed to reducing unwarranted complexities in regulation, supervision and reporting while maintaining resilience and compliance with international standards. The resilience of the EU banking sector has been demonstrated by its stability during recent crises like the COVID-19 pandemic and the banking turmoil of March 2023. This resilience is largely the result of the global regulatory reforms implemented in the wake of the global financial crisis. These reforms have strengthened both the quality and the quantity of banks' capital and enhanced their liquidity positions.[67] However, they have also increased the complexity of the regulatory framework and added to the compliance burden faced by banks. While the regulatory framework reflects the inherent intricacy of bank business models, undue regulatory complexity needs to be minimised. Recognising this, the ECB has set up the High-Level Task Force on Simplification, comprising the ECB's Vice-President and five governors of euro area national central banks as well as an ECB representative to the ECB's Supervisory Board. The Task Force is working on ways to simplify the regulatory framework and streamline reporting requirements and supervisory processes. The goal is to eliminate overlaps and inefficiencies while maintaining the current level of resilience in the banking sector, ensuring that prudential objectives continue to be met effectively, and adhering to international standards. The Task Force aims to conclude its work by the end of 2025. At that point, any final proposals will be presented to the European Commission.

The ECB emphasises the need for progress on the review of the EU macroprudential framework by the European Commission, incorporating any proposals set out by the Task Force. The review should focus on promoting the

---

65 See "Commission proposes to postpone by one additional year the market risk prudential requirements under Basel III", *press release*, European Commission, 12 June 2025.

66 Commission Delegated Regulation (EU) 2025/1496 of 12 June 2025 amending Regulation (EU) No 575/2013 of the European Parliament and of the Council with regard to the date of application of the own funds requirements for market risk (OJ L, 2025/1496, 19.9.2025).

67 Research by the ECB and the Basel Committee on Banking Supervision shows that the benefits derived from these reforms since the global financial crisis outweigh their costs. See Budnik, K., Dimitrov, I., Gross, J., Lampe, M. and Volk, M., "Macroeconomic impact of Basel III finalisation on the euro area", *Macroprudential Bulletin,* Issue 14, ECB, 2021, and "Evaluation of the impact and efficacy of the Basel III reforms", Basel Committee on Banking Supervision, 2022.

consistent use of macroprudential tools across Member States, making implementation procedures more effective and enhancing information sharing among authorities. The ECB supports any revisions that enable the authorities to build up releasable capital buffers in a timely manner to strengthen banks' resilience in an uncertain macro-financial environment. At the same time, the ECB acknowledges that overlaps between risk-weighting, leverage-ratio and resolution requirements could limit the usability of some capital buffers in scenarios where materialised losses are large and widespread. In this context, the forthcoming proposals should take a holistic approach to prudential and resolution requirements, ensuring that capital buffers can be used and released more easily.[68]

[68] See Zsámboki, B., Doležal, J., Singh, J., Leitner, G. and Vasilakos, S., "Buffer usability in a complex world", *Occasional Paper Series*, No 374, ECB, 2025. The authors estimate buffer usability to be around 40-50%, depending on the analytical approach used.

4 Non-bank financial sector

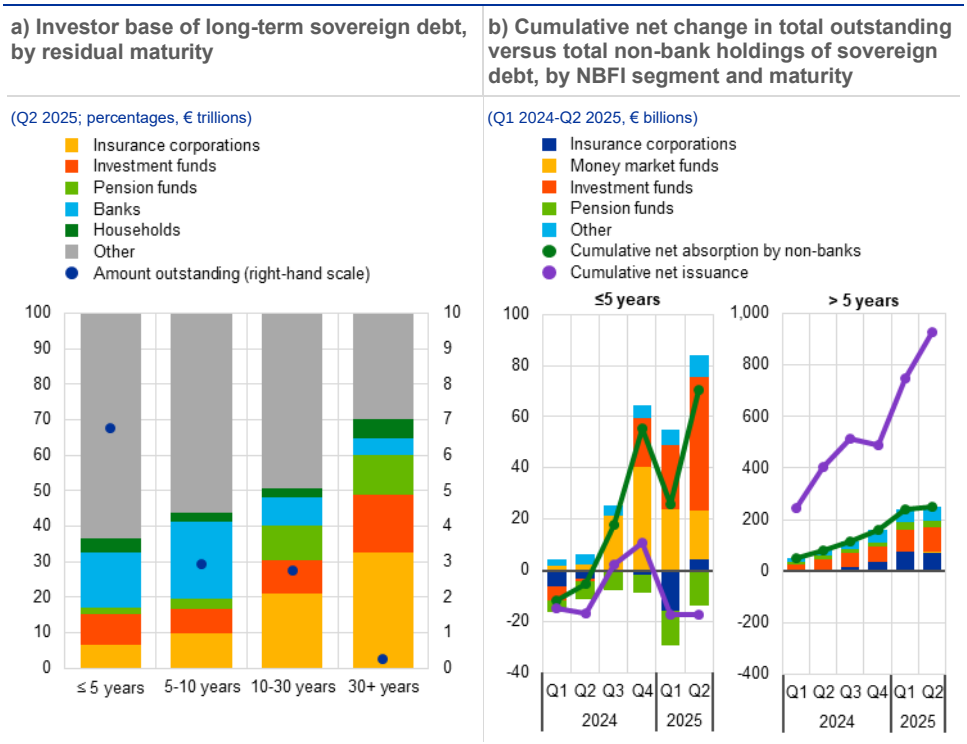
4.1 The non-bank financial sector remains vulnerable to valuation shocks

The non-bank financial intermediation (NBFI) sector is an important provider of funding to the euro area real economy and its governments. The financing of non-financial corporations (NFCs) by non-banks has expanded steadily over the past decade and now accounts for an estimated share of up to 37% of euro area NFC

credit, depending on the measure used.[69] Ten years ago the figure was around 33%, while twenty years ago it was only 20%. Although business models and investment portfolios vary across the diverse NBFI ecosystem, the sector as a whole remains a stable source of funding for euro area governments, holding about 27% of euro area sovereign debt. Non-banks are particularly important for long-term government financing. The NBFI sector holds about 40% of outstanding euro area government debt securities with residual maturities of between ten and 30 years, and 60% of those with maturities of 30 years or more (**Chart 4.1**, panel a). Insurance corporations and pension funds represent the largest euro area institutional investors in long-term sovereign bonds, typically holding such securities until maturity.

Chart 4.1

Non-banks have recently increased the absorption of short-maturity bonds while reducing their net intake at the long end of the yield curve, indicating a portfolio shift



Sources: ECB (CSDB, CSEC, SHS) and ECB calculations.
Notes: Panel a: the referenced sectors refer to euro area holders, while "Other" includes other non-specified euro area holders, non-euro area holders and the Eurosystem. Insurance corporations, investment funds and pension funds constitute the NBFI sector. Panel b: net issuance is defined as cumulative quarter-on-quarter net changes in issued securities, while non-bank absorption refers to cumulative quarter-over-quarter net changes in the holdings of the euro area NBFI sector. "Other" includes all other euro area holders besides those listed in the chart.

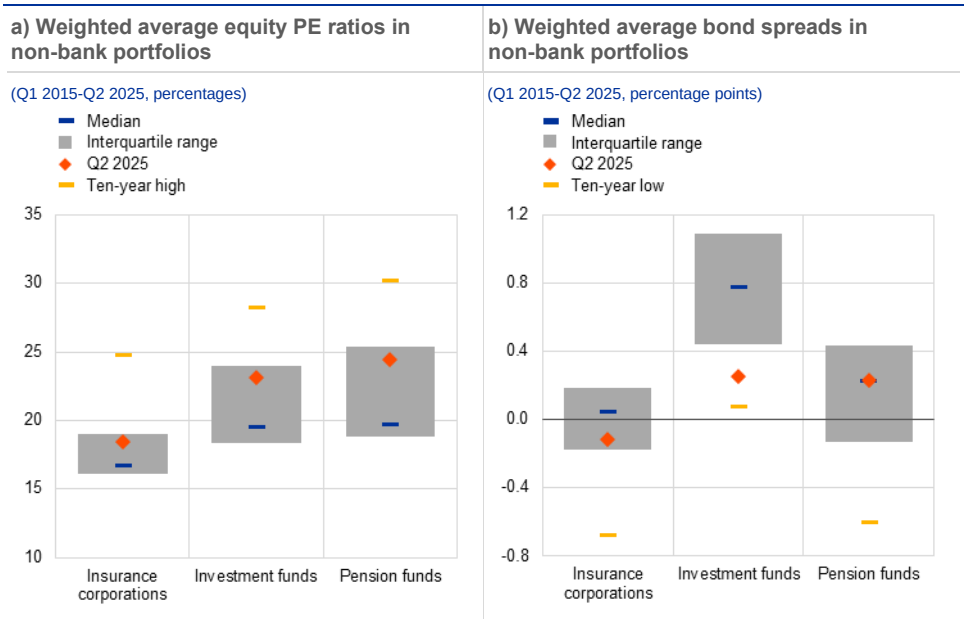
The recent steepening of the yield curve has been associated with a shift in the composition of non-banks' bond portfolios, with weight moving slowly towards the shorter end. Several structural demand and supply shifts have been driving the recent increase in long-term sovereign bond yields in the euro area and are currently having an impact on the important role played by non-banks in bond markets (see **Chapter 2**). Non-banks, especially insurance corporations and pension funds, have

[69] Estimates of the non-bank share in NFC credit depend heavily on the inclusion of a residual of other financial intermediaries (OFIs). Excluding OFIs, the measure amounts to 23% of euro area NFC credit. For more details, see Box 2 in "Financial Integration and Structure in the Euro Area", ECB, 2022.

long been and still are a stable funding base for sovereign and corporate debt. However, the composition of their portfolios continues to shift slowly from longer to shorter maturities, despite increasing sovereign bond issuance at the long end (**Chart 4.1**, panel b). The reform of the Dutch pension system may result in a sell-off of bonds and interest rate swaps with long maturities as the individual pension funds move from defined benefit to defined contribution schemes.[70] With traditional hold-to-maturity investors reducing their absorption of long-maturity bonds, the funding base of sovereigns at the long end may shift towards more "flighty" investors, increasing the risks to government financing posed by bond market volatility.[71]

Chart 4.2

Non-bank portfolios remain vulnerable to shocks given holdings of risky assets, high equity valuations and tight credit spreads in their securities portfolios



Sources: ECB (SHS), LSEG and ECB calculations.
Notes: Panel a: the price/earnings (PE) ratio calculation is limited to non-bank holdings within the S&P 500, EURO STOXX 600, Nikkei 225 and FTSE 100 indices, accounting for their changing compositions over time. The metric used is the 12-month forward PE ratio. The PE ratios are weighted by the market value of each equity holding relative to the total market value of the portfolio. Panel b: the spreads are calculated as the difference between an individual security's yield to maturity and a corresponding benchmark rate. Euro-denominated holdings are benchmarked against the euro area ten-year government benchmark bond yield while US dollar and all other currency holdings are benchmarked against the ten-year US Treasury yield. Each security's yield is compared with the respective common ten-year benchmark, regardless of its individual maturity. In a standard, upward-sloping yield curve environment, yields on shorter-maturity bonds can be lower than the ten-year benchmark rate. The spreads are weighted by the market value of each individual debt security.

Non-banks' portfolios show signs of elevated valuations, exposing the sector to credit risk and the risk of sudden price adjustments. Current market valuations reflect significant market optimism driven, among other things, by high expectations of future earnings growth or a fear of missing out on gains from a continued rally (see

70 Defined benefit schemes guarantee retirees a predetermined benefit, typically financed by the employer and employee contributions and investor returns, with pension funds often favouring assets that generate predictable cash flows to match future liabilities. Defined contribution schemes, on the other hand, provide a variable benefit depending on the individual contributions to the scheme and the return on investment, reducing the sector's need for liability matching and shifting market risk to individuals. As such, defined contribution schemes may allow or even encourage a greater allocation to riskier and potentially higher-yielding assets over long investment horizons.

71 In the first half of 2025, banks, foreign investors and households were strong net absorbers of long-term sovereign debt securities. Such investors may not necessarily hold these securities to maturity.

Chapter 2). High valuations are also mirrored in non-banks' holdings, with equity portfolio valuations now standing close to the 75th percentile observed in the past decade (**Chart 4.2**, panel a). These high valuations leave the sector exposed to broad, abrupt price adjustments, should investor sentiment shift or fall short of expectations. Furthermore, heavy concentration in highly valued US and (especially) tech stocks increases the sector's vulnerability to both market-wide valuation adjustments and idiosyncratic shocks. The picture is more nuanced with regard to bond holdings. Weighted average spreads of investment funds' bond portfolios are close to their ten-year low (**Chart 4.2**, panel b), reflecting elevated bond valuations, for example in the high-yield segment, but also a portfolio composition with a higher share of riskier bond types. In the high-yield segment in particular, overly benign valuations may mask significant credit risks. Insurance corporations hold bond portfolios with less extreme but still elevated valuations, while the valuation of pension funds' bond portfolios is at the historical median, likely mirroring the relatively high share of longer-dated government debt securities that both sectors hold. Insurance corporations maintain portfolios with a significantly lower share of equities than do investment funds and pension funds, even though the proportion has been increasing slowly over time for all three types of entity.

Highly valued assets expose non-banks to sudden price shocks, with potentially adverse knock-on effects on financial markets. The combination of highly valued and concentrated portfolios with low liquidity buffers in some non-bank types exposes the sector as a whole to financial stability risks from market shocks (see **Section 4.2**). When highly valued assets correct quickly, non-banks can face valuation losses, margin calls and fund share redemptions. This would result in forced asset sales and reduce the ability of non-banks to make markets, potentially further exacerbating price declines. Risks for sudden valuation shocks may be especially pronounced in private equity and credit markets due to the opaqueness of valuations, the illiquid nature of investments and pockets of elevated credit risk in these markets.

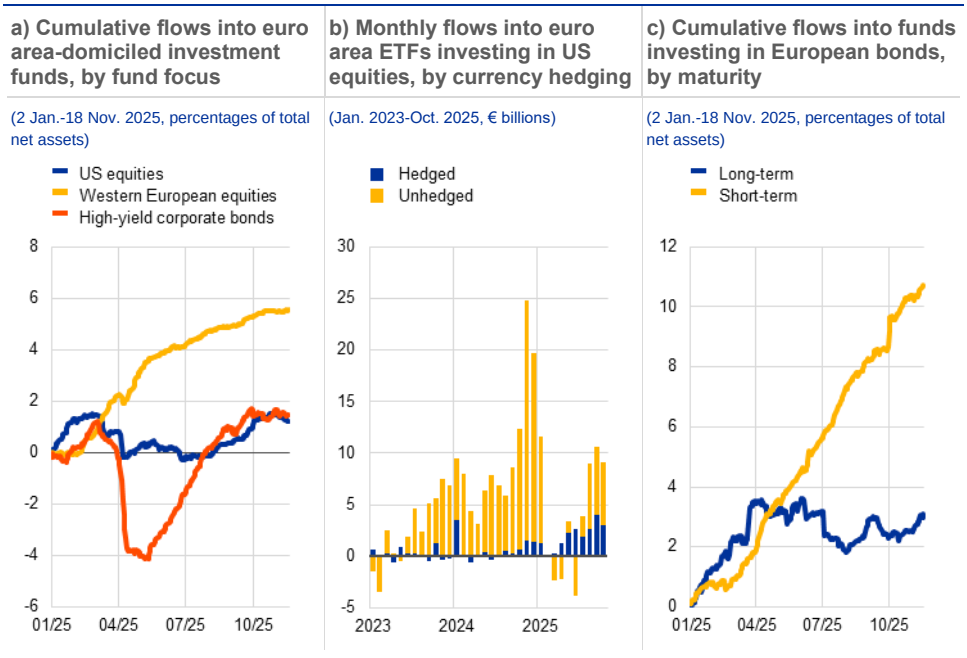
Interconnectedness within and between the non-bank and banking sectors results in potentially systemic financial stability risks. Borrowing by non-banks accounts for 10% of euro area banks' total assets, but 17% of banks' liabilities are attributable to non-bank funding, meaning that non-banks are net lenders to euro area banks (see **Special Feature B**). Non-bank funding tends to be short term and can be "flighty" in times of market stress, exposing banks to rollover and redemption risks. Additionally, banks' provision of leverage to non-banks exposes the banking sector to credit risk and could amplify market swings should banks cut lending to non-banks in times of stress. Finally, increasing interconnectedness within the NBFI sector means that risks from liquidity mismatches and high valuations in investment funds and private markets may spill over to insurance corporations and pension funds (see **Section 4.2**). Insurance corporations and pension funds increasingly manage their investments in listed equities and bonds through fund shares instead of direct asset holdings.

4.2 Flows into investment funds recover, while hedge funds' footprint and leverage continue to grow

Investment fund flows have recovered from the April turmoil, especially in high-yield and shorter-maturity bond funds. Euro area investors' demand for European equities has continued in 2025, while flows into funds holding US equities have remained subdued since the April turmoil, despite a slight pick-up of late (**Chart 4.3**, panel a). A breakdown of more recent flows into US-equity ETFs shows that investors are increasingly looking to hedge US dollar currency risks (**Chart 4.3**, panel b), while flows into high-yield bond funds have recovered strongly amid record spread compression (see **Chapter 2**). In a context of elevated macroeconomic uncertainty, investors have been showing a preference for short-term rather than long-term bond funds (**Chart 4.3**, panel c). This is also reflected in the recent steepening of the yield curve. The stalling of long-term bond fund flows mirrors the recent shift in bond absorption in the wider non-bank financial intermediation sector towards the shorter end (see **Section 4.1**). A less stable investor base and lower demand for long-term sovereign bonds could contribute to vulnerabilities in bond markets and increase the risk of market volatility, particularly if fiscal positions in some euro area countries were to deteriorate further.

Chart 4.3

Investment fund flows into risky assets recover from the April trade shock amid increasing demand for currency-hedged US equities and shorter-maturity bonds



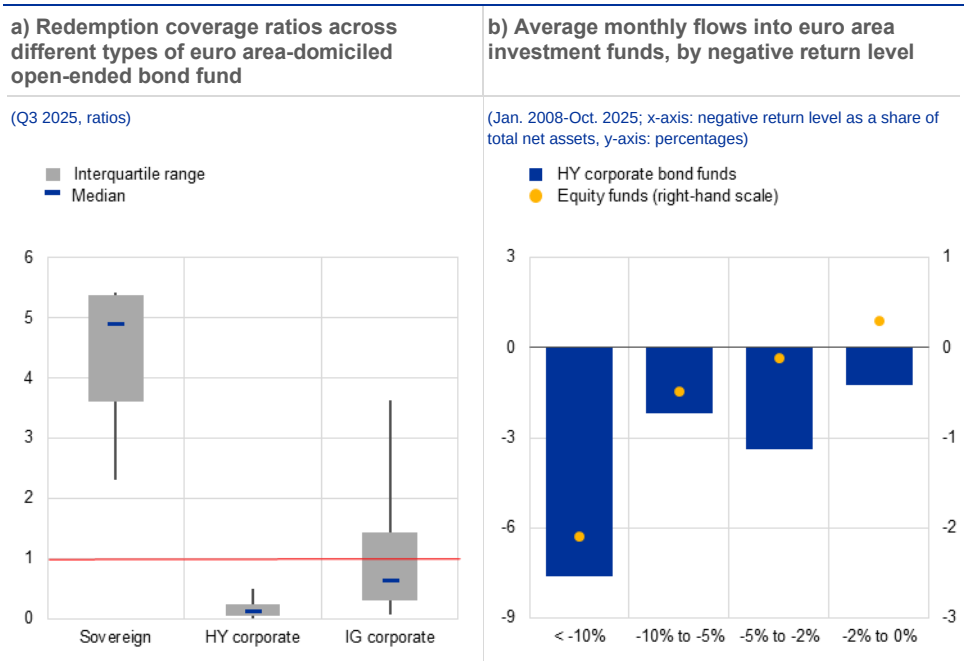
Sources: EPFR Global, Bloomberg Finance L.P. and ECB calculations.
Notes: Panel b: ETFs stands for exchange-traded funds. Data are at monthly frequency and refer to month-end values. The latest observations are for 31 October 2025. Panel c: short-term bond funds invest in bonds with durations of between zero and four years. Long-term bond funds invest in bonds with durations of six years or more. A bond fund with duration of five years is classified as intermediate term.

Concentrated exposures to US assets and liquidity mismatches make investment funds vulnerable to procyclical asset sales. After years of strong inflows and valuation gains in US equities, euro area equity funds now maintain large

positions in US stocks with high concentration risk and valuation risk. While the recent depreciation of the US dollar against the euro has increased demand for hedged products, most funds remain additionally exposed to exchange rate risk. These portfolios are therefore highly susceptible to valuation risk arising from both adverse exchange rate movements and sudden stock price adjustments. Previous episodes of shocks to financial markets have illustrated how open-ended investment funds may amplify price declines via procyclical asset sales. Spikes in share redemptions, like those that followed the market turmoil in April this year, can force funds to sell less-liquid assets at unfavourable market conditions. This risk is particularly pronounced in fund types with high liquidity mismatches, such as real estate funds and high-yield corporate bond funds (**Chart 4.4**, panel a). Procyclical investor behaviour can further amplify market downturns, as investors in funds focusing on riskier assets tend to redeem their shares when returns are negative (**Chart 4.4**, panel b). The composition of a fund's investor base can play an important role in determining how procyclical open-ended fund flows are. While institutional investors' leverage and short-term investment strategies may lead to higher redemption shocks in periods of stress, a broad household investor base can reduce procyclicality (see **Box 2**).

Chart 4.4

Liquidity mismatches in open-ended funds and procyclical asset sales continue to pose a significant financial stability risk



Sources: Bloomberg Finance L.P., EPFR Global, LSEG Lipper and ECB calculations.
Notes: Panel a: HY stands for high-yield; IG stands for investment-grade. The redemption coverage ratio (RCR) measures investment funds' resilience to redemption shocks, following the methodology set out in the November 2023 edition of the Financial Stability Review*. The RCR is obtained by dividing the value of fund-level high-quality liquid assets according to Commission Delegated Regulation (EU) 2015/61 by net outflows experienced in a severe but plausible scenario lasting 30 days. An RCR above 1 indicates that high-quality liquid assets are sufficient to cover outflows, while an RCR below 1 indicates insufficient coverage. The boxplots display the distribution per fund group of the resulting fund-level RCRs. The whiskers refer to the 5th and 95th percentiles.
*) See the box entitled "Assessing liquidity vulnerabilities in open-ended bond funds: a fund-level redemption coverage ratio approach", *Financial Stability Review*, ECB, November 2023.

European and global hedge funds have levered up considerably since late 2022 and expanded their footprint in euro area sovereign bond markets. Over the past two years, financial leverage has risen by 30 percentage points on average in euro

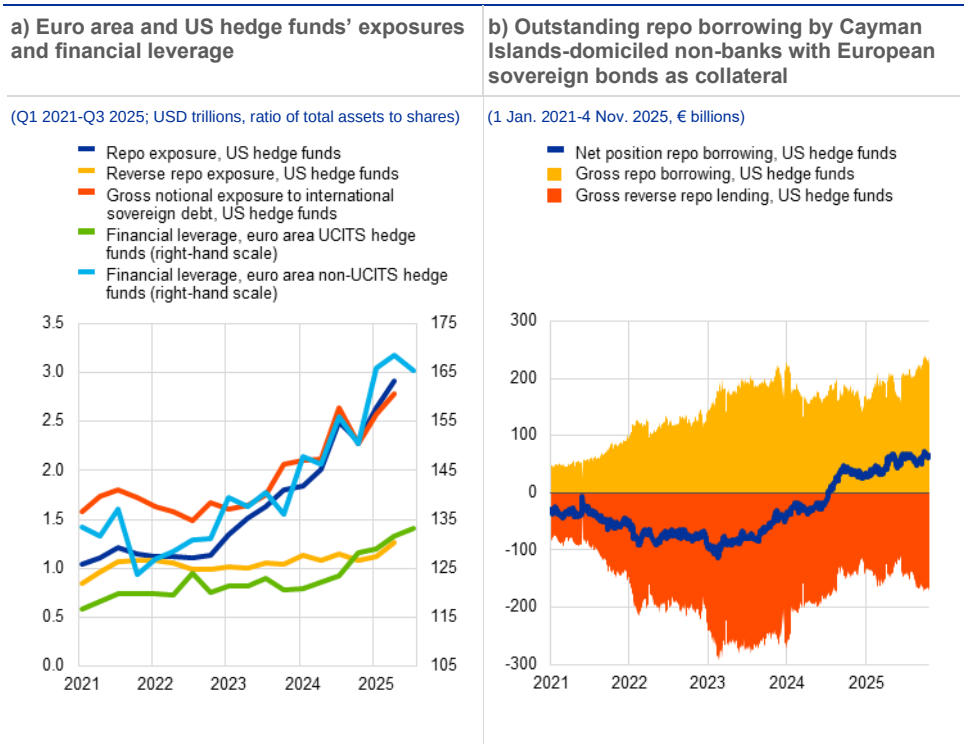
area-domiciled hedge funds that are not subject to the Undertakings for Collective Investment in Transferable Securities (UCITS) Directive, to around 165% of total assets as at the first quarter of 2025 (**Chart 4.5**, panel a). However, these aggregate figures mask the concentration of hedge funds with significantly higher leverage ratios in the tail of the distribution. Both UCITS and non-UCITS hedge funds make extensive use of synthetic leverage and may be exposed to simultaneous liquidity risk from margin calls and procyclical redemption requests in periods of stress (see **Box 4**). While the presence of hedge funds in bond markets does not in itself increase bond market volatility, it may significantly amplify financial shocks when leveraged positions have to be unwound.[72] US hedge funds, which are often domiciled in the Cayman Islands, have ramped up their overall exposure to international sovereign debt by around USD 1 trillion and their net repo borrowing by more than USD 1.3 trillion since late 2022. Since mid-2024, they have also been net repo borrowers, using euro area sovereign bonds as collateral (**Chart 4.5**, panel b), likely reflecting basis trade activity in euro area markets. Basis trades commonly use extensive repo borrowing to fund long positions in sovereign bonds while shorting corresponding futures. This type of activity can pose significant risks in the event of sudden yield changes: liquidity-constrained funds facing margin and collateral calls may be forced to unwind their positions, thereby amplifying declining prices through additional sovereign bond sell-offs.[73]

[72] See Ferrara, F.M. et al., "Hedge funds: good or bad for market functioning?", *The ECB Blog*, ECB, 24 September 2024.

[73] 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.

Chart 4.5

Hedge funds have increased leverage and activity in euro area sovereign bond markets



Sources: Office of Financial Research (OFR), ECB (IVF, SFTDS) and ECB calculations.
Notes: Panel a: financial leverage is defined as the ratio of total assets to outstanding fund shares. US hedge funds include all investment advisers registered with the U.S. Securities and Exchange Commission (SEC) with at least USD 150 million in private fund assets under management. Euro area hedge funds are the entire universe of funds reported in the ECB's Investment Funds Balance Sheet Statistics (IVF) dataset. Financial leverage series end in Q3 2025, while the other series end in Q1 2025. Panel b: the chart includes all non-banks domiciled in the Cayman Islands that have repo or reverse repo transactions with euro area counterparts and use euro area sovereign debt as collateral in these transactions.

Box 4

Procyclicality and leverage of euro area UCITS hedge funds: an unhealthy mix

Prepared by Paolo Alberto Baudino, Oscar Schwartz Blicke and Maurizio Michael Habib

Hedge funds represent a relatively small segment of the euro area investment fund sector and comprise both AIF and UCITS hedge funds. The total assets of euro area hedge funds stood at around €660 billion in the third quarter of 2025, equivalent to roughly 3% of the investment fund sector's total assets. In the EU, hedge funds may fall either under the Alternative Investment Fund Managers Directive (AIFMD)[74] or the Undertakings for Collective Investment in Transferable Securities (UCITS) Directive.[75] AIF hedge funds are usually marketed to wealthy investors and are predominantly held by euro area investment funds. They offer limited liquidity, by allowing redemptions only quarterly or even annually (often with advance notice), for example, and by imposing lock-up periods on initial investments. By contrast, UCITS hedge funds are more accessible to retail investors and other non-bank sectors – with euro area households and insurance

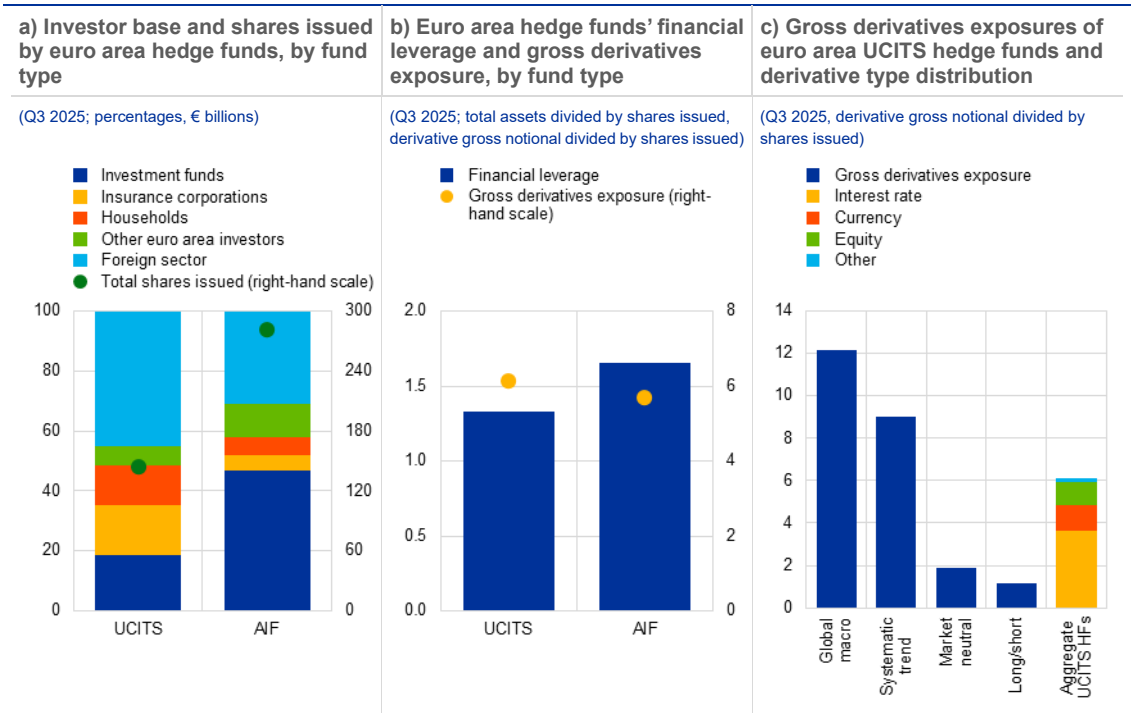
74 Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010 (OJ L 174, 1.7.2011, p. 1).

75 Directive 2009/65/EC of the European Parliament and of the Council of 13 July 2009 on the coordination of laws, regulations and administrative provisions relating to undertakings for collective investment in transferable securities (UCITS) (OJ L 302, 17.11.2009, p. 32).

corporations each holding around 15% of the shares in such funds. As these funds often allow investors to redeem shares on a high-frequency basis, the sector is more exposed to fund share redemptions during market turmoil. UCITS hedge funds account for about 30% of the overall hedge fund sector in terms of shares issued (**Chart A**, panel a) as well as total assets.

Chart A

UCITS hedge funds exhibit higher retail participation and use derivatives more intensively than do AIF hedge funds



Sources: ECB (EMIR, IVF, SHS), Morningstar Direct[76] and ECB calculations.
Notes: the sample of euro area UCITS and AIF hedge funds is derived from the ECB's investment fund list classification. AIF stands for alternative investment fund. Panel a: the investor base is proxied by information available for traded securities. The latest available information on the investor base refers to Q2 2025. For a discussion of different measures of leverage for hedge funds, see the article entitled "Leveraged investment funds: A framework for assessing risks and designing policies", *Macroprudential Bulletin*, Issue 26, ECB, 2025. Panel c: hedge fund strategies follow the Morningstar Direct classification. HFs stands for hedge funds.

As UCITS hedge funds have relatively high derivatives exposure and leverage, they warrant attention from a financial stability perspective. Both UCITS and AIF hedge funds employ a wide range of investment strategies, including leveraged trades, to achieve positive absolute returns. Because of regulatory constraints on borrowings,[77] UCITS hedge funds make less use of financial leverage than AIF hedge funds do, with a total assets/equity ratio of 1.3 for UCITS hedge funds versus 1.7 for AIF hedge funds. However, synthetic leverage through derivatives is more pronounced in UCITS hedge funds, with gross notional derivatives exposure reaching up to 12 times equity for

[76] Please note that Morningstar Direct data are provided for informational purposes only and may not be reproduced or redistributed without prior authorisation.

[77] Article 83 of the UCITS Directive restricts UCITS' borrowing to a maximum of 15% of assets, albeit only on a temporary basis.

fund categories such as global macro strategies (**Chart A**, panels b and c).[78] In addition, UCITS hedge funds hold a lower proportion of highly liquid assets (e.g. cash and sovereign bonds) than AIF hedge funds do.[79] This leaves them more vulnerable to liquidity risk from redemption shocks or margin calls. Although some research has been carried out on the performance of UCITS hedge funds, this box sheds light on their liquidity and leverage-related risks, given their importance for financial stability.[80]

Procyclical flows and larger redemptions from leveraged funds in times of stress can lead to asset sales and mounting liquidity pressures during periods of high market volatility. Evidence from a panel of 457 UCITS hedge funds shows that their flows are procyclical, positively correlated with past returns (**Chart B**, panel a) and in line with the findings for other fund categories.[81] Although the analysis does not indicate that leverage generally amplifies the flow procyclicality of UCITS hedge funds, it does show larger outflows from leveraged UCITS hedge funds in periods of market stress (**Chart B**, panel b). Since fund share redemptions may force funds to sell assets when markets are under pressure, leveraged funds could be required to close larger positions, thereby amplifying stress.

The use of derivatives by UCITS hedge funds can intensify liquidity pressures via margin calls. Derivatives positions, which can be used for hedging or for leverage, are subject to margin requirements. During periods of elevated price volatility and significantly negative returns, margin calls on these derivatives positions tend to increase (**Chart B**, panel c), further straining a fund's liquidity.[82] This exacerbates the challenges faced by leveraged UCITS hedge funds, as they have to manage liquidity to meet both margin calls and redemption requests simultaneously. Interaction between these factors can heighten liquidity strains and contribute to broader market stress under adverse market conditions.[83]

78 While most UCITS hedge funds are subject to direct leverage limits, the UCITS Directive allows funds with hedge fund-like strategies to use value-at-risk models to determine their leverage indirectly. This could potentially lead to higher leverage levels than those typically permitted under the more widely used commitment approach, which converts derivatives exposures into cash-equivalent positions, resulting in "global exposure" after netting and reinvested cash collateral. The analysis in this box is based on measuring synthetic leverage on the basis of gross derivatives exposure, which may overestimate leverage, as this does not take hedging and netting effects into account (for a discussion, see "Leveraged investment funds: A framework for assessing risks and designing policies", *Macroprudential Bulletin*, Issue 26, ECB, 15 January 2025). It should be noted that UCITS hedge funds display higher leverage and higher risks than AIFMD-compliant funds across a range of different dimensions, including complexity, liquidity and interconnectedness. See "Risks in UCITS using the absolute Value-at-Risk approach", *TRV Risk Analysis*, European Securities and Markets Authority, 24 April 2025.

79 See the special feature entitled "Synthetic leverage by UCITS using the absolute VaR approach", EU *Non-bank Financial Intermediation Risk Monitor*, European Systemic Risk Board, 1 September 2025.

80 UCITS hedge funds tend to underperform conventional hedge funds. This is because of regulatory constraints such as those governing eligible assets, diversification and short selling, while neither redemption terms nor the level of leverage explain the underperformance. See Joenväärä, J. and Kosowski, R., "The effect of regulatory constraints on fund performance: New evidence from UCITS hedge funds", *Review of Finance*, Vol. 25(1), 2021, pp. 189-233.

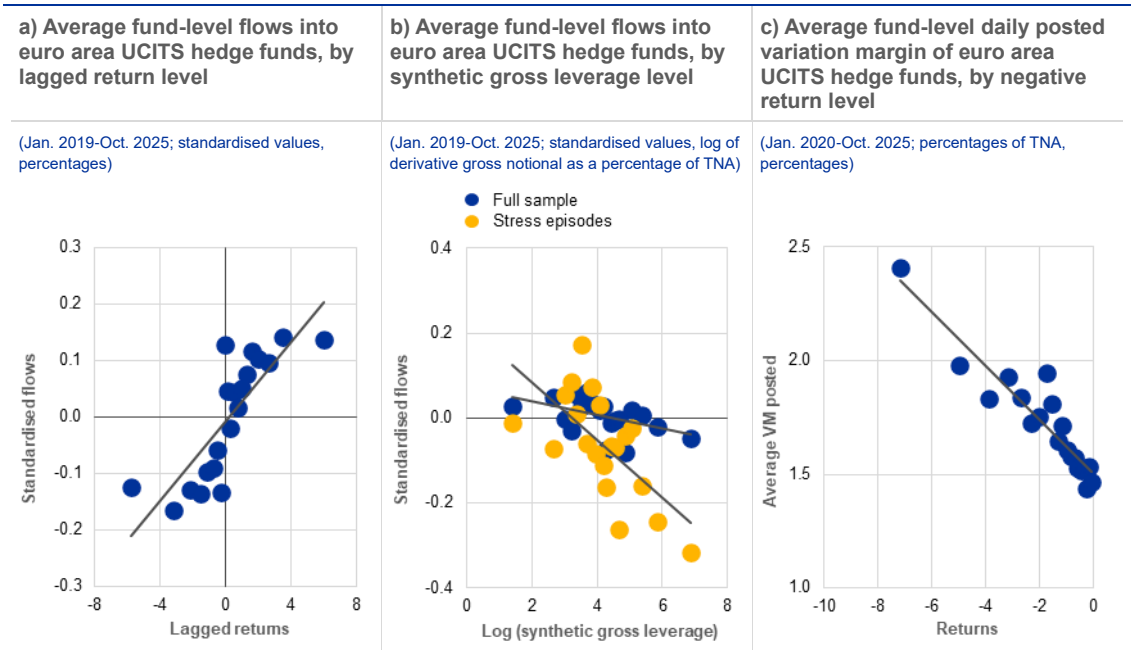
81 See the analytical framework and results obtained by Vivar, L.M., Wedow, M. and Weistroffer, C., "Burned by leverage? Flows and fragility in bond mutual funds", *Journal of Empirical Finance*, Vol. 72, 2023, pp. 354-380.

82 See the box entitled "Synthetic leverage and margining in non-bank financial institutions", *Financial Stability Review*, ECB, May 2022.

83 For further background on procyclicality in the non-bank financial intermediation sector, see Aramonte, S., Schrimpf, A. and Shin, H.S., "Non-bank financial intermediaries and financial stability", *BIS Working Papers*, No 972, Bank for International Settlements, 2021.

Chart B

Flows into UCITS hedge funds tend to be procyclical, while margin calls may intensify liquidity risk



Sources: ECB (EMIR), EPFR Global, Morningstar Direct[84] and ECB calculations.
Notes: Panel a: the sample is based on funds that have been classified as UCITS hedge funds in the ECB's investment fund list since 2009, to limit survivorship bias. The analysis is restricted to funds pursuing major hedge fund-like strategies, as classified by Morningstar Direct, and which have substantial representation in the sample. These strategies include global macro, systematic trend, options trading, market neutral and long/short strategies. Fund-level returns are calculated by aggregating the returns for each fund's share classes, weighted by the total net assets (TNA) of each share class. Fund-level flows and TNA are obtained by aggregating the corresponding values across all the share classes within each fund. Flows are expressed as percentages of TNA and standardised to remove trends from the data. Panel b: stress episodes are defined as months in which the VIX exceeds the 90th percentile of our sample. Synthetic leverage is proxied by the gross notional value of derivatives excluding interest rate and FX contracts, which are extensively used for hedging, as a share of fund-level TNA. Panel c: average posted variation margin (VM) is calculated as the mean of fund-level daily margin amounts posted as percentages of fund TNA.

A robust stress-testing framework for leveraged UCITS hedge funds is essential to ensure their resilience and limit the risks to financial stability in turbulent market conditions. The combination of outflows and margin calls on derivatives positions can intensify liquidity pressures for UCITS hedge funds during periods of stress. This raises concerns about the ability of such funds to manage the challenges and contributes to broader financial instability. These dynamics highlight the need for strengthened risk management and comprehensive stress-testing practices to safeguard financial stability during episodes of market turmoil.

Finally, authorities should be equipped with suitable tools to limit excessive leverage in UCITS hedge funds and mitigate the build-up of risks during periods of market stress. While authorities have tools that enable them to contain excessive leverage in AIFMD-compliant funds, they do not have such tools for UCITS hedge funds. The Eurosystem suggests introducing discretionary powers that would allow authorities to impose stricter leverage limits on these funds when they pose risks to financial stability.[85] It also recommends that all UCITS hedge funds should be required to report their leverage using the commitment approach.

84 Please note that Morningstar Direct data are provided for informational purposes only and may not be reproduced or redistributed without prior authorisation.

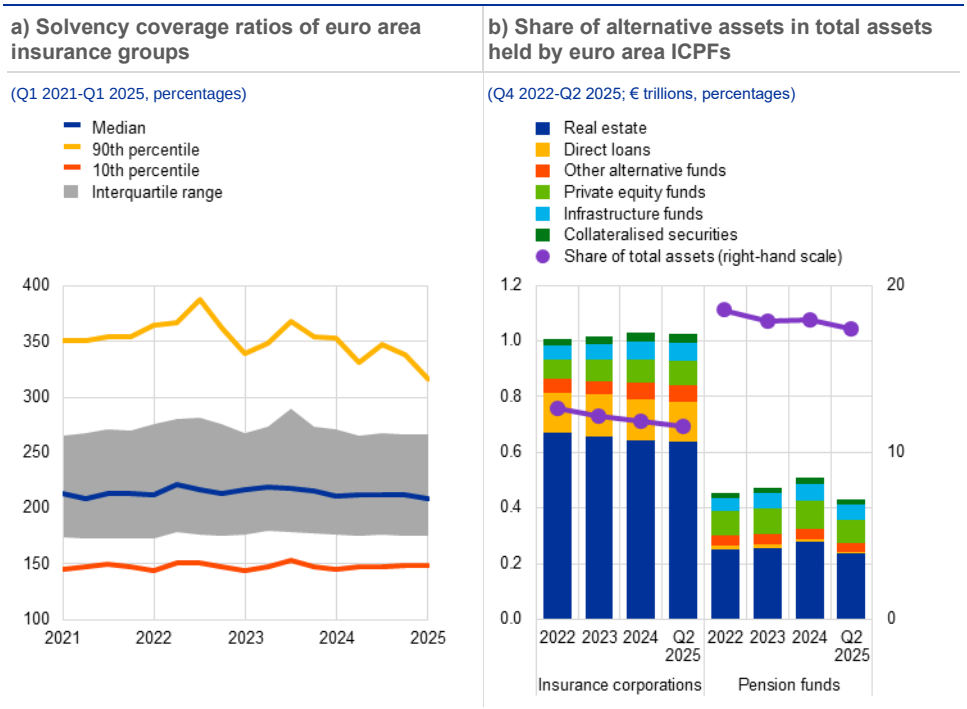
85 See "Eurosystem response to EU Commission's consultation on macroprudential policies for non-bank financial intermediation (NBFI)", FSC high level task force on NBFI, ECB, November 2024.

4.3 Insurance and pension fund sectors remain resilient but face valuation and structural risks

The euro area insurance and pension fund sectors continue to demonstrate resilience overall, despite the complex and evolving risk environment. Euro area insurers have consistently maintained Solvency Capital Requirement coverage ratios well above the 100% regulatory minimum (**Chart 4.6**, panel a). Profitability trends, while mixed, have remained broadly stable in recent quarters.[86] Higher yields at the long end of the yield curve have helped to reinforce resilience. Although weaker economic growth could weigh on demand for new business – particularly in the life insurance segment – the insurance sector's strengthened balance sheets and improved asset yields provide a significant buffer. Euro area pension funds also slightly improved their funding ratios – to slightly above 120% in the first two quarters of 2025 – as assets increased at a faster rate than liabilities.

Chart 4.6

Insurers' solvency remains strong in a context of structural portfolio adjustments



Sources: EIOPA and ECB calculations.
Notes: Panel a: the minimum required solvency coverage ratio is 100%. Panel b: "Pension funds" includes only occupational pension funds. "Real estate" includes direct holdings of real estate (i.e. physical property) and indirect holdings (i.e. real estate fund and company shares, securities and mortgages). "Direct loans" excludes mortgages. "Other alternative funds" covers alternative funds as categorised by EIOPA, which also includes private credit funds. The 2022-24 series refer to year-end data, while 2025 data refer to mid-year observations (Q2 2025).

Exposures to illiquid assets and the potential for derivative-related margin calls currently constitute the main vulnerabilities on the assets side of the balance sheet of insurance corporations and pension funds (ICPFs). ICPFs strategically allocate a significant portion of their portfolios to alternative assets – such as private equity, private credit, infrastructure and real estate – to enhance diversification and

[86] See EIOPA's October 2025 Insurance Risk Dashboard.

optimise long-term returns (**Chart 4.6**, panel b).[87] Alternative assets may face valuation pressure if financing conditions tighten or price discovery slows, which could reduce investment income and profitability. ICPFs employ derivatives – particularly interest rate and foreign exchange derivatives – as a strategic tool to manage market risk. However, these instruments can trigger acute liquidity pressures during periods of heightened volatility or abrupt rate movements. While recent monitoring indicates that median derivatives exposures remain modest overall, tail risks can become significant under system-wide stress scenarios.[88]

Portfolio adjustments are being driven by the higher yields at the long end of the yield curve and valuation effects, as well as long-term objectives for return optimisation and liability matching. While insurance corporations have slightly reduced the share of sovereign bonds in their balance sheets over the last two years, pension funds have slightly increased this share. They have also slightly adjusted their bond portfolios in favour of safer, higher-quality sovereign bonds (**Chart 4.7**, panel a). Although their overall exposure to debt securities has remained relatively stable, both sectors have increased their holdings of listed equities in the past two years, either through direct investments or via investment funds (**Chart 4.7**, panel b).[89] While exposures to US debt instruments have declined slightly, holdings of US equities have increased, particularly among pension funds, heightening ICPFs' sensitivity to both global and US-specific market shocks. Although increased US equity exposures in a highly concentrated market amplify the sector's vulnerability to abrupt market corrections, ICPFs' greater activity in foreign exchange derivatives markets suggests more limited exposure to currency risk than is the case for the broader non-bank financial sector.[90]

Ongoing reforms, such as the transformation of the Dutch occupational pension system,[91] are driving significant changes in investment strategies, governance frameworks and geographical asset allocations for pension funds. While these reforms aim to enhance diversification and improve risk management, they also introduce new transition-related risks that could affect the asset classes traditionally favoured by pension funds. At the same time, pockets of concentration risk remain, particularly in areas like commercial real estate and certain private market segments which are sensitive to market fluctuations. During periods of market stress, these risks could materialise as margin calls or collateral demands could lead to

---

87 Insurance corporations differ significantly in the portfolio shares they allocate to alternative assets. Those fully or partially owned by private equity firms tend to have larger allocations.

88 See the sections entitled "Liquidity & funding risks" and "Interlinkages & imbalances risks" on EIOPA's October 2025 Insurance Risk Dashboard; see also EIOPA's October 2025 IORP Risk Dashboard.

89 ICPFs in the EU commonly invest via investment funds given their ability to offer diversified, professionally managed portfolios that align with long-term financial obligations and regulatory frameworks. These funds help institutions to optimise capital efficiency under regimes like Solvency II and IORP II, while supporting broader EU goals such as the savings and investments union. By pooling assets, investment funds enhance scalability, liquidity and cross-border access, making them a strategic tool for managing risk and contributing to sustainable economic growth.

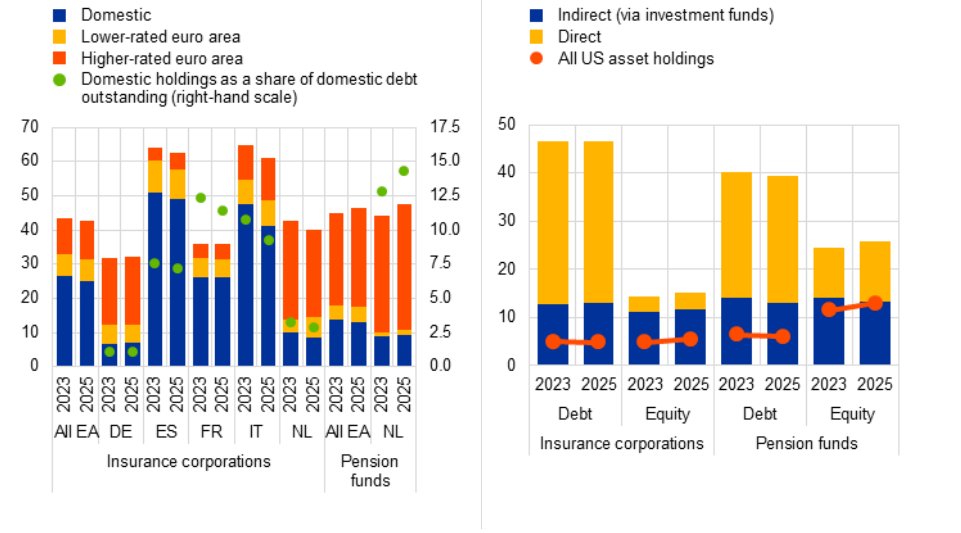
90 As outlined in Special Feature A, a large proportion of direct US equity holdings is hedged (see Chart A.8, panel b).

91 The Dutch Future Pensions Act took effect on 1 July 2023. This major reform will move the Dutch pension system from a hybrid defined benefit model to a collective defined contribution system. The reform involves transitioning to an asset allocation with a shorter interest rate hedge, leading to less demand for long-dated bonds and possibly increasing volatility in the market for long-term financial instruments. All pension funds must have switched to the new pension system by 1 January 2028 at the latest.

forced procyclical asset sales. This could exacerbate market volatility and trigger ripple effects across other financial intermediaries, including investment funds and banks.

Chart 4.7

Insurance corporations and pension funds are steadily adjusting their exposure structures



Sources: ECB (BSI, CSDB, ICB, IVF, PFBR, SHS) and ECB calculations.
Note: Panel a: EA stands for euro area; ICPFs stands for insurance corporations and pension funds. The green dots show the share of a country's domestic sovereign debt held by all insurance corporations (left) and all pension funds (right) residing in that country, expressed as a percentage of the country's total domestic sovereign debt outstanding. Lower-rated euro area sovereigns are countries with credit ratings below AA-. All series refer to mid-year data. Panel b: the 2023 series refers to end-of-year data, while the 2025 series refers to mid-year data (Q2 2025). Assets held via investment fund shares are obtained following the look-through approach outlined in Carvalho and Schmitz*.
*) Carvalho, D. and Schmitz, M., "Shifts in the portfolio holdings of euro area investors in the midst of COVID-19: looking-through investment funds", *Working Paper Series*, No 2526, ECB, 2021.

Cyber risks have become a significant concern for both the insurance and the pension fund sectors, driven by geopolitical tensions and growing digital interdependencies.[92] Both sectors need to ensure operational resilience to protect their systems and data from cyber threats. That said, insurers face additional challenges as they also underwrite cyber risk − offering policies that cover losses from cyber incidents like data breaches and ransomware attacks. This exposes them to financial risks from claims. The increasing use of artificial intelligence (AI) in cyberattacks and internal operations creates a dual challenge for insurers: while AI enhances their internal efficiency in tasks like underwriting and claims, it simultaneously raises the risk of more sophisticated cyberattacks that leverage AI. This amplifies third-party dependencies as insurers rely on AI-driven platforms and data, potentially increasing their vulnerability to a system-wide failure or breach. Meanwhile, cyber criminals use AI to generate highly convincing scams and automate exploit development. To address these challenges, the EU's Digital Operational Resilience Act,[93] which entered into force in January 2025, aims to strengthen the

[92] See EIOPA's October 2025 Insurance Risk Dashboard and its October 2025 IORP Risk Dashboard.

[93] See Digital Operational Resilience Act (DORA).

resilience of insurers and pension funds by enhancing oversight of critical information and communications technology (ICT) providers, mitigating the risks from cyber threats, technological failures and service disruptions.

4.4 Strengthening NBFI resilience and deepening EU capital markets

Monitoring and tackling emerging risks in the non-bank financial intermediation (NBFI) sector is becoming increasingly important as new market segments expand in size and relevance. Private market financing has grown rapidly, accompanied by rising corporate leverage, opaque valuations and lax lending standards. While the private credit fund segment remains relatively small in the domestic euro area market, concerns persist around concentration of risks and opaque bank lending exposures.[94] At the same time, the growing role of non-bank trading firms in equity and bond markets raises concerns about market functioning and the transmission of shocks through concentrated or leveraged trading strategies. Moreover, developments regarding stablecoins and other crypto-assets pose novel risks, especially where multi-issuance schemes and interlinkages with traditional finance could amplify vulnerabilities (see **Box 5**). Such developments underscore the need to broaden monitoring and deepen analysis to identify emerging risks at an early stage and to adapt the policy framework accordingly to prevent the build-up of systemic vulnerabilities.

Effective oversight of the NBFI sector requires timely, granular and comparable information, yet fragmented data continue to impede the assessment of systemic risks, both domestically and across borders. While substantial datasets are already being collected in the EU, the European System of Central Banks (ESCB) still has incomplete access to supervisory information under the AIFMD, the UCITS Directive, Solvency II and MiFID/MiFIR. Initiatives such as the proposal from the European Securities and Markets Authority (ESMA) to develop a more integrated reporting framework for investment fund data are welcome, to the extent that they broaden the sharing of available data and preserve the frequency and granularity of existing reporting. Limited cross-border information sharing means that the total exposures of foreign non-banks operating in the EU often remain opaque, creating significant data gaps for domestic authorities and central banks. Given the cross-border nature of NBFI activities and the sector's interlinkages with banks and core markets, ongoing work by the Financial Stability Board (FSB) and other standard-setting bodies to improve the availability and comparability of NBFI data is critical. Removing barriers to effective cross-border data sharing and strengthening public disclosures would help close information gaps.

Timely and consistent implementation of international reforms in the EU is essential to enhance resilience and reduce the scope for regulatory arbitrage.

---

94 See the box entitled "Private markets: risks and benefits from financial diversification in the euro area", *Financial Stability Review*, ECB, May 2025, and the special feature entitled "Private markets, public risk? Financial stability implications of alternative funding sources", *Financial Stability Review*, ECB, May 2024.

Past stress episodes, including the March 2020 market turmoil, the 2021 collapse of Archegos and the 2022 UK gilt market stress, have shown how vulnerabilities in the NBFI sector can amplify shocks and spill over to banks. In response, international policy work has been undertaken by the FSB and the International Organization of Securities Commissions (IOSCO) has made progress in addressing liquidity mismatches in money market funds (MMFs) and open-ended funds, tackling vulnerabilities from NBFI leverage and improving liquidity preparedness for margin and collateral calls. The EU should move forward with the implementation of agreed reforms to enhance resilience in the NBFI sector and limit the scope for regulatory arbitrage. Liquidity mismatch in the MMF sector should be addressed, in particular by increasing liquidity buffer requirements and by removing threshold effects linked to the breaching of regulatory requirements, as advocated by the Eurosystem and recommended by the European Systemic Risk Board (ESRB).[95]

Addressing leverage-related risks in the NBFI sector requires a flexible yet targeted approach, resting on a broad policy toolkit. The FSB recommendations on NBFI leverage represent an important step towards building a comprehensive international framework to close existing policy gaps, given the cross-border dimension of leveraged activities.[96] These recommendations call for a combination of entity-based measures, such as leverage limits and enhanced reporting, and activity-based measures, such as margins and haircuts, while carefully balancing effectiveness and costs. In addition, enhancing private disclosures by non-banks would strengthen the ability of banks and prime brokers to manage counterparty credit risk exposures. The experience with leverage restrictions in the EU, such as those applied to alternative investment funds under the AIFMD,[97] demonstrates the value of entity-based tools, but also highlights the need to expand the toolkit to include activity-based measures in core financial markets and stronger instruments to address concentration risks. Further international work would help to support consistent and effective policy implementation, including FSB guidance on entity-based measures and risk-mitigation practices for securities financing transactions backed by sovereign bonds.

An effective macroprudential framework for non-banks requires both a broader policy toolkit and strengthened EU-wide coordination. Given the significant cross-border activities of the asset management sector, a macroprudential approach to NBFI should rest on common rules and standards, supported by coordinated supervisory action at the EU level.[98] Stronger coordination at the EU level is needed to ensure the consistent and effective application of macroprudential measures across jurisdictions. An EU framework for the reciprocation of such measures would help avoid cross-border leakages and arbitrage. Granting ESMA "top-up" powers over

---

95 See "Eurosystem contribution to the European Securities and Markets Authority (ESMA) consultation on the framework for EU money market funds", ECB, June 2021, and "Recommendation of the European Systemic Risk Board of 2 December 2021 on reform of money market funds", ESRB, March 2022.

96 See "Leverage in Nonbank Financial Intermediation – Final report", Financial Stability Board, 9 July 2025.

97 Article 25 AIFMD allows leverage to be restricted if it is contributing to the "build-up of systemic risk in the financial system, risks of disorderly markets or risks to the long-term growth of the economy". See "ESMA guidelines on Article 25 of Directive 2011/61/EU", June 2021.

98 See "Eurosystem response to EU Commission's consultation on macroprudential policies for non-bank financial intermediation (NBFI)", ECB, November 2024.

national measures, to be used in collaboration with national authorities[99] and after consulting with the ESRB, would strengthen its ability to address cross-border risks and mitigate the risk of national inaction bias. Beyond Article 25 AIFMD, which enables authorities to limit excessive leverage in alternative investment funds, a dedicated EU-level tool is needed to address liquidity mismatches in open-ended funds. This could be used, for example, to impose longer notice periods or other ex ante measures to limit liquidity mismatch. Regulatory gaps for hedge-fund-like activities under the UCITS[100] Directive should be closed by requiring all such entities to report leverage under the commitment approach[101] and by granting authorities discretionary powers to impose limits on highly leveraged UCITS that pose financial stability risks (see **Box 4**).[102] Finally, an EU system-wide stress-testing framework, covering banks and NBFI entities, would provide valuable insights into cross-sectoral vulnerabilities and strengthen the capacity of authorities to assess systemic risk.

Accelerated progress on the savings and investments union is urgently needed to strengthen Europe's competitiveness, strategic autonomy and financial stability, while supporting the efficient financing of the real economy. Financing in the euro area remains predominantly bank-based, while equity markets are still fragmented and less developed than in other major economies. This hampers the efficient allocation of savings and increases funding costs across the corporate sector, particularly for innovative and high-productivity firms. Persistent legal and supervisory fragmentation continues to limit market depth, while long-term demographic trends, notably population ageing, underline the need to strengthen private pension and savings vehicles to complement public pensions and ensure adequate retirement income.

A broad set of measures will be needed to mobilise retail and institutional savings more effectively. This includes developing an EU-wide savings and investment product standard with coordinated tax incentives, wider use of automatic enrolment into occupational retirement schemes and a reduction of the debt-equity bias in taxation. Greater household participation in financial markets could also enhance financial stability by providing investment funds with a more stable funding base during periods of stress (see **Box 2**). Deepening equity markets should be a further priority, with targeted incentives for institutional investors to channel funds into long-term equity, especially venture capital and scale-ups, complementing efforts by the European Investment Bank (EIB) to expand venture financing. Structural barriers to cross-border activity should be reduced by streamlining corporate, securities and accounting law, as well as by aligning insolvency regimes to support efficient restructuring.

---

99 This includes both national competent authorities and macroprudential authorities.

100 UCITS stands for Undertakings for Collective Investment in Transferable Securities.

101 The commitment approach is generally used to constrain leverage under the UCITS Directive. Derivatives exposures are converted into cash-equivalent positions, resulting in "global exposure" after netting and taking into account reinvested cash collateral. For funds that use this approach, global exposure must not exceed the total net asset value (i.e. equivalent to a leverage multiplier of total assets over equity of 2).

102 See also "Risks in UCITS using the absolute Value-at-Risk approach", *TRV Risk Analysis*, European Securities and Markets Authority, 24 April 2025.

A more integrated supervisory framework would help ensure harmonised practices that underpin the development of capital markets in the EU. This is essential, given the growing size of capital markets and their inherent cross-border nature.[103] Enhancing the mandate, governance and resources of EU-level authorities and empowering them to coordinate macroprudential oversight would facilitate consistent policy implementation and improve crisis coordination across the EU. In addition, more integrated supervision of the asset management sector could be achieved, for example, by mandating ESMA to supervise asset managers and funds with significant European cross-border activities or by creating joint supervisory teams.[104] Such a system would strengthen rule implementation, boost market confidence and encourage cross-border investment. It would also help remove barriers within the European fund market, which is key to promoting retail investor participation.

Strengthening the macroprudential framework for non-banks and advancing the savings and investments union should be seen as complementary and mutually reinforcing objectives. While deeper and more integrated markets can enhance funding resilience by diversifying sources of finance, they can also heighten systemic vulnerabilities, particularly in segments of the NBFI sector characterised by liquidity mismatches, high leverage and cross-border interconnectedness. Only by combining stronger safeguards for NBFI entities with accelerated progress on the savings and investments union can Europe reap the benefits of deeper capital markets while safeguarding financial stability.

Box 5

Stablecoins on the rise: still small in the euro area, but spillover risks loom

Prepared by Senne Aerts, Claudia Lambert and Elisa Reinhold

Stablecoins have captured widespread attention in recent months on account of their rapid growth, raising potential concerns for financial stability.[105] Stablecoins are experiencing rapid growth, pushing their market capitalisation to new all-time highs. From a financial stability perspective, this may raise concerns arising from certain structural weaknesses inherent to stablecoins and their interconnectedness with traditional finance. This box explores the key risks and vulnerabilities associated with stablecoins, such as de-pegging and runs.[106] It explains the most important use cases for stablecoins and how risks could evolve if this market were to experience further significant growth. Finally, the box reflects on global regulatory developments and how the risks posed by cross-border regulatory arbitrage could be mitigated.

103 See "Statement by the ECB Governing Council on advancing the Capital Markets Union", ECB, 7 March 2024, in which the Governing Council outlines its priorities.

104 See "ESCB reply to the European Commission's targeted consultation on integration of EU capital markets", ECB, June 2025.

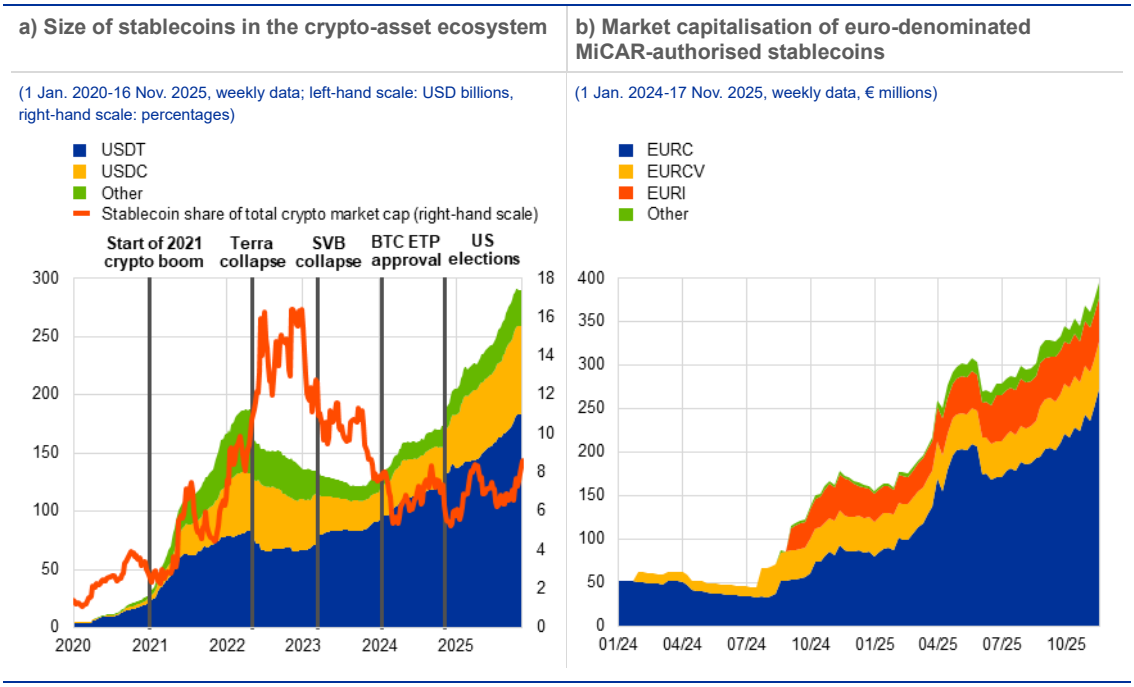
105 Stablecoins are digital units of value that use blockchain technology. They rely on tools, such as a pool of fiat reserve assets, to maintain a stable value relative to one or several currencies or other assets (including crypto-assets), or make use of algorithms for that purpose. See the box entitled "The expanding functions and uses of stablecoins", *Financial Stability Review*, ECB, November 2021; ECB Crypto-Assets Task Force, "Stablecoins: Implications for monetary policy, financial stability, market infrastructure and payments, and banking supervision in the euro area", *Occasional Paper Series,* No 247, ECB, September 2020; and Bullmann, D., Klemm, J. and Pinna, A., "In search for stability in crypto-assets: are stablecoins the solution?", *Occasional Paper Series*, No 230, ECB, August 2019.

106 Stablecoins are designed to maintain a stable value relative to a reference asset, for example. De-pegging occurs when this stability is lost and the price of the stablecoin fluctuates significantly.

Fuelled by broadening investor interest and global regulatory developments, the combined market capitalisation of all stablecoins has reached an all-time high. It now exceeds USD 280 billion, accounting for roughly 8% of the total crypto-asset market (**Chart A**, panel a). Two US dollar-denominated stablecoins dominate the market, with Tether (USDT) and USD Coin (USDC) accounting for USD 184 billion (63%) and USD 75 billion (26%) of stablecoin market capitalisation respectively. While US dollar-denominated stablecoins make up around 99% of all stablecoin supply in circulation, euro-denominated stablecoins play a minor role, totalling only around €395 million (**Chart A**, panel b). Recent regulatory clarity may have been a driver of the soaring demand for stablecoins. The EU has taken significant steps to regulate crypto-assets through the full implementation of its Markets in Crypto-Assets Regulation (MiCAR)[107] last year, providing clear rules for stablecoin issuers and those offering stablecoin-related services. The United States has recently followed suit with the passage of its Guiding and Establishing National Innovation for U.S. Stablecoins Act (GENIUS Act), thereby offering some regulatory clarity for stablecoin issuers. Other jurisdictions, such as Hong Kong, have also introduced legislation to regulate stablecoins.[108]

Chart A

Stablecoin market capitalisation has grown quickly and US dollar-denominated stablecoins continue to dominate



Sources: IntoTheBlock, CoinDesk Data, CoinMarketCap and ECB staff calculations.
Notes: Panel a: "Terra collapse" refers to the de-pegging event of the TerraUSD algorithmic stablecoin and the associated collapse of its reserve asset, LUNA; "SVB collapse" refers to the failure of Silicon Valley Bank; "BTC ETP approval" refers to the approval by the U.S. Securities and Exchange Commission of bitcoin exchange-traded products (ETPs) in the United States; "US elections" refers to the 2024 US presidential elections. "Other" includes a total of 27 US dollar-denominated stablecoins. Panel b: "Other" includes five other euro-denominated stablecoins currently authorised under MiCAR. The list of authorised e-money tokens and asset-referenced tokens was retrieved from ESMA's Interim MiCA Register on 6 October 2025.

At present, crypto trading constitutes by far the most important use case for stablecoins. Stablecoins are used as an easy way in and out of the crypto ecosystem while eliminating the need for traders to repeatedly convert back to fiat currencies. Stablecoins like USDT and USDC are now

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

[108] For an overview, see the "Thematic Review on FSB Global Regulatory Framework for Crypto-asset Activities", Financial Stability Board, 2025.

the preferred units for trading on crypto trading platforms. Around 80% of all trades executed globally on centralised crypto trading platforms involve stablecoins, which shows that stablecoins have become essential for the functioning of the crypto-asset ecosystem.[109] Other use cases for stablecoins do exist but play only a minor role. Cross-border payments are a frequently cited use case, as crypto-assets flow easily across borders.[110] Although research suggests that over 70% of stablecoin flows are cross-regional there is, however, a lack of concrete evidence that stablecoins are used systematically for remittances and other cross-border transactions.[111] In addition, it has been claimed that stablecoins are used as a store of value in emerging markets and developing economies, especially in countries facing high inflation.[112] However, the available data indicate that the retail use of stablecoins represents a tiny share of total stablecoin volumes. It is estimated that only around 0.5% of volumes are organic retail-sized transfers.[113] In conclusion, the use of stablecoins seems to be primarily driven by their role within the crypto-asset ecosystem, and it remains to be seen whether stablecoins will be adopted widely across other use cases.

Stablecoins may pose financial stability risks through their inherent vulnerabilities and their interconnectedness with traditional finance. Stablecoins' primary vulnerability is that investors lose confidence that they can be redeemed at par. This loss of faith can simultaneously trigger a run on a stablecoin and cause a de-pegging event. Given the importance of stablecoins in the crypto ecosystem, a large adverse stablecoin shock would be detrimental for crypto markets. However, other market segments could also be affected through spillovers and second-round effects, including those arising from wealth effects and interconnections with traditional finance.[114] These interlinkages exist primarily through stablecoins that are backed by fiat-denominated asset reserves, such as USDT and USDC. As the two largest stablecoins, they now rank among the largest holders of US Treasury bills and have asset reserves that are comparable to the top 20 largest money market funds (**Chart B**, panel a). Moreover, they have been among the largest net acquirers of short-term US Treasuries in recent months (**Chart B**, panel b). A run on these stablecoins could trigger a fire sale of their reserve assets, which could affect the functioning of US Treasury markets.[115] This could pose a significant risk if stablecoins, and their corresponding asset reserves, continue to grow rapidly, with some projections suggesting that market capitalisation could reach USD 2 trillion by 2028.[116] These

[109] See the special feature entitled "Just another crypto boom? Mind the blind spots", *Financial Stability Review*, ECB, May 2025.

[110] Some of the decrease in the costs and time associated with cross-border transactions may be attributed to a lack of know-your-customer and anti-money laundering compliance. See Rey, H., "Stablecoins, Tokens, and Global Dominance", *Finance & Development Magazine*, International Monetary Fund, 2025.

[111] See Reuter, M., "Decrypting Crypto: How to Estimate International Stablecoin Flows", *IMF Working Papers*, Vol. 2025, Issue 141, International Monetary Fund, 2025.

[112] See "The 2024 Geography of Crypto Report", Chainalysis, 2025, which finds comparatively high stablecoin activity in Argentina, Nigeria, Türkiye and Venezuela. The Financial Stability Board has highlighted additional risks, including macro-financial and financial stability risks, for emerging market and developing economies from global stablecoins denominated in foreign currencies. See "Cross-border Regulatory and Supervisory Issues of Global Stablecoin Arrangements in EMDEs", Financial Stability Board, 2024. See also Rey, H., "Stablecoins, Tokens, and Global Dominance", *Finance & Development Magazine*, International Monetary Fund, 2025. According to Rey, "…citizens of countries with poor governance would have access to more stable and convenient means of payment and store of value than their domestic currency."

[113] See the 2025 Visa Onchain Analytics Dashboard. Organic transactions exclude transactions, executed by internal smart contract, intra-exchange or bots, of entities generating excessive amounts or volumes. Retail-sized transactions are defined as transactions smaller than USD 250. These data indicate that most volumes are driven by bots and by large crypto traders.

[114] See the special feature entitled "Just another crypto boom? Mind the blind spots", *Financial Stability Review*, May 2025.

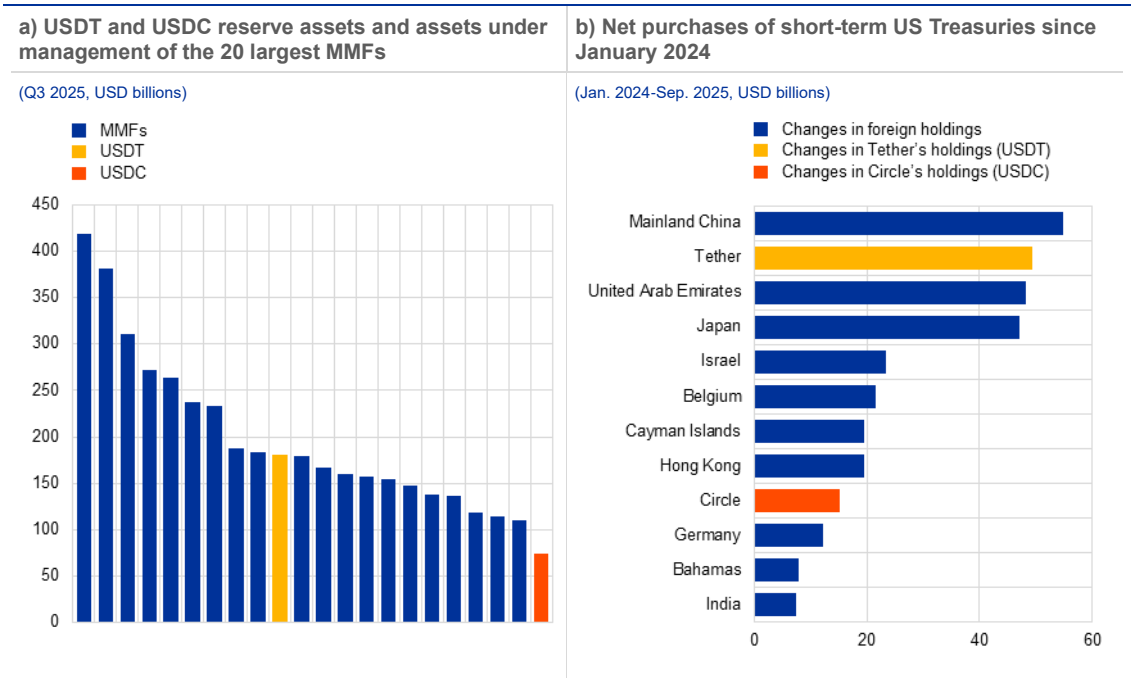
[115] See Ahmed, R. and Aldasoro, I., "Stablecoins and safe asset prices", *BIS Working Papers*, No 1270, Bank for International Settlements, 2025.

[116] See "Stablecoins, USD Hegemony, and UST Bills", Standard Chartered, 2025, and "Digital Money", Treasury Borrowing Advisory Committee, 2025.

risks could become especially great if current extreme levels of concentration persist, with just two issuers accounting for around 90% of all stablecoins in circulation. This situation could be difficult to change, given the inherent interchangeability frictions across different stablecoins.[117] As a result, the failure of just one entity could have a widespread impact, even in the absence of a systemic stablecoin crisis.[118]

Chart B

Stablecoin issuers hold significant amounts of traditional financial assets, comparable to the world's largest MMFs, while ranking among the largest purchasers of short-term US Treasuries



Sources: LSEG Lipper, U.S. Department of the Treasury, Tether attestations, Circle attestations and ECB staff calculations.
Notes: Panel a: net assets for money market funds (MMFs) and reserve assets for Tether (USDT) and USD Coin (USDC) as at 30 September 2025. Reserve assets for USDT and USDC consist predominantly of US Treasuries, reverse repos, shares in MMFs, cash and bank deposits. Panel b: changes in holdings of short-term US Treasuries by foreign (i.e. non-US) nations in comparison with the changes in short-term US Treasury holdings of Tether and Circle, excluding reverse repurchase agreements, between the start of January 2024 and the end of September 2025.

Significant growth in stablecoins could cause retail deposit outflows, diminishing an important source of funding for banks and leaving them with more volatile funding overall. If stablecoins are adopted widely, households may replace some of their bank deposits with stablecoin holdings. These outflows could be amplified if crypto-asset service providers, such as crypto trading platforms, were allowed to pay interest on stablecoin holdings, increasing stablecoins' relative attractiveness and causing banking disintermediation. In Europe, however, MiCAR prohibits the payment of interest on stablecoin holdings by stablecoin issuers and crypto-asset service providers,

[117] Stablecoins, even when pegged to the same fiat currency, cannot be considered fully interchangeable as they would not be universally accepted at their face value and might trade at a discount, depending on the relative creditworthiness of their issuer. This contrasts with commercial bank money, where deposits of the same currency are accepted without hesitation. Hence, stablecoins require an agreement between counterparties, stipulating which stablecoin issuer they will rely upon. This is not the case for commercial bank money, for which each counterparty is free to choose their own bank.

[118] See Van Rensburg, W. and Dombret, A., "Why stablecoins are Silicon Valley's Pandora's box", Reaction, 2025.

with banks calling for similar bans in the United States.[119] In any case, on an aggregate level retail deposit outflows would be at least partially recovered as wholesale deposits. This could occur directly, since stablecoin issuers hold some of their reserves as deposits with banks,[120] or indirectly, through deposits made by the entities from which stablecoin issuers purchase their reserve assets. The critical issue here is that wholesale funding is typically far less stable. Specifically, deposits made by stablecoin issuers may be subject to sudden withdrawals in the event of a stablecoin run, leaving bank funding structures more vulnerable to shocks.[121] Deposit concentration could also increase, as many banks may face retail outflows, while only a few attract wholesale inflows.

Global discrepancies across jurisdictions constitute the primary source of stablecoin risk for the euro area. Despite the many similarities across various sets of legislation, important differences remain regarding reserve requirements and whether or not redemption fees are permitted, for example. These differences facilitate regulatory arbitrage. Notably, risks may arise through third-country multi-issuance, where an EU entity and a third-country entity jointly issue a fungible stablecoin both in the EU and in a non-EU jurisdiction. This could leave EU issuers with insufficient reserve assets under the supervision of EU authorities to fulfil the combined redemption requests made by EU and non-EU token holders, amplifying run risks in the EU. Such risks call for additional safeguards, imposing preconditions that must be met before EU market access is authorised.[122]

Currently, financial stability risks stemming from stablecoins are limited within the euro area, but the rapid growth justifies close monitoring, while risks stemming from cross-border regulatory arbitrage should be resolved. Stablecoins are not widely used for transactions involving real-world assets, especially within the euro area, nor have they already caused significant retail deposit outflows. Moreover, US dollar-denominated stablecoins dominate in the stablecoin market, limiting stablecoins' interconnections with euro area financial markets through their reserve assets. Even if stablecoins were to be adopted across a wider set of use cases, and even if interconnections with the euro area were to grow, the EU has implemented a stringent regulatory framework through MiCAR that would mitigate potential risks. Nevertheless, stablecoins are growing rapidly and they may find adoption across new use cases, which could introduce financial stability risks in the future. Moreover, to mitigate risks posed by cross-border regulatory arbitrage and diminish spillover risks from inadequately regulated jurisdictions, it is vital that regulatory frameworks are further aligned at a global level. This can be achieved through the global implementation of the G20's crypto-asset roadmap, which includes the Financial Stability Board's recommendations on regulating crypto-asset markets and activities, the Basel standard for banks' exposures to crypto-assets and the Financial Stability Board's recommendations for regulating global stablecoin arrangements.[123]

---

119 At present, crypto trading platforms globally, including in the United States, still offer a yield on stablecoin holdings. Banks advocate against such practices as they could cause banking disintermediation and transmit risks to the traditional financial system. See also "Closing the Payment of Interest Loophole for Stablecoins", Bank Policy Institute, 2025.

120 MiCAR requires stablecoin issuers to hold at least 30% of their reserves as bank deposits.

121 See Coste, C.-E., "Toss a stablecoin to your banker", *Occasional Paper Series*, No 353, ECB, 2025.

122 See "ECB non-paper on EU and third country stablecoin multi-issuance", Council of the European Union, 2025.

123 See also "High-level Recommendations for the Regulation, Supervision and Oversight of Global Stablecoin Arrangements: Final Report", Financial Stability Board, 2023; "IMF-FSB Synthesis Paper: Policies for Crypto-Assets", Financial Stability Board, 2023; "High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-asset Activities and Markets: Final Report", Financial Stability Board, 2023; and Basel Committee on Banking Supervision, "Disclosure of cryptoasset exposures", Bank for International Settlements, 2024.

Special Features

A What safe haven after the April US tariff announcement? Implications for euro area financial stability

Prepared by Paolo Alberto Baudino, Magdalena Grothe, Maurizio Michael Habib, Ana-Simona Manu, Peter McQuade, Martino Ricci, Emilio Siciliano, Toma Tomov, Luca Tondo and Gibran Watfe

Trade turmoil in April 2025 saw a marked change in cross-asset behaviour compared with typical patterns. Notably, the US dollar depreciated strongly while US Treasury yields rose – the opposite of what usually happens in a risk-off environment. This prompted discussions as to whether the safe-haven properties of US dollar-denominated assets might be changing. This is particularly important for euro area financial stability since euro area investors hold US dollar-denominated securities in an amount equivalent to €6 trillion, which represents a significant share of their portfolios. As policy uncertainty remains high and alternative safe assets are scarce, investors' risk management practices may be evolving. Immediate and decisive implementation of policies associated with the savings and investments union and the capital markets union would help foster an alternative market of safe assets for euro area and global investors.

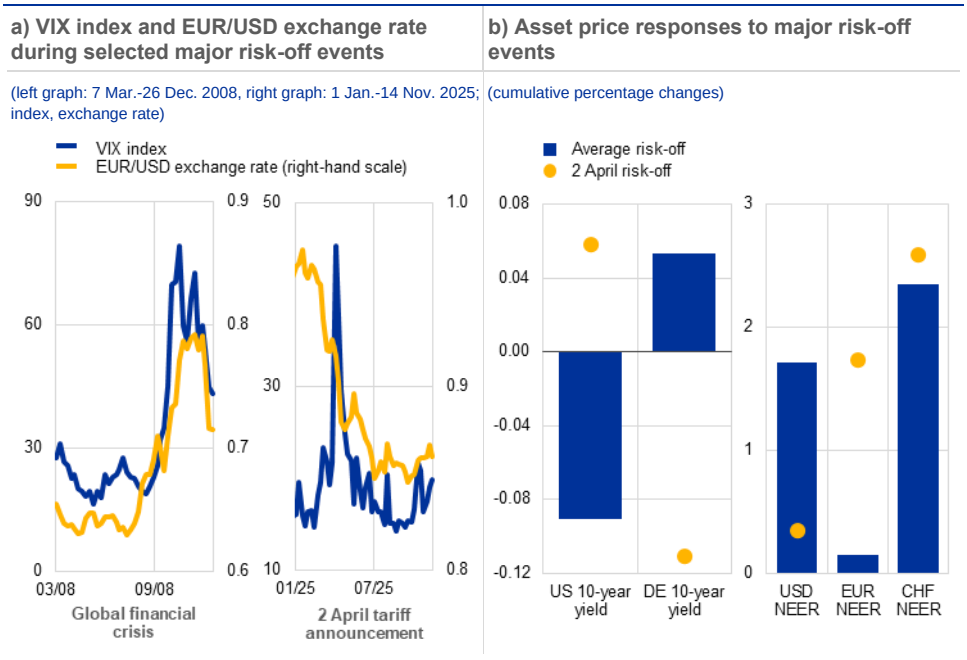
The market turmoil in early April triggered a marked change in typical cross-asset behaviour in a risk-off environment. There was a spike in the VIX index, which captures market expectations for near-term US equity market volatility and is often considered to be a proxy for global investor risk sentiment. The index rose to a level exceeded only during the global financial crisis and the COVID-19 pandemic. Equity prices declined sharply at the same time as a broad-based depreciation of the US dollar. The US dollar is typically seen as a safe-haven currency as it has generally appreciated in a risk-off environment, such as during the global financial crisis (**Chart A.1**, panel a). The depreciation seen in April 2025 occurred despite a similarly atypical rise in long-term US Treasury yields – something generally associated with an appreciation of the US dollar. According to standard economic theory, tariffs should be partially offset by currency appreciation in the country imposing the tariffs. Moreover, a widening yield differential compared with euro area sovereign bonds (as Treasury yields increased while Bund yields declined) should also be associated with an appreciation of the US dollar. The movement observed was therefore a notable deviation. The response of US financial variables in early April was different from typical patterns seen during other risk-off episodes (**Chart A.1**, panel b). This special feature reviews recent patterns in risk behaviour in global financial markets and outlines implications for euro area financial stability.

1 Risk behaviour deviated from past patterns in April

In recent decades US Treasury securities and the US dollar have typically been regarded as safe havens during risk-off episodes. This privileged status reflects the significant strengths that have long been associated with the United States. These include deep and liquid financial markets; the dominant role of the US dollar in international trade and finance, including its role as a reserve currency; the credibility of the US Federal Reserve System; stable governance and political institutions; and strong legal protections for investors. This meant that, historically, whenever financial market risk was elevated, US Treasuries and the US dollar were perceived as relatively safe, causing demand for such assets to increase and their relative prices to rise, forming hedges in global investors' portfolios against market risk.

Chart A.1

The April risk-off event was exceptional and sparked US dollar depreciation



Sources: Bloomberg Finance L.P. and ECB staff calculations.
Notes: Panel a: increases in EUR/USD denote US dollar appreciation. Panel b: cumulative percentage changes three days after the event. EUR, USD and CHF NEER refer to nominal effective exchange rates. Average response calculated for five biggest daily VIX changes episodes. "2 April risk-off" is the US tariff announcement on 2 April 2025.

While the tariff announcement was the trigger for the early April financial market events, there was a more general spike in policy uncertainty across multiple domains. Economic policy uncertainty also spiked, reacting not just to tariffs but also to a variety of other aspects of the US Government's policy programme (e.g. fiscal, regulatory and immigration policies). However, the US tariff announcement sparked market stress, as the rates threatened on 2 April were much higher than had previously been expected. The tariff announcement increased the risk of a global trade war, particularly as China promptly announced its intention to retaliate.[124]

[124] Some authors argue that the overall US dollar depreciation observed at this time was due to retaliatory tariffs imposed on the United States by its trade partners. See Corsetti, G., Lloyd, S. and Ostry, D., "Tariffs and US dollar depreciations: Not so surprising after all", Centre for Economic Policy Research, 3 September 2025.

What happened to key financial asset prices and correlations?

Some financial market proxies for investor appetite for US assets declined in April. The yield on ten-year US Treasuries surged by almost 50 basis points between 4 and 11 April, the third largest weekly increase since 1986. The spread between a risk-free benchmark, in this case maturity-matched overnight interest rate swap rates, and the yield on ten-year US Treasuries also declined.[125] This spread is sometimes referred to as the convenience yield, insofar as it captures investor willingness to accept the lower yield on US Treasuries because of their greater liquidity, perceived safety and eligibility as collateral. While the spread had already turned negative (as the supplementary leverage ratio regulation de facto discourages large banks from holding US Treasuries), it fell markedly in reaction to the US tariff announcement on 2 April, signalling a further erosion of convenience (**Chart A.2**, panel a).[126,127] Empirical evidence confirms that tariff-related remarks made on social media by President Trump have generally been associated with somewhat lower US convenience yields across a range of maturities (**Chart A.2**, panel b). This suggests that investors responded to heightened policy uncertainty by repricing US Treasuries as they reassessed the potential economic fallout from escalating trade tensions.[128] The impact of the 2 April announcement, however, was much greater than usual.

Weaker sentiment around the relative growth outlook and attractiveness of US assets saw a broad-based depreciation of the US dollar, not least against the euro. The US dollar has fallen by 12% against the euro since the start of 2025, around 7 percentage points of which has been since 1 April (**Chart A1**, panel a). There has also been a sharp adjustment of the economic outlook, as reflected in consensus growth forecasts since 2 April. This marks a shift since the initial optimism that was priced in for the US economy following the 2024 US elections.

---

125 See Aquilina, M., Schrimpf, A., Sushko, V. and Xia, D., "Negative interest rate swap spreads signal pressure in government debt absorption", *BIS Quarterly Review*, Bank for International Settlements, 10 December 2024.

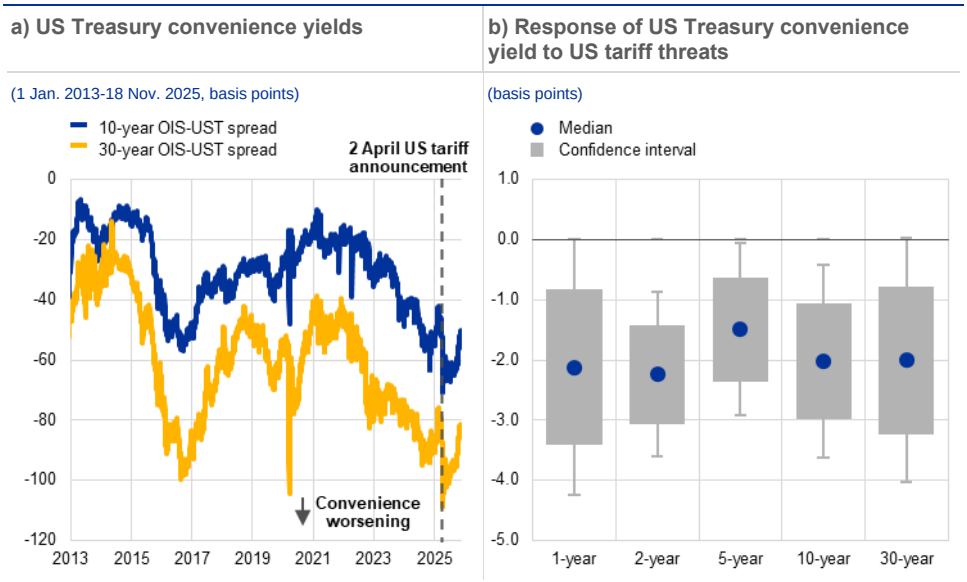
126 For more information on the supplementary leverage ratio regulation, see Tapia, J.M., Leung, R. and Hamandi, H., "Banks' Supplementary Leverage Ratio", *The OFR Blog*, Office of Financial Research, 2 August 2024.

127 See Plante, M., Richter, A.W. and Zubairy, S., "How sensitive are interest rates to higher federal debt?", *blog post*, Federal Reserve Bank of Dallas, 12 August 2025.

128 The international US Treasury convenience yield, measured as deviations from covered interest parity between ten-year Bund yields and ten-year Treasury yields, also declined notably immediately after 2 April, and regression results show a significant decline following tariff threat shocks. Anecdotal evidence suggests that the April swing in swap spreads was partly driven by hedge funds unwinding leveraged positions amid trade uncertainty and tighter liquidity, possibly also linked to foreign capital flight, which may have amplified market reactions to tariff threats.

Chart A.2

Tariff announcements caused a notable fall in US Treasury interest rate swap spreads



Sources: Bloomberg Finance L.P., LSEG and ECB staff calculations.
Notes: Panel a: spread between overnight index swaps (OIS) and US Treasury (UST) yields. Panel b: response of spreads to changes in a tariff threat index constructed by categorising President Trump's Truth Social posts using a large language model, scoring from -1 (trade de-escalation) to +1 (trade escalation). Responses estimated using local projections during the second Trump Administration. Results refer to the ten-day response. Grey bars are to 68% and whiskers to 90% confidence intervals respectively.

Before April, investors held sizeable positions speculating on the US dollar appreciating but quickly reversed these positions after 2 April. In the run-up to the April episode, speculative positions in the US dollar against the euro and other major currencies were at multi-year highs (**Chart A.3**, panel a). This stretched positioning was at least partly motivated by the positive yield differential that non-US investors were able to earn from their US dollar exposures.[129] However, speculative positions in the US dollar turned from net long to net short in April and remained so for several months. Recent analyses have shown that the April episode triggered an increase in the hedging of US dollar-denominated asset exposures by non-US investors, especially in Asia, as they took steps to reduce their currency risk.[130]

[129] Carry-to-risk ratios were favourable for long US dollar exposures in an environment of high interest rate differentials in support of the US dollar and low currency-implied volatility. This reflected the market consensus that the risk of future sharp exchange rate movements was low.

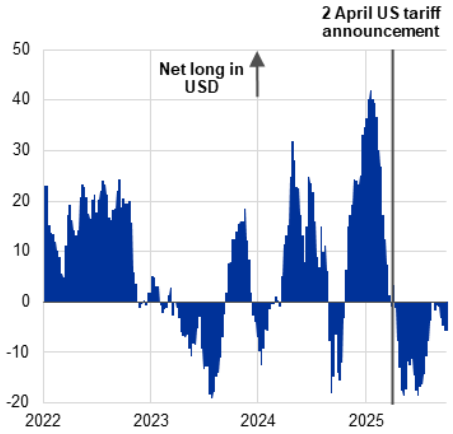
[130] See Shin, H.S., Wooldridge, P. and Xia, D., "US dollar's slide in April 2025: the role of FX hedging", *BIS Bulletin*, No 105, Bank for International Settlements, 20 June 2025.

Chart A.3

Speculative positions on the US dollar turned short; the positive correlation between US Treasuries and US dollar exchange rates has not been fully restored

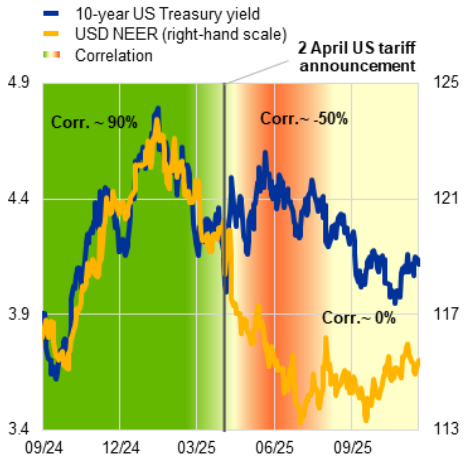
a) Speculative positions on the US dollar against other major currencies including the euro

(1 Jan. 2022-30 Sep. 2025, USD billions)



b) Correlation between the ten-year US Treasury yield and the US dollar effective exchange rate

(1 Sep. 2024-18 Nov. 2025, percentages, index)



Sources: Bloomberg Finance L.P. and ECB staff calculations.
Notes: Panel a: net non-commercial US dollar positions across CFTC-reported contracts for all major currencies. Latest data release affected by US Government shutdown. Panel b: correlation shading ranges from green (100%) to red (-100%) and is computed over the periods 1 September 2024-1 April 2025, 2 April-15 June 2025 and since 16 June 2025.

Empirical evidence confirms that the co-movement of safe-haven financial market variables was atypical in April. The typical positive correlation between US Treasury yields and the US dollar exchange rate, which had been especially strong for much of 2024, turned negative for a period after 2 April (**Chart A.3**, panel b). The correlation between a "safe-haven factor", based on a principal component analysis of a range of safe-haven assets, and the US dollar and US Treasuries, further illustrates the different nature of the recent risk-off episode (**Chart A.4**, panel a).[131] The blue bars show the typical co-movement and the yellow bars show the co-movement in the period from April to May 2025. Typically, US Treasury yields co-move negatively with the safe-haven factor. Since 2 April, however, US yields have exhibited less negative co-movement with the safe-haven factor. Similarly, the US dollar typically appreciates following a deterioration in global risk sentiment, but this type of co-movement switched signs in April 2025.

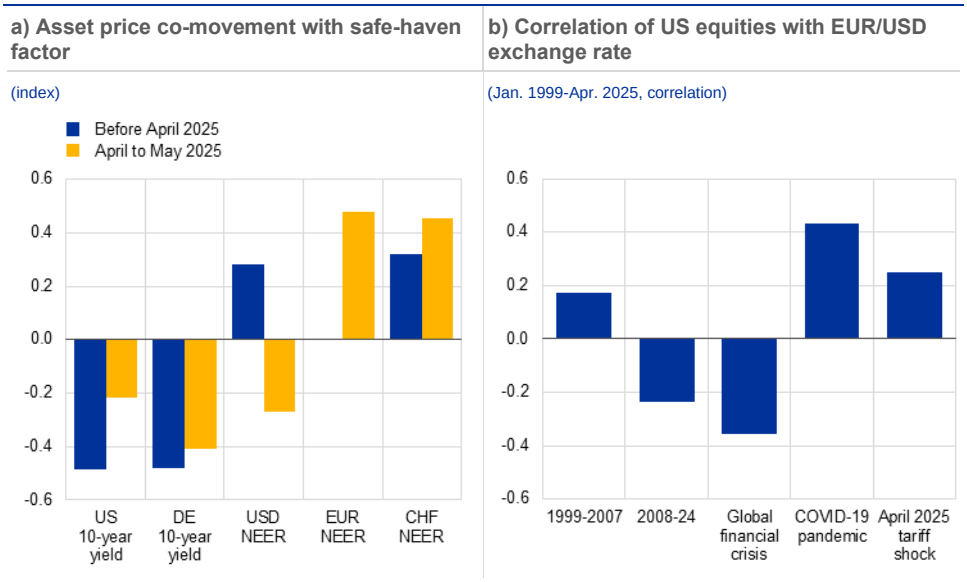
131 Principal components analysis is a statistical technique that transforms complex, correlated financial data into a smaller set of uncorrelated variables – called principal components – that capture the most important patterns common to a set of variables. In this case, it is applied to capture the common patterns in the prices of assets that are typically considered to be safe havens in periods of financial market stress. More specifically, the "safe-haven factor" is the first principal component (i.e. the linear combination of the original variables that explains the most variance) of daily changes in Swiss franc, Japanese yen, US dollar and euro nominal effective exchange rates, gold price returns, the first difference of the ten-year US, Japanese and euro area sovereign yields, and changes in the VIX index. The weights indicate how much each variable contributes to the safe-haven factor. See Grothe, M., McQuade, P., Ricci, M. and Tondo, L., "Recent patterns in global risk behaviour in financial markets", Centre for Economic Policy Research, 12 August 2025.

What are the implications for euro area investors with US exposures?

As a result of this atypical behaviour, the US dollar temporarily failed to act as a natural hedge for non-US investors. Since 2008, the US dollar has emerged as a barometer of global risk and has appreciated when US equity markets have declined (**Chart A.4**, panel b), providing a hedge to foreign investors exposed to US dollar assets.[132] This relationship broke down during the "dash for cash" during the pandemic in early 2020 and again in April 2025. This in turn may have increased hedging demand, putting additional downward pressure on the US dollar.[133]

Chart A.4

Cross-asset behaviour changed during the April event compared with earlier periods, meaning that unhedged investors were hit by the depreciation of the US dollar



Sources: Haver Analytics, Bloomberg Financial L.P. and ECB staff calculations.
Notes: Panel a: bars show weights in the first principal component estimated from daily changes in the following variables: (i) the CHF, JPY, EUR and USD nominal effective exchange rates (NEER) cleansed of monetary policy and macro shocks estimated using the model developed by Brandt et al.*; (ii) gold price returns removed from USD data; (iii) first difference of ten-year government yields for the United States, Japan and the euro area; and (iv) VIX. The weights indicate how much each variable contributes to the safe-haven factor. Blue bars: sample from 1 January 2006 to 31 March 2025; yellow bars: sample from 1 April to 30 May 2025. Blue bar for EUR NEER is not visible as it is close to 0. Panel b: Global financial crisis: 1 September 2008-27 February 2009; COVID-19 pandemic: 20 February-23 March 2020; April 2025 tariff shock: 2-21 April 2025.
*) Brandt, L., Saint Guilhem, A., Schröder, M. and Van Robays, I., "What drives euro area financial market developments? The role of US spillovers and global risk", *Working Paper Series*, No 2560, ECB, May 2021.

The depreciation of the US dollar exacerbated losses on US portfolio investments made by euro area investors. Unusually, the correlation between the return on a balanced US equity and debt portfolio and the change in the US dollar exchange rate against the euro turned positive (**Chart A.5**, panel a). After a temporary decline, many US asset prices recovered, but the US dollar exchange rate remained weak. In US dollar terms, the return on US assets has been positive, particularly on US equities which have rallied strongly (by around 13%) since the beginning of the year. Yet because of the double-digit depreciation of the US dollar against the euro

[132] See Avdjiev, S., Du, W., Koch, C. and Shin, H.S., "The Dollar, Bank Leverage, and Deviations from Covered Interest Parity", *American Economic Review: Insights*, Vol. 1, No 2, 2019, pp. 193-208.

[133] See "Foreign investors in US assets rush for protection against swings in dollar", *Financial Times*, 17 September 2025.

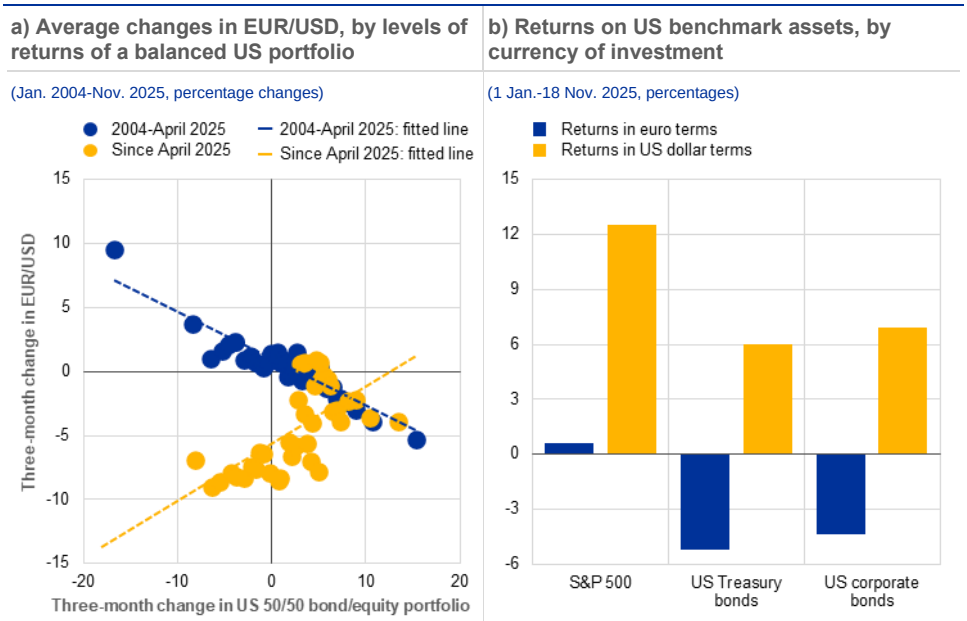
since the beginning of the year, the return on the US dollar assets of euro area investors who have not hedged their currency risk has been eroded and has even turned negative for US Treasury and corporate bonds (**Chart A.5**, panel b). In particular, the total return for a US Treasury index, a traditional safe haven for risk-averse investors, was down by around 5 percentage points in euro terms. This potentially calls for the reassessment of unhedged dollar exposures in the portfolios of euro area and foreign investors.

Was the April event unusual and will it happen again?

Similar episodes have occurred in the past, but they were rare. Looking at the historical evidence, the negative correlation of US Treasuries with global risk is unusual, though not unprecedented (for instance at times before 2007) (**Chart A.4**, panel b).[134] Moreover, the US dollar also exhibited negative co-movement with other safe-haven assets in the early months of 2017, after the first Trump Administration introduced fiscal stimulus.

Chart A.5

The natural hedge of the US dollar was temporarily lost in April 2025



Sources: Bloomberg Finance L.P. and ECB staff calculations.
Note: Panel a: balanced US portfolio is proxied by the S&P Balanced Equity and 500 Corporate Bond Index. The chart shows averages derived from daily data.

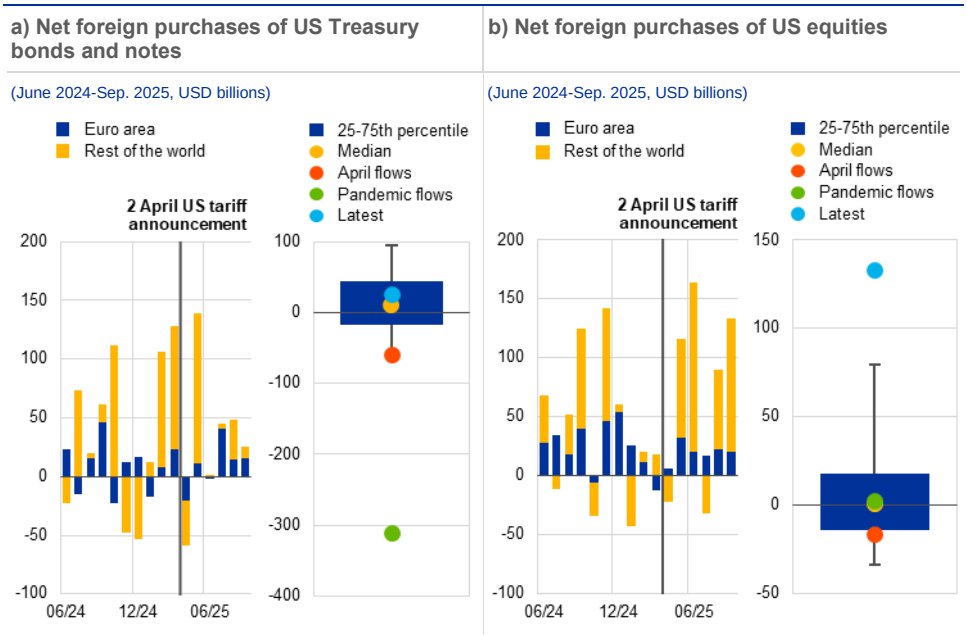
Market commentary has since debated whether the response to the April events was an isolated anomaly or a structural shift in asset price correlations. On the one hand, the change in the cross-asset correlation could have been a temporary phenomenon, driven by a one-off adjustment of global portfolios reflecting the desire of investors to reduce their exposure to US risk, which had been building up in the

[134] See Ranaldo, A. and Söderlind, P., "Safe Haven Currencies", *Review of Finance*, Vol 14, Issue 3, 2010, pp. 385-407.

current business cycle. At the same time, it could also signal a fundamental shift in the perception of the safety of US dollar assets. This has been accompanied by suggestions of eroding confidence in US institutions (on the back of a tariff-focused trade policy, a retreat from international partnerships, concerns about the independence of the Federal Reserve System and big changes in the stance and composition of fiscal policy, among other things).[135]

Chart A.6

Investor flows into US assets from the euro area appear to have stabilised since April



Sources: U.S. Department of the Treasury and ECB staff calculations.
Notes: Net purchases of US Treasury bonds and notes (panel a) and equities (panel b) by euro area residents and the rest of the world, based on US Treasury International Capital system data. Distributions are calculated as of 2012. "April flows" refers to April monthly flows following the 2 April US tariff announcement; "Pandemic flows" refers to flows in March 2020 during the dash for cash.

While many indicators show a strong rebound in risk appetite and asset prices, there are signs that earlier patterns may not be fully restored. Financial flows recorded in the US Treasury International Capital system show sizeable but short-lived outflows from US assets in April, including both equities and US Treasuries (**Chart A.6**). There was a strong rebound in May in foreign purchases of US Treasuries and US equities, including by euro area investors.[136] While the convenience yield has flattened off, it remains lower than it was before April (**Chart A.2**, panel a). The US dollar has stabilised since July, despite downward pressure from increased hedging of US dollar exposure and growing expectations that the Federal Reserve will cut interest rates further, possibly buoyed by the announcement of trade deals between the United States and many of its trading partners. Yet speculative positions on the US dollar remain mildly negative despite its earlier depreciation, thus not indicative of market expectations for a rebound (**Chart A.3**, panel a). The correlation between US Treasuries and the US dollar exchange rate is again positive but remains weak, particularly when compared with

[135] Financial Times, "Sell America", *Unhedged podcast*, 23 April 2025.

[136] EPFR data indicate that flows to funds investing in the United States have rebounded strongly since April. This includes euro area investors and is especially the case for bond flows.

the close correlation observed in 2024 (**Chart A.3**, panel b). Some US asset prices (especially equities) and international flows have recovered, and some cross-asset correlations have normalised somewhat, while risk asset pricing has been benign recently. However, a more thorough validation of asset pricing patterns will hinge on the market response to the next major adverse shock. The next section looks at what the implications for financial stability would be if the unusual correlations and financial market responses observed around the April episode were to become the rule rather than the exception.

2 Financial stability implications of shifting cross-asset correlations

What if the change in correlations and financial market responses persists?

Shifting and less predictable cross-asset price correlations pose a risk to financial stability. Shifts in correlations could undermine diversification and hedging strategies, causing asset prices that are normally uncorrelated to fall simultaneously during periods of stress. This could amplify losses, render risk models inaccurate and trigger margin calls and forced selling, potentially leading to liquidity spirals and systemic contagion. When correlations shift unpredictably, investors and policymakers alike lose reliable tools for managing risk and stabilising markets, increasing the likelihood of widespread financial disruption. If the negative correlation between the US dollar, or US Treasuries, and market risk were to persist, this could compromise the use of these assets as a hedge against global shocks.[137]

Changing cross-asset correlations pose a sizeable challenge for euro area investors, as they hold a large portfolio of US securities. As of the second quarter of 2025, euro area resident entities held more than €12 trillion in foreign portfolio assets, around half of which are securities issued by US entities. At that time, euro area investors held €3.8 trillion of US equities, around €800 billion of US sovereign debt and €1.5 trillion of other US debt securities (**Chart A.7**, panel a). Exposure to US equities has grown rapidly in the past decade, accounting for one-third (60%) of euro area investors' total (foreign) portfolio, up from 13% (35%) in 2014. Exposure to US debt securities has risen at a similar pace, although it has been more limited as bond portfolios show a greater degree of home bias than equity portfolios. As of the second quarter of 2025, US sovereign debt securities accounted for 10% (34%) of the total (foreign) sovereign debt portfolio of euro area investors, while other US debt securities accounted for 13% (37%) of the total (foreign) portfolio of euro area investors in these securities.

[137] The tendency of the US dollar to appreciate and the US net external position to deteriorate in crises has been seen as valuable form of insurance provided by the United States to investors in the rest of the world. See Gourinchas, P.-O. and Rey, H., "Exorbitant Privilege and Exorbitant Duty", *CEPR Discussion Papers,* No 16944, Centre for Economic Policy Research, 2022.

Which euro area sector could this be a problem for?

Non-banks channel the bulk of euro area investment in the United States and have large exposures to US dollar securities, but they hedge only a fraction of their currency risk. Investment funds account for 75% of euro area investors' holdings of US equities, almost 50% of their holdings of US sovereign debt and around 60% of their holdings of other US debt securities (**Chart A.7**, panel b).[138] The share of US dollar securities in the equity portfolios of non-banks is significant: 60% for pension funds, 50% for investment funds and more than 20% for insurance corporations. The share of US dollar securities in the debt portfolios of non-banks is lower than that for equity, but it is still substantial, with 10% for pension and almost 30% for investment funds (**Chart A.8**, panel a). While non-banks generally use derivatives to hedge currency risk, a significant share of their currency exposure remains unhedged. According to a recent study, euro area pension funds hedge 57% of the currency risk in their US dollar bond portfolios whereas insurance corporations and investment funds hedge only around one-third of it.[139] Gross notional US dollar foreign exchange derivatives held by euro area investment funds represent less than 10% of their portfolio of US dollar-denominated securities for equity funds and 55% of US dollar-denominated securities for fixed-income funds (**Chart A.8**, panel b).[140] Yet the use of foreign exchange derivatives by euro area investment funds − in particular fixed-income funds − rose last year, signalling increasing interest in hedging US dollar exposures among euro area portfolio managers (**Chart A.8**, panel c). However, macro-financial uncertainty can strain foreign exchange markets, raising hedging costs in periods of financial stress. Moreover, long-term foreign currency positions are usually hedged via short-term foreign exchange derivatives, giving rise to liquidity mismatches in non-banks' balance sheets.[141] Both factors lead to foreign asset fire sales by non-banks or larger currency exposure when financial market volatility increases.[142]

---

138 It should be noted that investment funds located in the euro area channel investment by global investors, meaning that some of their holdings of US securities do not necessarily represent an exposure to euro area residents. For instance, estimates using security-level data suggest that euro area residents account for only around one-third (or one-quarter in the case of bonds) of investment fund assets held by investment funds in Luxembourg and Ireland. See the box entitled "Geographic biases in international financial statistics" in *The international role of the euro*, ECB, June 2025.

139 See Kubitza, C., Sigaux, J.-D. and Vandeweyer, Q., "The implications of CIP deviations for international capital flows", *Working Paper Series*, No 3017, ECB, 2025.

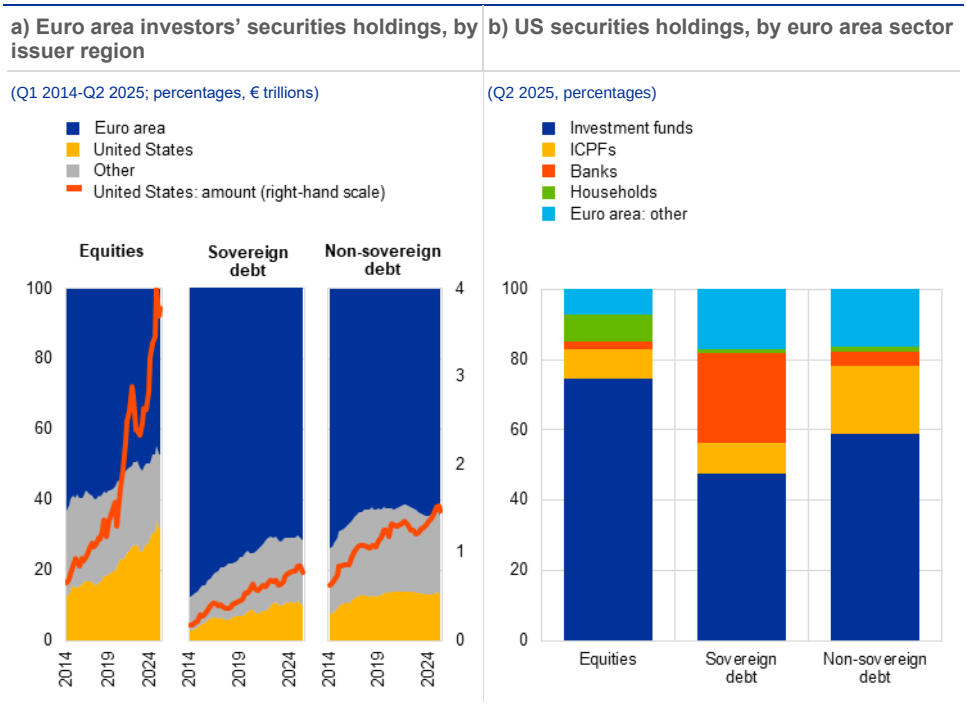
140 These gross figures are a crude proxy of currency hedging activity by non-banks. Usually, currency hedging ratios are higher for fixed-income funds than for equity funds. This is because the volatility of exchange rates is normally lower than the volatility of equity returns but higher than that of bond returns, meaning that it has a greater impact on returns on US dollar-bond portfolios in euro terms.

141 See "Risk and resilience in the global foreign exchange market", *Global Financial Stability Report,* International Monetary Fund, October 2025.

142 See Kubitza, C. et al., op. cit.

Chart A.7

The increase in euro area investors' exposure to US dollar markets has been channelled through non-banks



Sources: ECB (SHS) and ECB calculations.
Notes: Securities reported at current market value. The growing share of US securities holdings reflects both increased investments and valuation gains over time. The ECB's SHS dataset does not provide a comprehensive view of foreign-issued holdings, especially where these are held outside the euro area. Panel b: ICPFs stands for insurance corporations and pension funds.

Beyond hedging, liquid sovereign bond markets are essential to safeguard financial stability more broadly. Safe assets such as US Treasuries perform two distinct roles that are important for financial stability.[143] First, they are information-insensitive and can be valued without the need for expensive analysis. They can serve as collateral and a store of value, as their price tends to remain stable or rise in volatile market conditions.[144] Second, they can be liquidated quickly during stress episodes.[145] For long-term US Treasuries, the first role (store of value) was challenged in April 2025 and the second role (liquid safe haven) in the dash-for-cash turmoil at the onset of the pandemic in 2020.[146] However, the US Treasury market remains the largest and most liquid market globally, although liquidity stress can propagate rapidly across jurisdictions (see **Box A**). It remains of key importance for global financial stability that this market continues to function efficiently.

143 See Duffie, D., "How US Treasuries Can Remain the World's Safe Haven", *Journal of Economic Perspectives*, Vol. 39, No 2, 2025, pp. 195-214.

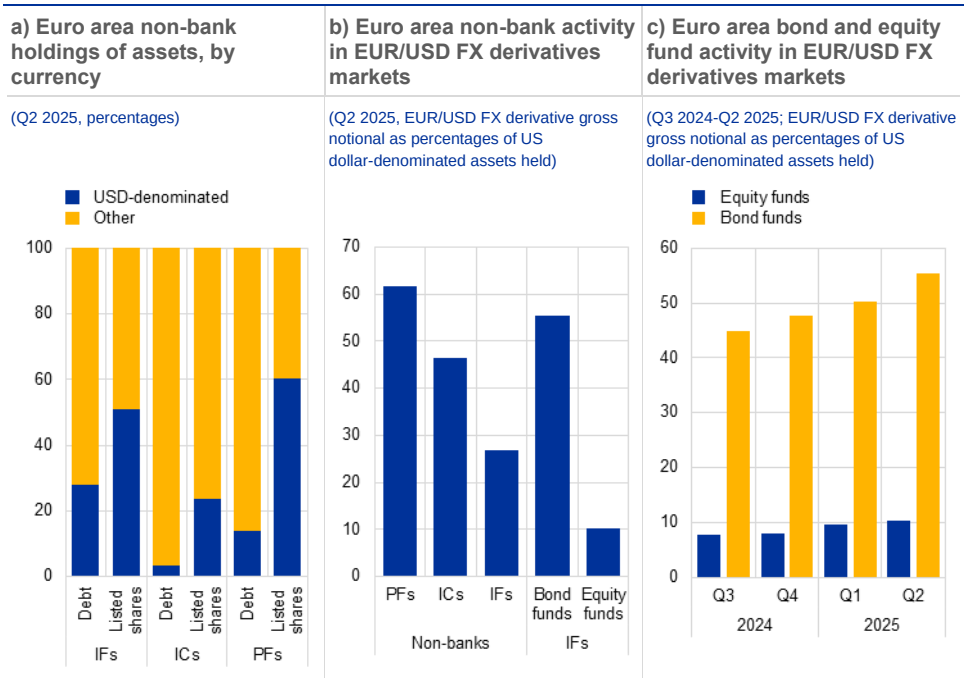
144 See Gorton, G., "The History and Economics of Safe Assets", *Annual Review of Economics*, Vol. 9, 2017, pp. 547-586.

145 See Habib, M.M., Stracca, L. and Venditti, F., "The fundamentals of safe assets", *Journal of International Money and Finance*, Vol. 102, 2020.

146 See Duffie, D., op. cit.

Chart A.8

Large non-bank exposures to the US dollar; investment funds only partly hedged



Sources: Bloomberg Finance L.P., ECB (EMIR, IVF, SHS) and ECB calculations.
Notes: IFs stands for investment funds; ICs stands for insurance corporations; PFs stands for pension funds. Panel b) and panel c: due to data quality issues, it is currently not possible to reliably estimate the open FX derivative positions held by non-banks. Gross FX derivative notional is correlated with FX hedging activity but includes both long and short FX positions. Cross-currency interest rate swaps are not included under FX derivatives. Holdings of US dollar-denominated assets by bond funds are estimated by subtracting aggregate investment funds' holdings of euro-denominated US debt, allocated across investment fund subsectors based on their share of US debt holdings, from bond funds' total US bond portfolios. Total US dollar-denominated bond holdings are calculated by applying the aggregate fund sector's share of US-issued bonds within the US dollar-denominated debt portfolios. US dollar-denominated equity holdings are proxied by US-issued equity holdings.

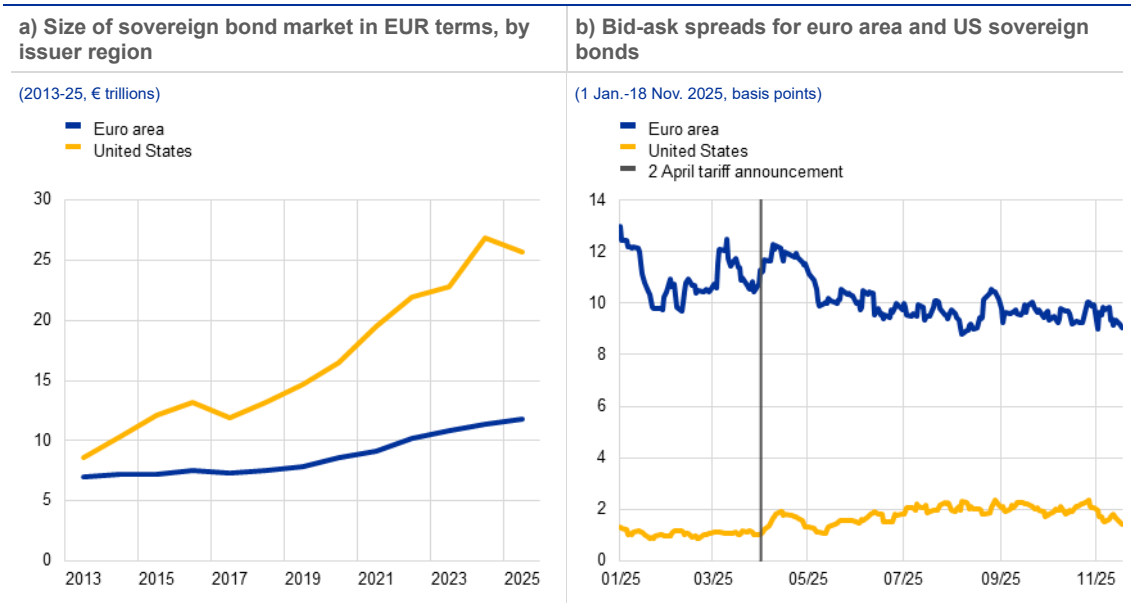
Box A

Liquidity of euro area and US sovereign debt markets

The US Treasury market is the largest and most liquid market globally, but market liquidity has deteriorated since the US tariff announcements in April. The amount of US Treasury securities outstanding has reached USD 30 trillion (€26 trillion), doubling in size since 2018 (**Chart A**, panel a). The euro area sovereign bond market has also expanded but is still only about 40% of the size of its US counterpart. Traditionally, US Treasuries exhibit superior liquidity compared with euro area sovereign bonds (even the German Bund). However, liquidity conditions in the United States have deteriorated since the tariff announcements in April, as US bid-ask spreads have widened to some extent and remain above pre-April levels. They are nonetheless still far lower than those in the euro area (**Chart A**, panel b) and remain tight relative to a longer historical time series (**Chart B**, panel a). By contrast, euro area sovereign bond market liquidity, which initially deteriorated in parallel with US developments, has recovered more swiftly. This box examines structural trends in market liquidity in the United States and the euro area, drawing on a range of indicators to assess how liquidity evolves in episodes of stress.

Chart A

The US Treasury market is large and liquid, but liquidity has deteriorated recently



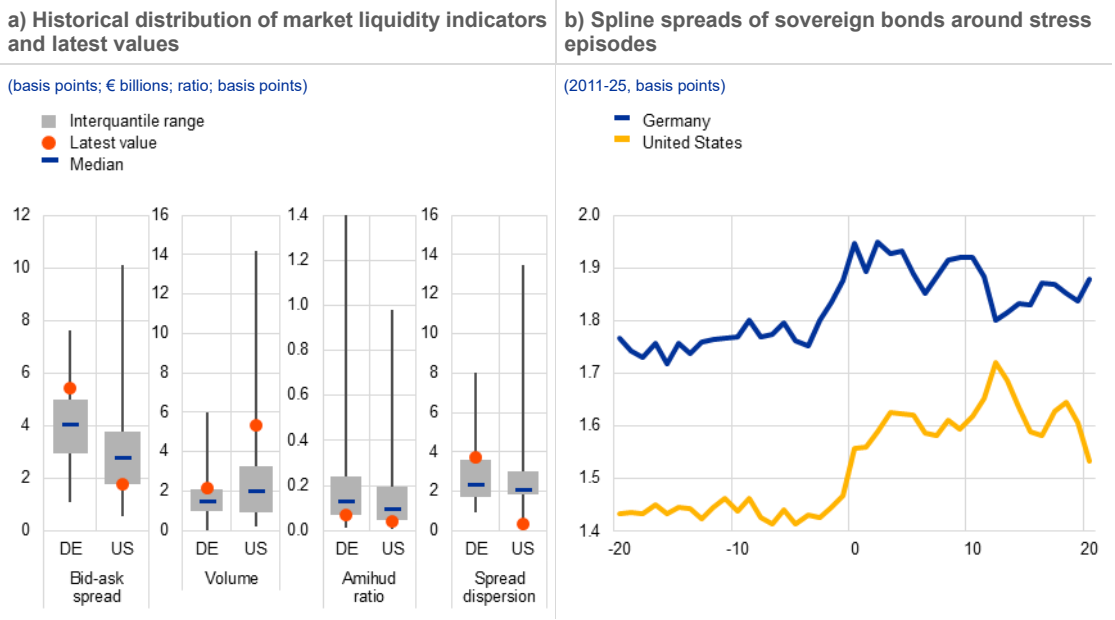
Sources: MarketAxess and ECB calculations.
Notes: Panel a: the value for 2025 is the latest available amount outstanding (as at 7 October 2025), while for previous years values are year-end values. In USD terms, the US Treasury market has grown continuously over the period since 2013, with the drop in 2016-17 and 2025 due to exchange rate movements. Panel b: five-day moving average bid-ask spread weighted by the amount outstanding of each bond.

The US Treasury market is generally more liquid than euro area sovereign bond markets, according to a range of indicators. Bid-ask spreads on US Treasuries are typically lower than those on German Bunds – usually the most liquid sovereign bond market in the euro area. Trading volumes in US bond futures are also higher, while a measure of the price impact of trades (the Amihud ratio) is usually lower for US securities (**Chart B**, panel a). Market breadth is also stronger in the United States, as indicated by the smaller dispersion of bid-ask spreads across securities. Importantly, euro area sovereign bond markets remain more fragmented and heterogeneous, with multiple sovereign issuers that have differing credit quality, issuance practices and market structures.

Liquidity dynamics in the United States and the euro area are similar during stress episodes, reflecting the interconnected nature of global sovereign bond markets. Using data since 2011, the analysis identifies 14 episodes in the United States and 13 in the euro area, most of which are the same for both jurisdictions. The yield curve spline spread measures bond market liquidity by quantifying how actual bond yields deviate from a smooth, fitted yield curve: larger deviations suggest lower liquidity, as prices are less aligned with expected market norms. Unsurprisingly, this measure of market liquidity deteriorates during stress episodes, which tend to cause synchronised liquidity deteriorations in Germany and the United States (**Chart B**, panel b). A similar pattern holds for other indicators of market liquidity. This suggests that liquidity stress can propagate rapidly across jurisdictions, potentially amplifying financial stability risks in periods of market turbulence.

Chart B

US Treasuries are more liquid than Bunds but exhibit a similar decline in liquidity during stress episodes



Sources: MarketAxess, Bloomberg Finance L.P. and ECB calculations.
Notes: Panel a: red dots reflect the average of the last 20 observations of daily data up to 18 November 2025. Winsorised at 0.01 and 0.99. Historical distribution using daily data since 2013 (for bid-ask spread and spread dispersion) and since 1995 (for trading volume and Amihud ratio). Panel b: spline spreads measure bond market liquidity by quantifying how actual bond yields deviate from a smooth, fitted yield curve – larger deviations suggest lower liquidity, as prices are less aligned with expected market norms. The x-axis shows trading days around stress episodes. Stress episodes are defined as days on which the change of the MOVE index (for the United States) or the SMOVE index (for the euro area) is 4 standard deviations or greater relative to its distribution over the preceding two years. To eliminate shocks belonging to the same episode, shocks occurring within 30 days of the initial shock are removed. Most identified episodes are the same for both jurisdictions.

3 Policy considerations and conclusions

Even though it is not clear whether the April turmoil in financial markets represents a fundamental shift in cross-asset correlations, it does call for euro area investors to pay close attention. The changes in correlation patterns observed in April could be of systemic relevance for euro area markets and investors. Reaping the benefits of global financial integration to diversify risk through exposure to foreign assets and to manage risk in foreign portfolios could be more challenging if the correlation between the securities that represent a substantial share of the portfolio of euro area investors were to become less predictable. Continuing regulatory and supervisory scrutiny of investor risk management practices would be required.

The potential scarcity of safe assets poses challenges from a financial stability perspective. In the last two decades, US Treasuries and the US dollar have tended to act as a stabilising factor in global financial portfolios during periods of financial market stress. Over the short to medium term, this important function cannot easily be replaced by other assets and currencies. Such markets would have to be large, liquid and deep enough to absorb large spikes in demand without sharp price fluctuations when market volatility is elevated. Ultimately, there is little alternative to the US Treasury market in terms of size, liquidity and depth. If the stabilising role of US assets

in stress periods were to be compromised, global investors would struggle to find alternative assets to hedge market risk.[147]

In this context, the creation of a deeper and more liquid market for euro area safe assets could provide important benefits for the euro area – not only from a financial stability perspective but also for strengthening the international role of the euro. It could establish an asset to hedge risk that is not subject to exchange rate risk. A large market for euro area safe asset could also support the smooth transmission of monetary policy and would create a benchmark for other euro area issuers to ensure efficient price discovery.

Immediate and decisive progress is needed on the European savings and investments union, encompassing both the banking and capital markets union.[148] These initiatives are intended to foster a single large and liquid market, thereby helping to safeguard financial stability. However, progress has not been fast enough to deliver these objectives, and there is an urgent need for relevant institutional players to intensify efforts towards their swift completion. Achieving a single market for capital is essential to mobilise private savings towards productive investment, boost innovation and increase private risk sharing across the euro area, especially in the face of idiosyncratic shocks at the country level. Moreover, this would also strengthen the international role of the euro, as deep and liquid financial markets are fundamental to a currency's ability to attain international status. A swift agreement and implementation of the upcoming package of proposals on the supervision and integration of EU capital markets would represent an important step towards reaching these objectives.[149]

147 See Rey, H., "Strengths and Flaws of the Dollar-Based System", in Irwin, D.A. and Obstfeld, M. (eds.), *Floating Exchange Rates at Fifty*, Part V, 24, Peterson Institute for International Economics, Washington DC, 2024.

148 In particular, the key areas in which the EU is expected to make progress are: the development of the EU securitisation market; integrated supervision of EU capital markets; targeted harmonisation of corporate insolvency rules, accounting frameworks and securities law; post-trading and addressing the debt bias in taxation. See "Statement by the ECB Governing Council on advancing the Capital Markets Union", ECB, 7 March 2024.

149 See "ESCB reply to the European Commission's targeted consultation on integration of EU capital markets", ECB, June 2025.

B Systemic risks in linkages between banks and the non-bank financial sector

Prepared by Paul Bochmann, Daniel Dieckelmann, Maciej Grodzicki, Aoife Horan, Chloe Larkou and Francesca Lenoci[150]

Linkages between euro area banks and entities in the non-bank financial intermediation (NBFI) sector may lead to the emergence of systemic risk in at least two fields. First, the banking sector receives short-term deposit, repo and debt securities liabilities from NBFI entities. Such liabilities may be prone to flight risk and difficult to substitute. Second, euro area banks provide credit to NBFI entities which follow leveraged investment strategies. Hedge funds, mainly based outside of the euro area, together with non-bank lenders and real estate funds are the main groups of such leveraged NBFI entities. These interconnections are particularly important for euro area global systemically important banks (G-SIBs), which play a central role in financial intermediation and transform short-term NBFI liabilities into credit granted to other NBFI entities. While the scale of these linkages is generally contained, they could make euro area banks vulnerable to asset price shocks which, by triggering NBFI funding outflows and counterparty credit losses on exposures to NBFI entities, could lead to deleveraging by banks, reduced provision of leverage by banks to NBFI entities and asset fire sales. G-SIBs' loss-absorbing capacity is thus essential to ensure the smooth provision of financial services in times of stress.

1 Introduction

Interconnections between banks and NBFI entities reflect the wide range of financial services the two sectors provide to each other. NBFI entities are a diverse group of intermediaries that perform a range of economic functions.[151] However, most of them rely on banks to manage liquidity, obtain leverage and access financial markets (in which banks act as market-makers). Some NBFI entities invest in banks' capital and long-term debt funding and provide insurance and guarantees.[152] These activities expose both sectors to credit, market, liquidity and operational risks, resulting in a complex landscape of connections which may give rise to systemic risk. Recent episodes of financial stress have demonstrated how the concentration of these connections among single firms[153] or groups of similar firms[154] could raise financial stability concerns.

Systemic risks may emerge from linkages between banks and NBFI entities in two areas: liquidity vulnerabilities in the banking system and the provision of

150 The authors thank Lavinia Franco for her work on data and analysis used in this special feature.

151 See "Strengthening Oversight and Regulation of Shadow Banking", Financial Stability Board, August 2013.

152 See Basel Committee on Banking Supervision, "Banks' interconnections with non-bank financial intermediaries", Bank for International Settlements, July 2025.

153 See "Leverage and derivatives – the case of Archegos", *TRV Risk Analysis*, European Securities and Markets Authority, May 2022.

154 See the box entitled "Interconnectedness of derivatives markets and money market funds through insurance corporations and pension funds", *Financial Stability Review*, ECB, November 2020.

leverage to NBFI entities. Previous work carried out by the ECB has established that euro area banks are net borrowers from the NBFI sector and that interactions in capital markets are a key channel through which stress can propagate between banks and NBFI entities.[155] US research has shown that the expansion of the NBFI sector relies on banks as providers of leverage and contingent liquidity facilities to NBFI entities.[156] These relationships have resulted in US banks becoming net creditors to the NBFI sector. Although the expansion of NBFI entities in the euro area has not been associated with tightening linkages between banks and NBFI entities to the same degree,[157] euro area banks also provide liquidity and leverage to euro area and global NBFI entities.

Granular datasets shed light on how linkages between banks and NBFI entities differ by entity size, business model, geography, currency and maturity. This special feature combines multiple trade and exposure-level datasets to shed further light on key interlinkages between euro area banks and NBFI entities and highlight the associated systemic risks to financial stability. The analysis has limits, however, since it investigates neither ownership links nor the role of NBFI entities as credit insurers or protection providers. Future work may examine these aspects and take stock of existing work on ownership links.[158] In the following sections, the risks arising from liabilities to NBFI entities are investigated first, followed by those risks emerging from banks' provision of leverage to NBFI entities. Last, the risks arising from banks' intermediation role in financial markets are discussed.

2 Redemption and rollover risks in bank liabilities to NBFI entities

Bank liabilities obtained from NBFI entities may be prone to flight risk, given their short maturity, with dependencies concentrated in specific bank business models. On average, euro area banks finance 15% of their assets through liabilities to NBFI entities (**Chart 5**, panel c in the **Overview**). Approximately 60% of these liabilities comprise very short-term instruments such as deposits and repos (**Chart B.1**, panel a).[159] Overnight and foreign currency liabilities, which may be particularly prone to outflows during periods of market stress, constitute a large part of repo borrowing by euro area banks from NBFI entities (**Chart B.1**, panel b). However, as these liabilities result from intermediation activity, they tend to be matched by corresponding reverse repo lending in the same currency (**Section 4** in this special feature). NBFI entities often place cash buffers with banks and may withdraw their

---

155 See the special feature entitled "Key linkages between banks and the non-bank financial sector", *Financial Stability Review*, ECB, May 2023.

156 See Acharya, V.V., Cetorelli, N. and Tuckman, B., "Where Do Banks End and NBFIs Begin?", *NBER Working Paper Series*, No 32316, National Bureau of Economic Research, April 2024.

157 For a comparative analysis of US and euro area NBFI expansion over time, see Pelizzon, L., Mattiello, R. and Schlegel, J., "Growth of non-bank financial intermediaries, financial stability, and monetary policy", paper presented at the ECB Forum on Central Banking, Sintra, July 2025.

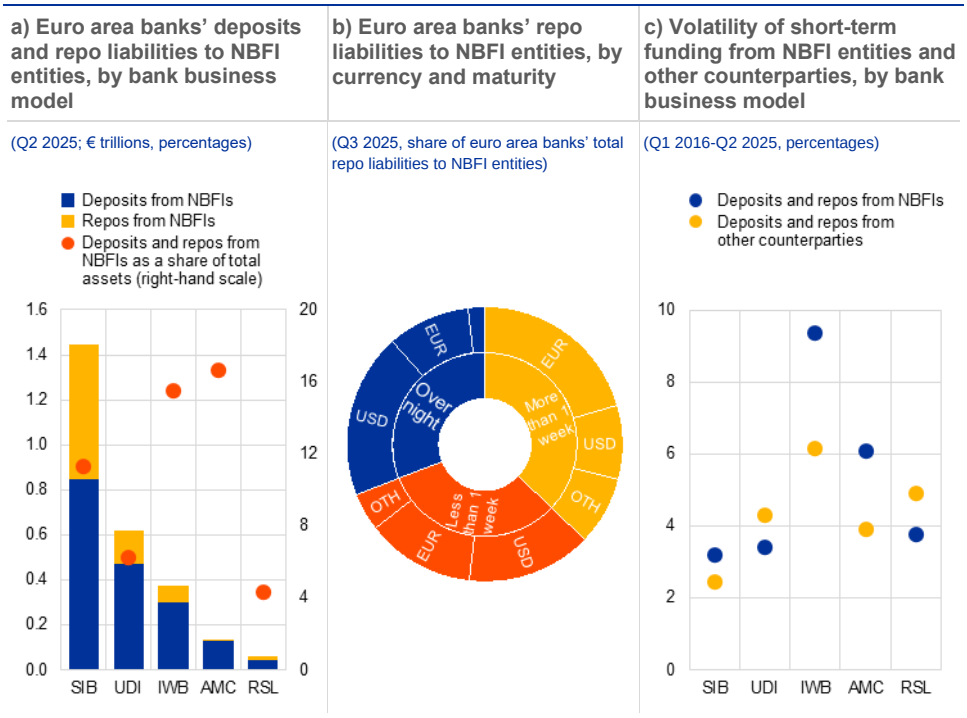
158 See the special feature entitled "Asset manager ownership structure in the EU", *NBFI Monitor*, No 9, European Systemic Risk Board, June 2024.

159 See footnote 155.

deposits when facing redemptions or margin calls.[160] In some cases, however, they may also increase their deposit holdings, either for a precautionary reason, or because of a changing risk appetite. The volatility of liabilities obtained from NBFI entities is higher in bank business models with a larger share of such liabilities, especially in the case of deposits and repos from NBFI entities as opposed to deposits from other counterparties such as non-financial corporations, households and banks (**Chart B.1**, panel c).

Chart B.1

Banks' liabilities to NBFI entities are short-term and may be volatile



Sources: ECB (supervisory data, SFTDS) and ECB calculations.
Notes: Panel a and panel c: SIB stands for systemically important banks; UDI stands for universal and diversified institutions, which include universal banks and diversified lenders; IWB stands for investment and wholesale banks; AMC stands for asset managers and custodian banks; RSL stands for retail banks and small lenders.* Panel b: for each significant institution and NBFI entity pair, we calculate the quarterly median for each maturity bucket and currency. Subsequently, we aggregate the results by summing across currencies and maturity buckets. Panel c: volatility is measured as the standard deviation of the share of deposit and repo liabilities divided by banks' total assets for the period Q1 2016-Q2 2025, by bank business model and counterparty cluster. "Deposits and repos from other counterparties" includes deposits and repos from non-financial corporations, households and banks.
*) See Methodological note for the publication of aggregated Supervisory Banking Statistics for significant institutions, ECB, 2025.

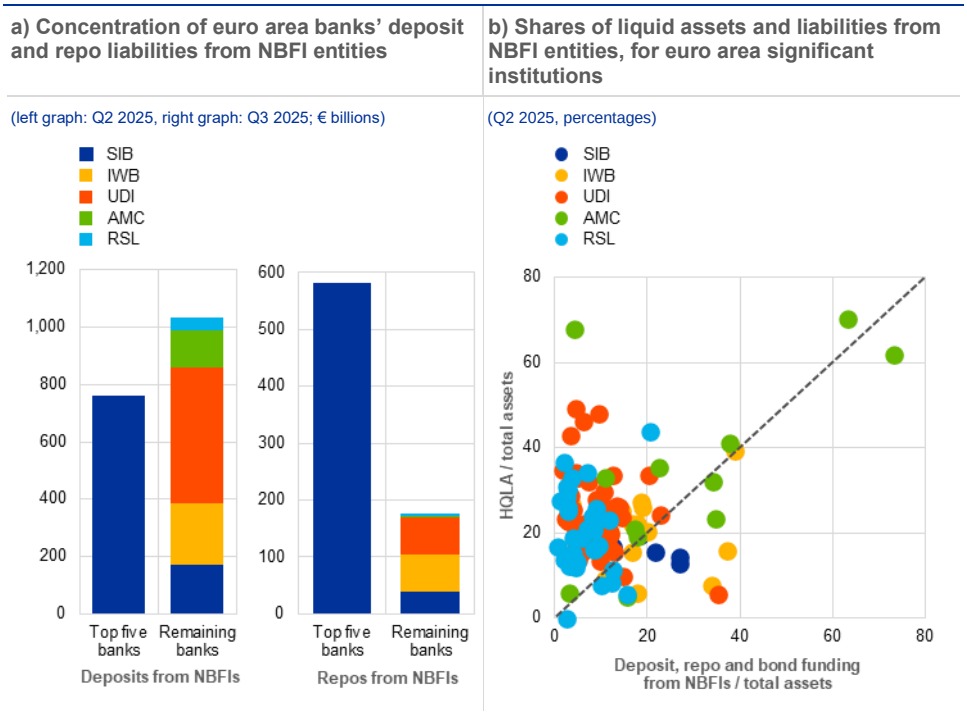
Banks' short-term liabilities from NBFI entities are concentrated and highly segmented at the level of individual banks. In particular, a small number of euro area banks hold a large share of total non-bank repo and deposit liabilities from NBFI entities. This is particularly evident in the repo market, where the top five banks – all G-SIBs – account for approximately 65% of euro area banks' repo borrowing from NBFI entities (**Chart B.2**, panel a) while accounting for 35% of the total assets of euro area significant institutions. Short-term liabilities to NBFI entities are provided mainly by investment funds and other financial institutions (such as broker-dealers), while money market mutual funds lend US dollars on a secured basis and provide

[160] Some NBFI entities, including certain types of open-ended funds, hold a high share of relatively illiquid assets but offer investors daily redemptions. This structure makes them vulnerable to runs (where investors rush to redeem their funds), potentially leading to significant volatility in asset markets.

unsecured commercial paper funding. This segmentation reflects differences in the sizes of the NBFI sectors and their respective investment mandates. It also highlights the concern that funding outflows may be difficult to replace in the short term. This is because providers of specific types of liabilities tend to follow similar business models, which may result in concentrated withdrawals.[161]

Chart B.2

Banks with highly specialised business models rely heavily on volatile liabilities to NBFI entities but maintain low liquidity buffers



Sources: ECB (supervisory data, SFTDS) and ECB calculations.
Notes: SIB stands for systemically important banks; UDI stands for universal and diversified institutions, which include universal banks and diversified lenders; IWB stands for investment and wholesale banks; AMC stands for asset managers and custodian banks; RSL stands for retail banks and small lenders. Panel b: HQLA stands for high-quality liquid assets. The share of NBFI liabilities may include intragroup exposures.

Relying on volatile and concentrated short-term funding can amplify risks, especially for banks operating with limited liquidity reserves. At the banking-system level, the flows in bank deposits from NBFI entities do not appear to be related to market volatility.[162] This may indicate that NBFI entities need to place liquidity with banks for structural reasons. However, idiosyncratic shocks to an individual bank could prompt NBFI counterparties to reallocate funds to other banks. Some banks with a high share of liabilities to NBFI entities also tend to hold lower liquidity buffers than their peers, despite the potential risk of outflows (**Chart B.2**,

[161] See the box entitled "Non-bank financial intermediaries as providers of funding to euro area banks", *Financial Stability Review*, ECB, May 2024.

[162] An analysis of quarterly data from 2021 to 2025 indicates no contemporaneous correlation between volatility in bank repo flows from NBFI entities and either the VIX or the volatility of stock prices of listed banks (as proxied by the VSTOXX index).

panel b).[163] In the event of funding stress triggered by NBFI outflows, such banks may need to rapidly sell assets or cut back on their provision of services to NBFI entities.

Some other NBFI entities provide stable long-term bond funding to euro area banks. As of June 2025, euro area NBFI entities held approximately one-third of outstanding euro area bank bonds, amounting to around €1.5 trillion. Insurance corporations and pension funds are a prominent class of investor in bank bonds, as they need to take duration risk to reduce their asset-liability mismatches. With long maturities spaced out over time, the liquidity risk associated with such funding is limited. However, a protracted loss of access to bond funding may also make it difficult for banks to comply with regulatory requirements such as the minimum requirement for own funds and eligible liabilities.

3 Credit risk arising from interconnections between banks and NBFI entities

Banks provide credit to a diverse group of NBFI entities, often on a collateralised basis. Euro area banks' asset-side exposures to NBFI entities constitute about 10% of their total assets. Lending (including loans and reverse repos) and securities holdings constitute the most significant portion of banks' on-balance-sheet exposures to NBFI entities, while derivatives also account for a notable share.[164] Total bank credit exposures to NBFI entities as a share of total assets are highest in Germany, France and the Netherlands, as well as in Ireland, which is home to several subsidiaries of non-EU investment banks (**Chart B.3**, panel b). The high share of collateralised and short-maturity lending, such as that provided via reverse repos, reduces the credit risk banks are exposed to in their lending to NBFI entities (**Chart B.3**, panel a),[165] although these exposures incur counterparty credit risk charges.[166] Lending to other financial intermediaries, such as prime brokers, securities firms, securitisation vehicles, leasing units and financing conduits, represents about 50% of euro area significant institutions' credit exposure to NBFI entities, followed by investment funds at 18% and captive financial institutions at 14.5% (**Chart B.3**, panel b).

Intragroup linkages, in which banks fund entities within the same financial group, are very common. Exposures to other financial intermediaries (OFIs) and captive financial institutions are often contained within the same banking group. At

---

163 Low liquid buffers at investment and custodian banks could be attributed to their distinct operational models. Investment banks actively invest in financial markets to generate returns through trading, underwriting and market-making, while custodians utilise segregated accounts for their clients. Neither model necessitates the liquid buffers required by commercial banks to manage deposit withdrawals and the liquidity mismatches arising from long-term lending.

164 Derivatives are not examined in detail in this analysis and may be considered in future work. Off-balance-sheet exposures may also include committed but undrawn credit lines and guarantees.

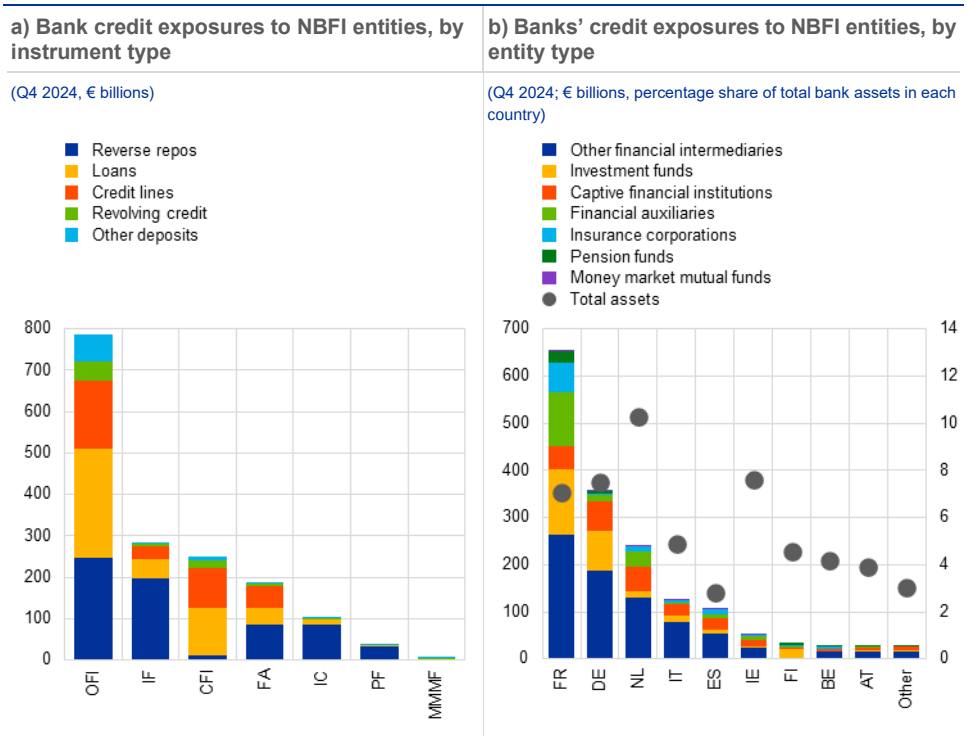
165 While around 10% of credit exposures to NBFI entities are classified as subordinated debt, these are typically concentrated in intragroup exposures to financial vehicle corporations and reflect the retention of junior positions in originated securitisations.

166 For an analysis of counterparty credit risk and contagion via counterparty defaults, see Barbieri, C., Grodzicki, M., Halaj, G. and Pizzeghello, R., "System-wide implications of counterparty credit risk", *Macroprudential Bulletin*, Issue 26, ECB, January 2025.

least 55% of credit exposures to OFIs are classified as intragroup.[167] These exposures cannot be seen in consolidated banking data, but account for a large share of bilateral exposures visible in loan-level and security-level data. Such intragroup linkages are essential in financial conglomerates. Banks often provide a customer with multiple services which may be delivered by a dedicated NBFI entity. If the NBFI entity faces financial difficulties, the bank may opt to support it and absorb financial risks, even if it does not have a contractual obligation to do so, to mitigate legal and reputational risks.[168]

Chart B.3

In aggregate, banks' asset-side exposures are dominated by collateralised exposures, often contained within the banking group's perimeter



Sources: ECB (AnaCredit, supervisory data) and ECB calculations.
Notes: The banking sample comprises all euro area significant institutions. Panel a: OFI stands for other financial intermediaries; IF stands for investment funds; CFI stands for captive financial institutions; FA stands for financial auxiliaries; IC stands for insurance corporations; PF stands for pension funds; MMMF stands for money market mutual funds. Panel b: the country is the domicile of the bank at the highest level of consolidation.

Lending to NBFI entities creates pockets of vulnerability, as many NBFI counterparties follow business models that are predicated on the use of leverage. A classification of NBFI entities by sector, business model and geographical location can shed light on the scale of bank interconnections with NBFI entities that are using leveraged strategies. NBFI entities that deal in residential or commercial real estate (such as real estate investment trusts, REITs), as well as private credit or private equity funds, hedge funds, international securities or commodities trading firms

[167] In the underlying data, any relationship in which a bank owns more than 50% of the shares in an NBFI entity is considered to be intragroup. Thus, the figures on intragroup exposure presented here represent a minimum-bound estimate.

[168] For the definition of step-in risk, see Basel Committee on Banking Supervision, "Identification and management of step-in risk – Guidelines", Bank for International Settlements, March 2017.

and loan originators (such as leasing companies), rely on leverage to achieve their investment objectives. However, the scale of such leverage and the resulting maturity and liquidity mismatches differ across firms and business models.[169] This financial leverage is, to some extent, provided by euro area banks. The latest available data suggest that around €432 billion, or 26%, of the €1.66 trillion that can be identified of euro area banks' total exposures to NBFI entities, involve such leveraged firms.[170] Other NBFI entities, including insurance corporations, pension funds, money market and investment funds, financial auxiliaries and captive financial institutions, are assumed to use no or limited leverage, given that they are often tightly restricted by regulation.[171]

Credit exposures to potentially leveraged NBFI entities are concentrated in G-SIBs, mainly via repo lending to hedge funds and risky trading and securities trading firms. G-SIBs maintain sizeable links to hedge funds and risky trading and securities firms (**Chart B.4**, panel a).[172] Universal banks and diversified lenders are more diversified than G-SIBs, with a notable concentration in hedge funds and substantial exposures to real estate funds and non-bank lenders. Investment banks are more exposed to risky trading and securities firms, which is consistent with their business models. By contrast, less complex banks engage with these entities to a much smaller extent.

Hedge funds and risky trading and securities firms, which are typically more opaque, highly leveraged and prone to liquidity mismatches, account for the largest share of borrowing by leveraged NBFI entities from banks. Linkages with hedge funds and risky trading and securities firms are almost exclusively via the repo market, where banks provide very short-term collateralised loans. Other leveraged NBFI entities tend to use a more diverse mix of bank lending instruments, including revolving facilities and credit lines (**Chart B.4**, panel b).

The distribution of exposures to potentially leveraged NBFI entities relative to banks' capital further highlights the heterogeneity that exists across business models (**Chart B.4**, panel c). While the median bank's exposure is moderate for most

---

169 This also includes entities from outside the euro area. Here, data availability severely limits the identification of leveraged NBFI entities, so a novel two-step identification procedure is implemented. First, all not-yet-identified NBFI entities domiciled in Caribbean islands are classified as hedge funds. Second, the top 1,000 non-euro area NBFI entities in order of total size of exposure to euro area banks are reviewed and assigned to business models on an individual basis.

170 The two-step procedure explained in the footnote above results in about 4% of total exposure for which it is not possible to classify the NBFI entity as potentially leveraged. It is likely that these remaining exposures contain a significant share of exposures to leveraged NBFI entities, most likely real estate funds, which tend to have smaller individual exposure sizes. Thus, 26% can be seen as a lower-bound estimate of risky exposures and 30% as a higher bound. The granular data are reported by euro area-based entities only and do not include exposures of euro area banking groups booked in non-euro area subsidiaries.

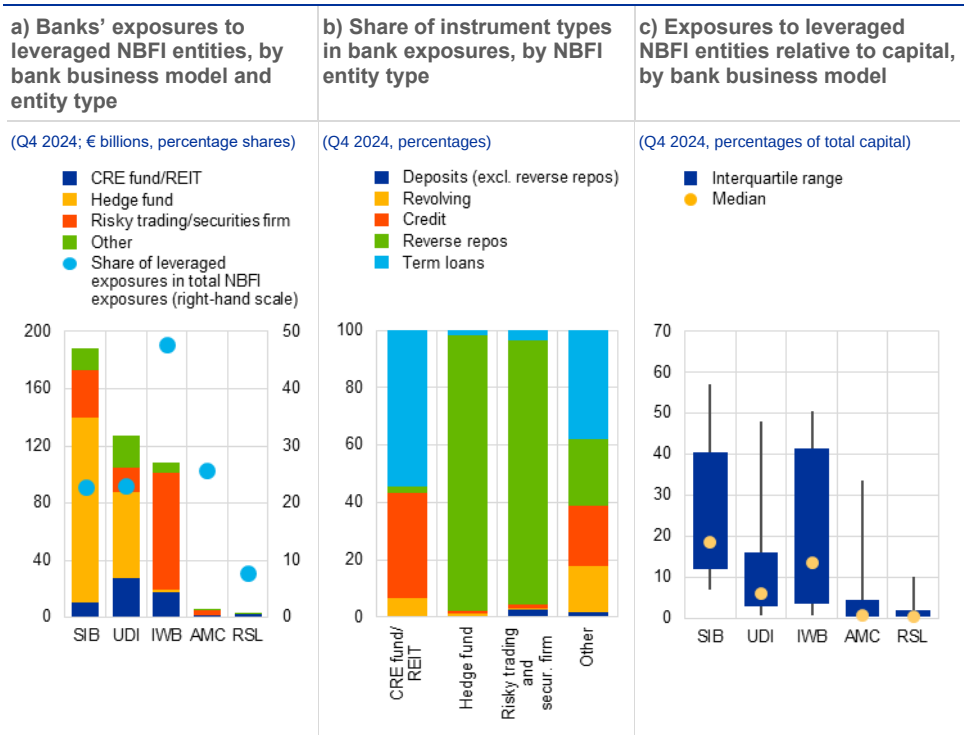
171 While some of these NBFI types may use leverage, its use is usually constrained either by business model features or by regulation (as in the case of insurance corporations and pension funds). Captive financial institutions and financial auxiliaries are usually conduits for the financing of non-financial firms or banks. Other types of NBFI entity are not allowed to use leverage (e.g. money market mutual funds). These first-step sector classifications are based on the AnaCredit dataset and the sector enrichment shown by Lenoci, F.D. and Letizia, E., "Classifying Counterparty Sector in EMIR Data", in Consoli, S., Reforgiato Recupero, D. and Saisana, M. (eds.), *Data Science for Economics and Finance*, Springer, Cham, 2021.

172 For an analysis of exposures to REITs and real estate funds, see Bierich, M., Daly, P., Horan, A., Ryan, E. and Storz, M., "A first look at bank loans to real estate funds", *Macroprudential Bulletin*, Issue 25, ECB, November 2024.

business models, some banks, particularly G-SIBs and investment banks, show higher exposures relative to capital, reflecting their central role in providing leverage and liquidity to NBFI entities. By contrast, universal banks and retail lenders show more contained and less dispersed exposures, which is consistent with their more traditional intermediation role.

Chart B.4

Euro area bank exposures to leveraged NBFI entities are substantial and are highly dependent on business model



Source: ECB (AnaCredit).
Notes: SIB stands for systemically important banks; UDI stands for universal and diversified institutions, which include universal banks and diversified lenders; IWB stands for investment and wholesale banks; AMC stands for asset managers and custodian banks; RSL stands for retail banks and small lenders; CRE stands for commercial real estate; REIT stands for real estate investment trust. Panel c: boxes show the interquartile range, dots denote medians, whiskers span the 5th to the 95th percentiles.

Euro area banks' holdings of debt securities issued by NBFI entities are dominated by long-dated securitisation bonds with low credit risk, a sizeable share of which are in US dollars. Banks' holdings of debt securities issued by NBFI entities stand at slightly above €650 billion, or about 2.5% of total assets in aggregate. They do, however, differ across bank business models and individual banks. Similar to bank lending to NBFI entities, intragroup holdings are sizeable (**Chart B.5**, panel a).[173] Asset managers and custodian banks are the largest holders of debt securities issued by NBFI entities, relative to total assets, albeit with pockets of high concentration which probably arise because they manage or hold investment portfolios.[174] Euro area banks' holdings of NBFI entities' debt securities are dominated by securitisation

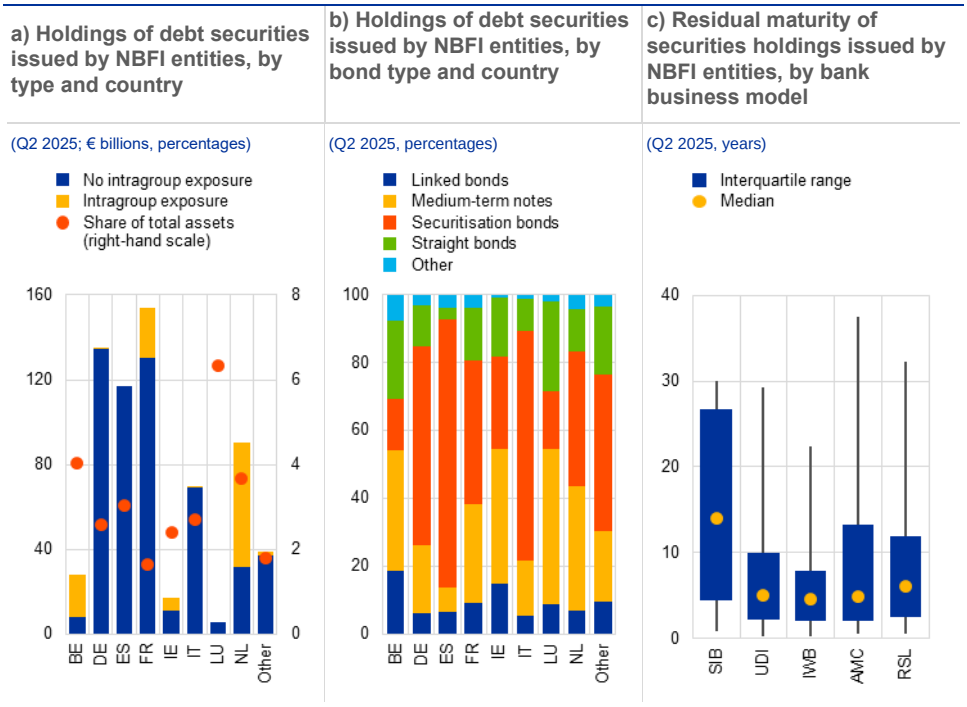
[173] Intragroup holdings are typically either (i) holdings of securities issued by (investment) banking subsidiaries or (ii) holdings of securities issued by funding vehicles falling under the scope of prudential consolidation. Intragroup holdings have been removed from the subsequent analysis in this section as they are associated with different risks compared with holdings of securities from extragroup issuers.

[174] Securities held in custody are excluded from the SHS dataset.

bonds, whether purchased on the open market or retained (**Chart B.5**, panel b).[175] Additionally, about 30% of bank holdings of such securities are denominated in US dollars. They consist mainly of long-dated agency mortgage-backed securities and offer a US dollar-denominated high-quality liquid asset reserve that provides a natural FX hedge against US dollar-denominated liabilities.[176] Credit risk associated with banks' holdings of securities issued by NBFI entities seems contained. However, their long maturity exposes banks to interest rate and liquidity risk (**Chart B.5**, panel c).

Chart B.5

Banks' holdings of debt securities issued by NBFI entities



Sources: ECB (SHS, CSDB) and ECB calculations.
Notes: Panel b) and panel c) exclude intragroup securities holdings. Panel c: boxes show the interquartile range, dots denote medians, whiskers span the 5th to the 95th percentiles. SIB stands for systemically important banks; UDI stands for universal and diversified institutions, which include universal banks and diversified lenders; IWB stands for investment and wholesale banks; AMC stands for asset managers and custodian banks; RSL stands for retail banks and small lenders.

Overall, euro area banks' credit exposures to NBFI entities appear to carry generally low direct credit risk, owing to short maturities and collateralisation, but give rise to counterparty risk and step-in risk. A significant share of exposures is to leveraged NBFI entities, and some G-SIBs and investment banks are significantly more exposed than aggregate figures suggest, creating potential tail risks. Furthermore, the concentration of funding provision to leveraged NBFI entities in a few G-SIBs raises substitutability concerns, as market disruptions could be amplified during periods of stress should these banks withdraw. In addition, banks' sizeable holdings of long-duration NBFI securities expose them to interest rate risk and liquidity risk.

175 Holdings purchased on the open market mainly consist of senior tranches of US and Dutch mortgage-backed securities and European auto loan securitisations, all with very high credit ratings.

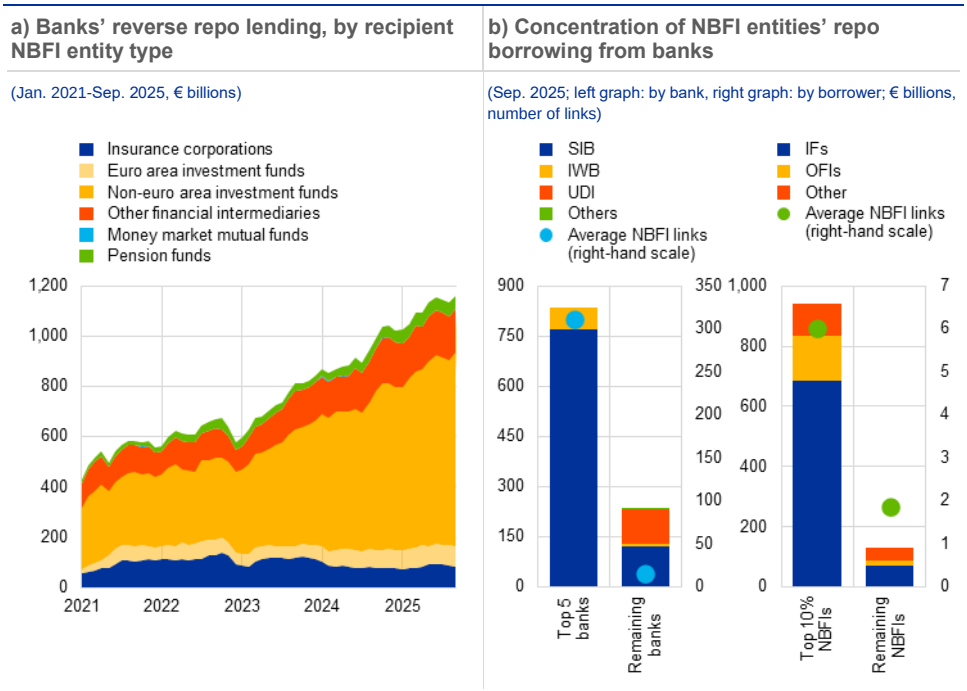
176 These US dollar-denominated bonds, issued by NBFI entities and held by euro area banks, are predominantly US agency residential mortgage-backed securities. They thus represent low credit risk, as underlying mortgage pools must comply with strict origination standards, while the bonds themselves may be considered effectively backed by the US Government.

4 Risks from banks' role as intermediaries in financial markets

Banks and leveraged NBFI entities interact primarily in repo and derivatives markets. In this context, banks engage in various capital market activities with NBFI entities, primarily to meet client needs and to generate revenue through fees and intermediation spreads. G-SIBs and specialised institutions such as investment banks play a key role in making markets for debt and equity.

Chart B.6

There has been a rapid increase in interconnections between banks and NBFI entities via the repo market, driven by prime brokerage activities concentrated among systemic banks



Sources: ECB (SFTDS) and ECB calculations.
Notes: Monthly median values of daily aggregated outstanding repo positions between euro area banks and NBFI entities are reported. The SFTDS dataset offers daily data on outstanding positions, making it possible to calculate averages or median values over the course of a month. SFTDS includes transactions involving non-euro area subsidiaries of euro area banks and euro area NBFI entities, which are not captured in the AnaCredit dataset. By contrast, Chart B.3, panel a) shows information on reverse repos obtained from the AnaCredit dataset, which provides data on repo contracts still active at the end of the month, as well as a point estimate of outstanding repos. However, these data are affected by "window dressing",* which explains potential discrepancies between the two charts. Panel b: SIB stands for systemically important banks; UDI stands for universal and diversified institutions, which include universal banks and diversified lenders; IWB stands for investment and wholesale banks; AMC stands for asset managers and custodian banks; RSL stands for retail banks and small lenders; IFs stands for investment funds; OFIs stands for other financial intermediaries; "Other" comprises insurance corporations, pension funds, money market mutual funds, captive financial institutions and financial auxiliaries.
*) See Bassi, C., Behn, M., Grill, M., Libertucci, M., Torstensson, P. and Welz, P., "Closing the blinds on banks' window dressing", *The ECB Blog*, ECB, 2 May 2024.

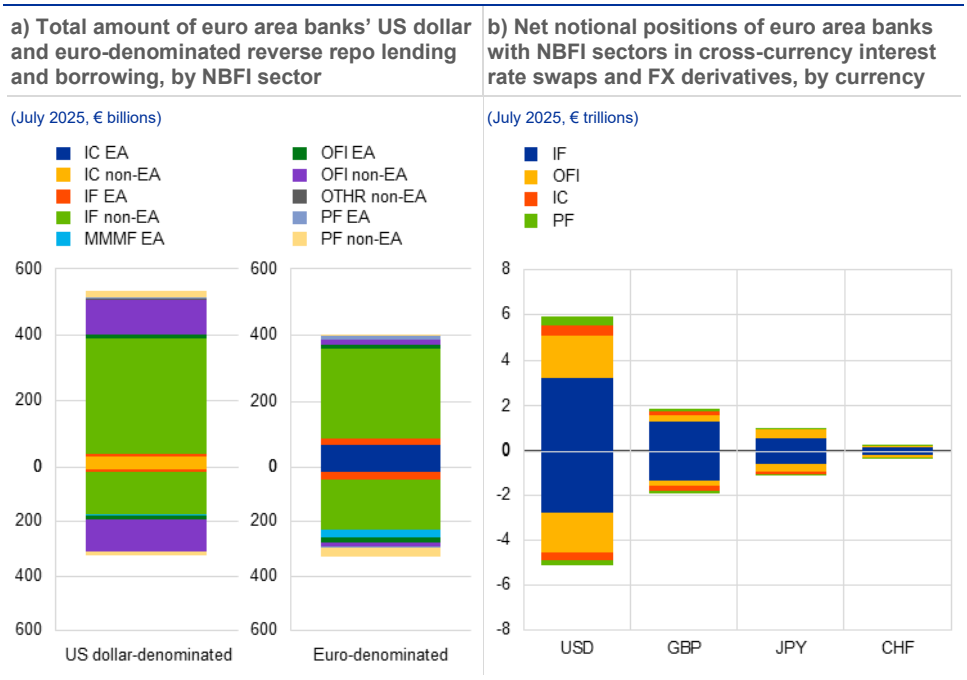
Euro area G-SIBs and investment banks intermediate between different groups of NBFI entities in the repo market, without taking large net positions. Repo intermediation activity has more than doubled since 2021, driven by increased lending to non-euro area investment funds (**Chart B.6**, panel a). This group, as presented in the previous section, consists mainly of hedge funds, which borrow US dollars from euro area G-SIBs.[177] Repo intermediation is highly concentrated, with five banks making up around 80% of banks' total reverse repo claims on NBFI entities

[177] See the box entitled "Euro area banks as intermediators of US dollar liquidity via repo and FX swap markets", *Financial Stability Review*, ECB, November 2024.

(**Chart B.6**, panel b). These are the same banks that account for the large majority of repo borrowing from NBFI entities (**Chart B.2**, panel a). These banks typically maintain balanced books with other financial institutions and investment funds for both US dollar and euro-denominated secured financing (**Chart B.7**, panel a). Their net exposure in the repo market is limited and it appears they do not use net repo liabilities to fund other banking activities.

Chart B.7

In aggregate, banks keep balanced books in secured financing with NBFI entities and run matched derivatives books for major foreign currencies



Source: ECB (SFTDS, EMIR) and ECB calculations.
Notes: OFI stands for other financial intermediaries; IF stands for investment funds; CFI stands for captive financial institutions; FA stands for financial auxiliaries; IC stands for insurance corporations; PF stands for pension funds; MMMF stands for money market mutual funds. Panel a: positive values indicate reverse repo lending, negative values repo borrowing. EA stands for euro area; OTHR comprises all other non-identifiable NBFI entities. Panel b: OFI comprises other financial intermediaries, captive financial institutions and financial auxiliaries. Net notional derivatives positions are calculated at bank-level offsetting positions across NBFI counterparties within the same NBFI sector, maturities and derivatives contract types. Positive (negative) values indicate banks which are net receivers (payers) in the corresponding foreign currency.

In derivatives markets, large euro area banks play a central role as market-makers and clearing counterparties for NBFI entities. These activities facilitate investment and risk management by NBFI entities. Banks' directional derivatives positions are typically limited, although there are exceptions for various contracts, such as interest rate derivatives used to hedge duration risk in banks' own banking books. For major foreign currencies, banks also serve as key providers of liquidity and hedging instruments to NBFI entities through cross-currency interest rate swaps and FX derivatives (**Chart B.7**, panel b).

Even though their net positions with NBFI entities in the repo and derivatives markets are matched, banks are exposed to potentially systemic counterparty risk and liquidity risk. Banks trade repos and reverse repos with counterparties using a wide range of different business models. By and large, banks obtain cash in the repo market from money market mutual funds and broker-dealers and lend it to

hedge funds and insurers. They also provide synthetic leverage to NBFI counterparties via derivatives. These trades are collateralised and are usually subject to margining, mitigating credit risk. Because of the mismatch between counterparties, however, repo and derivative activities entail liquidity risk and counterparty risk. In times of stress, banks may face a difficult trade-off between reducing their provision of financial services to clients and accepting higher levels of risk. Banks' responses likely depend on their balance sheet capacity, including CET1 capital, leverage ratios and liquidity buffers.[178]

5 Conclusions

This special feature highlights two important and interlinked systemic vulnerabilities emerging from euro area banks' linkages with the NBFI sector. First, asset price shocks and redemption flows may prompt NBFI entities to withdraw liquidity from euro area banks, especially when liabilities to NBFI entities are concentrated, correlated and volatile. While some of the liabilities to NBFI entities are matched by short-term claims on NBFI entities, this nonetheless exposes banks to counterparty risk and rollover risk, as banks intermediate between different groups of NBFI counterparties. Second, market gyrations may prompt banks to procyclically reduce their provision of leverage to NBFI entities, forcing them to liquidate leveraged positions. This deleveraging, if complemented by a lack of market liquidity, could in turn depress asset prices further, potentially triggering fire sales with systemic consequences. Additionally, these two mechanisms could reinforce each other and could, potentially, have a common trigger. Mitigation strategies commonly deployed by banks include using collateral to reduce credit risk and maturity matching to reduce liquidity risk.

Euro area banks' interconnections with potentially leveraged NBFI entities appear to be of limited magnitude. About a quarter of banks' total credit exposures are to potentially leveraged NBFI entities.[179] These exposures reflect the provision of leverage by euro area banks to hedge funds in the repo market and to real estate funds via long-term secured debt. As in the United States, interconnections with NBFI entities in the euro area include sizeable intragroup linkages.

Banks' exposures to NBFI entities are highly concentrated on both sides of their balance sheets. While the magnitude of systemic risks to financial stability from idiosyncratic shocks to individual NBFI entities seems to be contained, distributions of asset- and liability-side exposures are heavily concentrated, from both a bank and an NBFI perspective. On the bank side, the small group of euro area G-SIBs plays a

178 For discussion of shock amplification mechanisms during financial market stress, see Chapter 5 in Budnik, K. et al., "Advancements in stress-testing methodologies for financial stability applications", *Occasional Paper Series*, No 348, ECB, 2024. Counterparty credit risk exposures of banks arising from repo and derivatives trading are presented in Barbieri, C., Grodzicki, M., Halaj, G. and Pizzeghello, R., "System-wide implications of counterparty credit risk", *Macroprudential Bulletin*, Issue 26, ECB, January 2025.

179 This contrasts with the developments in the United States, where bank lending to leveraged NBFI entities is larger and growing. See Acharya, V.V., Cetorelli, N. and Tuckman, B., "Where Do Banks End and NBFIs Begin?", *NBER Working Paper Series*, No 32316, National Bureau of Economic Research, April 2024.

critical role and is difficult to replace. The loss-absorbing capacity of these G-SIBs is essential to maintain the smooth provision of financial services in times of stress.

Despite establishing important new facts, this in-depth analysis of the NBFI sector is constrained by data availability. Key data are not available for the balance sheets of potentially leveraged NBFI entities such as private equity, private credit and hedge funds outside the EU,[180] as well as for deposit funding from NBFI entities to banks. Other granular data are geographically constrained, as transactions taking place outside the euro area are not reported to the euro area authorities in a granular format. These data gaps make it more difficult to comprehensively analyse the risks associated with linkages between banks and NBFI entities. Further work on complementing the AnaCredit dataset with data collected under the Alternative Investment Fund Managers Directive[181] could provide further insights by extending the level of analysis on the amount and type of loan financing used by leveraged funds, the collateral they provide to lenders, and lender and borrower concentrations.

[180] Within the EU, such data are collected under the Alternative Investment Fund Managers Directive but are not available to the ECB.

[181] Directive 2011/61/EU of the European Parliament and of the Council of 8 June 2011 on Alternative Investment Fund Managers and amending Directives 2003/41/EC and 2009/65/EC and Regulations (EC) No 1060/2009 and (EU) No 1095/2010 (OJ L 174, 1.7.2011, p. 1).

Acknowledgements
The Financial Stability Review assesses the sources of risks to and vulnerabilities in the euro area financial system based on regular surveillance activities, analysis and findings from discussions with market participants and academic researchers.

The preparation of the Review was coordinated by the ECB's Directorate General Macroprudential Policy and Financial Stability. The Review has benefited from input, comments and suggestions from other business areas across the ECB. Comments from members of the ESCB Financial Stability Committee are gratefully acknowledged.

The Review was endorsed by the ECB's Governing Council on 19 November 2025.

Its contents were prepared by Desislava Andreeva, Peter Bednarek, Katharina Cera, Daniel Dieckelmann, John Fell, Sándor Gardó, Max Lampe, Diego Moccero, Philippe Molitor, Csaba Móré, Allegra Pietsch, Manuela Storz, Gibran Watfe, Christian Weistroffer and Jonas Wendelborn.

With additional contributions from Paolo Alberto Baudino, Markus Behn, Ties Busschers, Maria Leonor Carrilho Puga, Jakub Doležal, Joachim Eule, Johanne Evrard, Ana Goulão Diogo Bandeira, Maciej Grodzicki, Paul Hiebert, Julija Jakovicka, Urtė Kalinauskaitė, Domenic Kellner, Anton Kostiushko, Chloe Larkou, Riccardo Meli, Daniele Miceli, Sarah Mochhoury, Cristian Perales, Guido Thomas Maria Pistorius, Alessio Reghezza, Ellen Ryan, Jaspal Singh, Pär Torstensson, Pucho Vendrell, Fabian Wagner, Regine Wölfinger, Stefan Wredenborg and Balázs Zsámboki.

Postal address 60640 Frankfurt am Main, Germany
Telephone +49 69 1344 0
Website www.ecb.europa.eu

PDF ISSN 1830-2025, QB-01-25-248-EN-N
HTML ISSN 1830-2025, QB-01-25-248-EN-Q