EUROPEAN CENTRAL BANK

EUROSYSTEM

# Financial Stability Review

May 2025

# Contents

# Foreword

When the US Administration announced a new set of tariffs in April this year, it caused a spike in financial market volatility while testing stretched market valuations. Although expectations for tariff rates have eased somewhat since then, the repercussions of the shock continue to reverberate and the risks of an economic slowdown have increased markedly. Financial markets across the globe sold off at an unsettling speed in early April and financial conditions tightened considerably. While risky assets have been recovering their losses since temporary tariff pauses were announced, markets remain highly sensitive to news about global trade arrangements.

The abrupt change in US tariff policy forms part of a larger shift in the geopolitical environment, with economic and financial impacts that could yet test euro area financial stability. Uncertainty lingers within many important policy domains beyond trade – from regulation to national security. In this environment, the likelihood of increasingly frequent and impactful adverse tail events has increased. Furthermore, while global imbalances remain a long-standing issue in the policy debate, it is not clear that tariffs are the best-placed policy instrument to address them.

Financial market functioning held up well during the recent sell-off. Despite the drawdowns, equity valuations remain high while credit spreads still appear out of sync with underlying credit risk. Open-ended funds investing in corporate bonds have seen some outflows and do not appear well prepared to withstand significant liquidity stress. In the event of renewed turmoil, these funds may be forced to sell assets. This could turn price swings into more disorderly adjustments.

The euro area is an open economy, with firms strongly integrated into global supply chains. Trade frictions will have a direct impact on the revenues and costs of those companies that rely on foreign trade. Furthermore, adverse confidence effects are likely to lead market players to act with greater caution, which could also engulf sectors that are less exposed to the direct effects of tariffs. This may challenge the management of credit risk by euro area financial intermediaries. Should economic growth fall short of expectations, moreover, this could put pressure on government finances, which are already facing strains from higher defence spending needs.

This edition of the ECB's Financial Stability Review includes three analytical special features. The first analyses recent developments in crypto markets and their growing interconnectedness with the traditional financial sector. The second investigates risks to financial stability from trade tensions, while the third looks into how population ageing could affect financial stability in the financial and non-financial sectors.

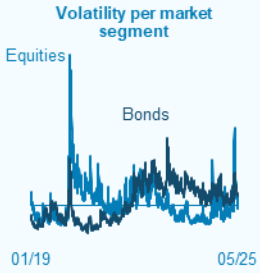
The FSR is intended to promote awareness of systemic risks among policymakers, the financial industry and the public at large, ultimately promoting financial stability. It has been prepared with the involvement of the ESCB Financial Stability Committee, which assists the decision-making bodies of the ECB in the fulfilment of their tasks.

Luis de Guindos,
Vice-President of the European Central Bank

# Overview

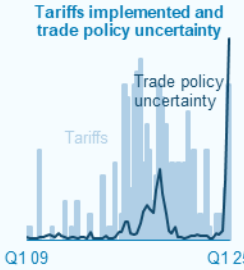
## A rapidly shifting geopolitical environment could test euro area financial stability

### 1 Sharp adjustments in financial markets risk becoming disorderly, particularly if the declining liquidity of non-banks amplifies price swings



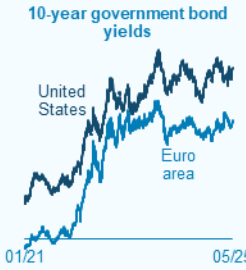

- In a highly volatile environment, financial markets saw significant abrupt adjustments following the announcement of US tariffs.
- Financial markets remain highly sensitive to news related to tariffs and other policies, with further volatility likely going forward.
- So far market functioning has held up well, but adjustments could become disorderly.
- Vulnerabilities related to liquidity mismatch and leverage in parts of the NBFI sector could amplify market-wide shocks due to forced asset sales.
- Real estate markets are showing signs of recovery but face headwinds from elevated uncertainty.

### 2 Escalating trade tensions could challenge euro area firms and households, translating into credit risks for banks and non-banks




- Escalating trade tensions coupled with weak cyclical conditions may translate into higher corporate insolvencies, especially in tariff-sensitive industries.
- Weaker than expected growth outturns and deteriorating 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.
- Banks may face higher provisioning costs, but solid profits and robust solvency and liquidity positions support their ability to absorb higher NPLs.
- Weak economic growth coupled with rising trade frictions have led to a worsening credit risk outlook, exposing the NBFI sector to revaluation losses.

### 3 A combination of weaker growth, defence spending needs and other structural challenges could compound prevailing pressures on sovereign finances




- A shifting geopolitical paradigm entails higher defence spending needs for euro area sovereigns.
- Greater defence spending could unlock positive growth effects if well targeted but could pose risks from higher issuance needs and funding costs.
- Fiscal capacity to address any risks to economic growth might be limited by high public debt levels in some countries.
- Cyclical headwinds, together with structural challenges such as ageing, may complicate the path towards fiscal consolidation.
- Any repricing of sovereign risk could spill over to the corporate and financial sectors via rating downgrades and higher funding costs.

### Other risks

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

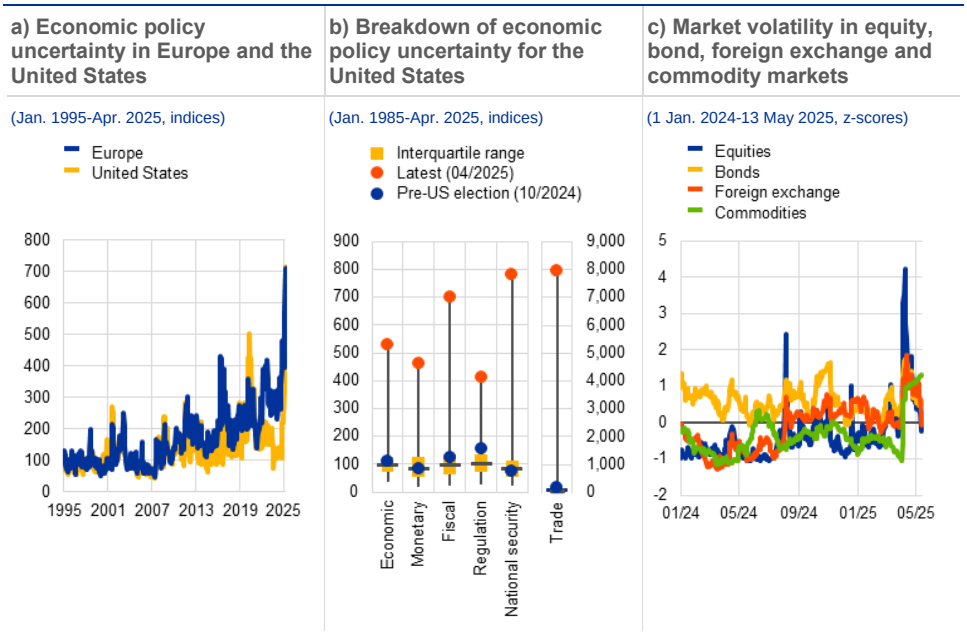
- Cybersecurity weaknesses, such as those associated with outages of systemic IT providers and the rise of AI
- Risks stemming from global regulatory fragmentation
- Risks associated with ageing populations
- Green transition and physical risks

## Soaring policy uncertainty leads to major shifts in market sentiment

**Geopolitical and policy uncertainty have spiked from already high levels since the previous edition of the Financial Stability Review was published.** Just as uncertainties stemming from political risks within euro area countries were subsiding, external sources of uncertainty, notably those associated with the unpredictability of a broad range of US policies, have soared (**Chart 1**, panel a). A lack of clarity surrounds several important economic policy domains, including trade, regulatory and fiscal policies, as well as the level of commitment of the new US Administration to international cooperation (**Chart 1**, panel b). While it is hard to predict the medium to long-term implications of these individual layers of uncertainty, they entail a broad risk of geoeconomic fragmentation across the globe, in turn raising the likelihood of increasingly frequent and impactful adverse tail events. Although the announcements of trade agreements between the United States and some of its trading partners point towards an easing of trade tensions, concerns remain that these tensions could escalate into a trade war with the potential for significant adverse impacts on global growth, inflation and asset prices. As the euro area is a very open economy which is well integrated into global supply chains, vulnerabilities to these sources of risk are pronounced.

**Chart 1**

Economic policy uncertainty has spiked in recent months, implying broad risks of economic, geopolitical and regulatory fragmentation across the globe



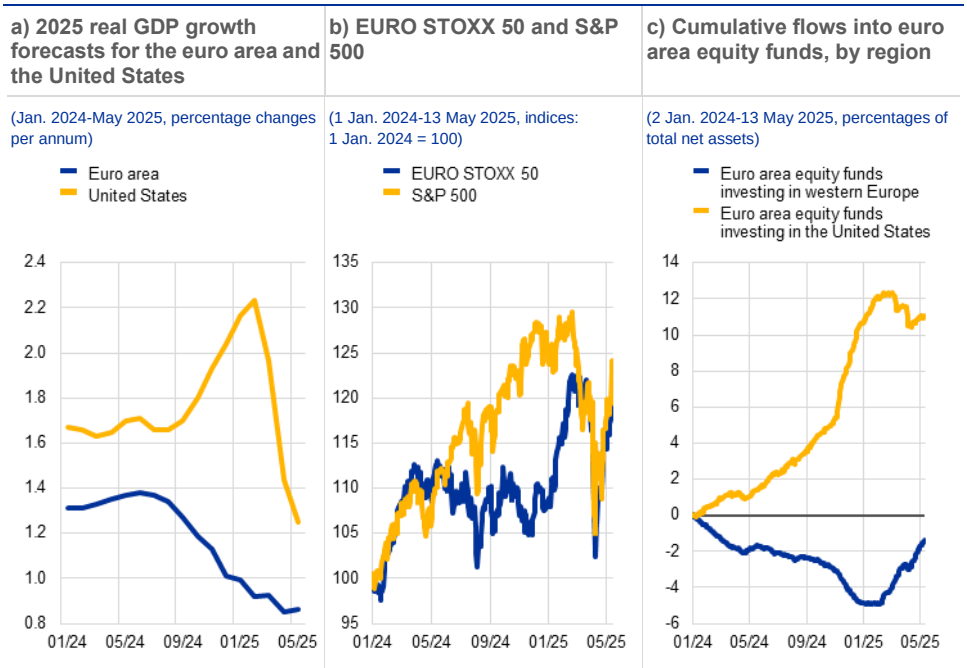

Sources: www.policyuncertainty.com, Baker, Bloom and Davis*, Bloomberg Finance L.P. and ECB calculations.
Notes: Panel b: the right-hand scale refers to trade policy uncertainty. Panel c: volatilities indicated are the VIX Index for equities, the MOVE Index for bonds, the 30-day volatility of the Bloomberg Commodities Index for commodities and the J.P. Morgan Global FX Volatility Index for foreign exchange rates.
*) Baker, S., Bloom, N. and Davis, S., "Measuring Economic Policy Uncertainty", *The Quarterly Journal of Economics*, Vol. 131, No 4, November 2016, pp. 1593-1636.

**Intensifying trade tensions have triggered a spike in market volatility, fears of slowing economic growth and a sharp repricing in financial markets.** The higher

than expected US import tariffs announced on 2 April 2025 injected significant volatility into financial markets (**Chart 1**, panel c). The prospect of slowing economic activity, notably for the United States (**Chart 2**, panel a), led to a major sell-off in riskier assets, with magnitudes not seen since the early stages of the COVID-19 pandemic. Markets rebounded strongly after a 90-day tariff pause was announced for most countries and had mostly recovered their initial losses by mid-May (**Chart 2**, panel b). During the turmoil, market functioning – which can be thought of as the ability to trade financial assets quickly without moving prices inordinately – in euro area financial markets held up well. This was despite some atypical shifts away from some traditional safe havens like US Treasuries and the US dollar. In part, this may have been due to technical factors such as investors needing to raise liquidity to meet fund redemptions or margin calls as market volatility rose (**Chapter 4**), with an unwinding of asset swap or basis trade positions contributing to the sell-off in US Treasuries. But these moves might also have reflected perceptions of a more fundamental regime change, with investors seeming to reassess the riskiness of US assets, possibly leading to broader shifts in global capital flows. This would have potentially far-reaching consequences for the global financial system. Meanwhile, euro area non-banks stayed resilient, with signs of a rotation in fund flow dynamics from the United States to the euro area (**Chart 2**, panel c).

**Chart 2**

Soaring geopolitical and policy uncertainty has led to marked shifts in economic and financial market sentiment




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

**Against this backdrop, three key sources of risk and vulnerability for euro area financial stability stand out.** First, price adjustments in stretched and concentrated asset markets risk becoming disorderly, particularly if liquidity and leverage fragilities in parts of the non-bank financial intermediation sector amplify asset price swings. Second, rising trade tensions could affect euro area corporates and households both

directly, via exposures to tariff-sensitive activities, and indirectly, via confidence effects, translating into credit risks for banks and non-banks. Third, a combination of weaker growth, defence spending needs and other structural challenges could compound the already strained fiscal positions of some euro area sovereigns. The potential for these vulnerabilities to materialise simultaneously given common triggers, possibly amplifying each other further, increases the risk to financial stability.

## Stretched valuations and declining non-bank liquidity make markets prone to further outsized reactions

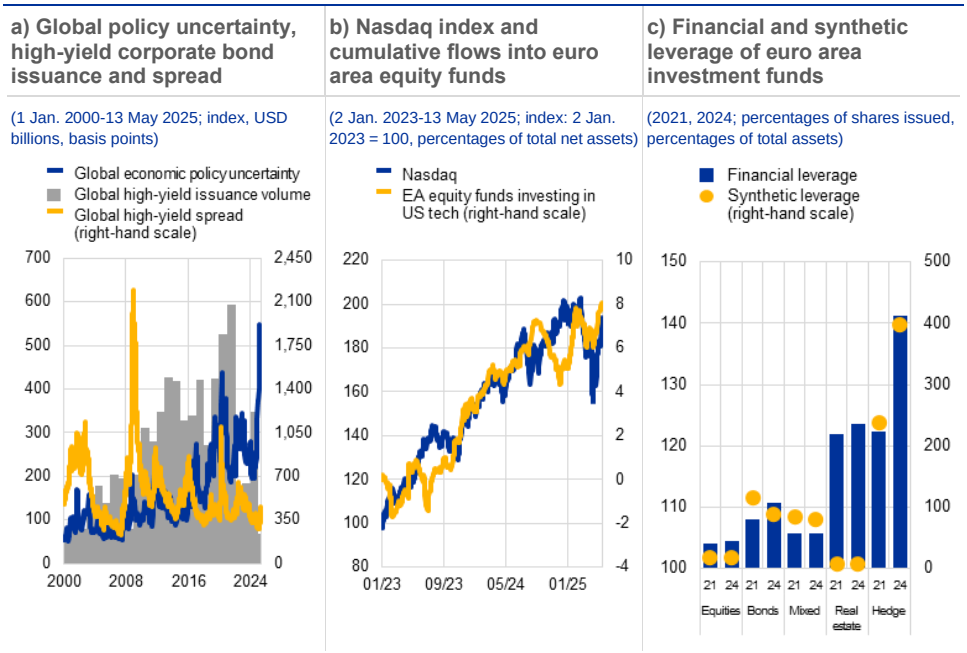
**Financial markets, particularly equity markets, remain vulnerable to sudden and sharp adjustments due to persistently high valuations and risk concentration.** Previous editions of the Financial Stability Review have warned about the vulnerabilities posed by high valuations that are not backed by fundamentals. This source of risk has now partly materialised, with the larger than expected US import tariffs announced on 2 April 2025 acting as the trigger. Despite notable declines following this announcement, US equity valuations have remained high since the market recovery. Meanwhile, strong market concentration, along with exposures to a handful of large firms (mostly US-based technology companies), continues to expose global markets to risks arising from shocks to these entities. Credit spreads have risen too but they still appear to be out of sync with the currently very high level of geopolitical and policy uncertainty (**Chart 3**, panel a). As such, investors may be underestimating and underpricing the likelihood and impact of adverse scenarios, not least because soaring uncertainty renders the materialisation of tail events more likely. Negative surprises – including sharply deteriorating economic growth prospects, sudden changes in monetary policy expectations or an escalation of trade tensions – could lead to further abrupt shifts in investor sentiment, causing spillovers across different asset classes while fuelling investors' interest in alternative asset classes such as gold (**Box 2**).

**Real estate markets have shown signs of recovery but face headwinds from elevated uncertainty.** The downturn in euro area commercial real estate (CRE) markets appears to be bottoming out as recent price corrections have reduced broader overvaluation, while easing monetary policy has strengthened confidence in CRE markets to some extent (**Section 1.5**). That said, downside risks prevail, as the sector continues to be challenged by structural factors such as lower demand for office space and for non-prime and non-energy efficient properties – which is also evident in higher vacancy rates. Similarly, residential real estate (RRE) prices have shown signs of improvement in countries that experienced rapidly falling prices from their 2022 peaks, supported by improving demand for mortgage loans on the back of lower interest rates. However, tail risks remain due to persisting RRE overvaluation in some countries and possible adverse effects should unemployment rates rise. In fact, real estate markets are highly sensitive to fluctuations in long-term interest rates and business cycle developments, which implies notable downside risks against the current backdrop of high macroeconomic uncertainty and geopolitical risks.

**The liquidity and leverage weaknesses of euro area non-banks could amplify market drawdowns.** Overall, non-banks have so far weathered adverse market disturbances relatively well. The non-bank financial intermediation (NBFI) sector has also continued to absorb a high proportion of sovereign debt, underscoring the important role it plays in euro area sovereign bond markets in a context of higher debt issuance. That said, in an environment of heightened geopolitical and trade policy uncertainty, non-banks may face higher valuation losses and more frequent margin calls as trade tensions increase market volatility and weigh on asset quality in corporate portfolios. Significant exposures to US dollar assets may also increase the risk of additional spillovers from potential US market shocks and exchange rate fluctuations, especially where equity portfolios are concentrated in a few large US issuers. Declining liquid asset holdings (**Box 5**) and significant liquidity mismatches in some types of open-ended investment fund (e.g. corporate bond funds), coupled with procyclical fund flow dynamics, could amplify adverse market shocks (**Chart 3**, panel b). At the same time, pockets of elevated financial and synthetic leverage in some entities (e.g. hedge funds) may exacerbate the risk of financial contagion and expose liquidity vulnerabilities through margin calls (**Chart 3**, panel c).

**Chart 3**

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




Sources: Dealogic, LSEG, Davis*, EPFR Global, Bloomberg Finance L.P., ECB (CSDB, EMIR, IVF, SFTDS) and ECB calculations.
Notes: Panel b: the chart refers only to euro area equity funds investing in US tech equity. Panel c: financial leverage is measured as the ratio of total assets to shares issued, expressed as a percentage. Synthetic leverage is proxied by the gross notional value of derivatives outstanding as a percentage of total assets. EA stands for euro area.
*) Davis, S.J., "An Index of Global Economic Policy Uncertainty", *Macroeconomic Review*, October 2016.

**Persistent liquidity and leverage vulnerabilities in the NBFI sector require a comprehensive policy response.** A bigger market footprint and the increased interconnectedness of non-banks raises the risk of NBFI vulnerabilities amplifying adverse market developments across the financial system. This calls for a comprehensive set of policy measures aimed at increasing the sector's resilience to

market-wide shocks. An adequate policy response should focus on addressing key structural vulnerabilities in the NBFI sector, including monitoring and tackling risks arising from non-bank leverage, enhancing the liquidity preparedness of non-bank market participants to meet margin and collateral calls, and mitigating liquidity mismatch in the investment fund sector. The further deepening and integration of capital markets forms part of a renewed strategy aimed at supporting Europe's productivity and economic growth in a competitive global environment. Strengthening NBFI policies from a macroprudential perspective would help ensure that non-banks remain resilient under stress, underpinning the long-term success of the capital markets union agenda. Enhanced EU-wide supervisory coordination will be needed to foster a level playing field and reduce the potential for regulatory arbitrage.

## Escalating trade tensions could affect euro area firms and households, implying credit risks for banks and non-banks

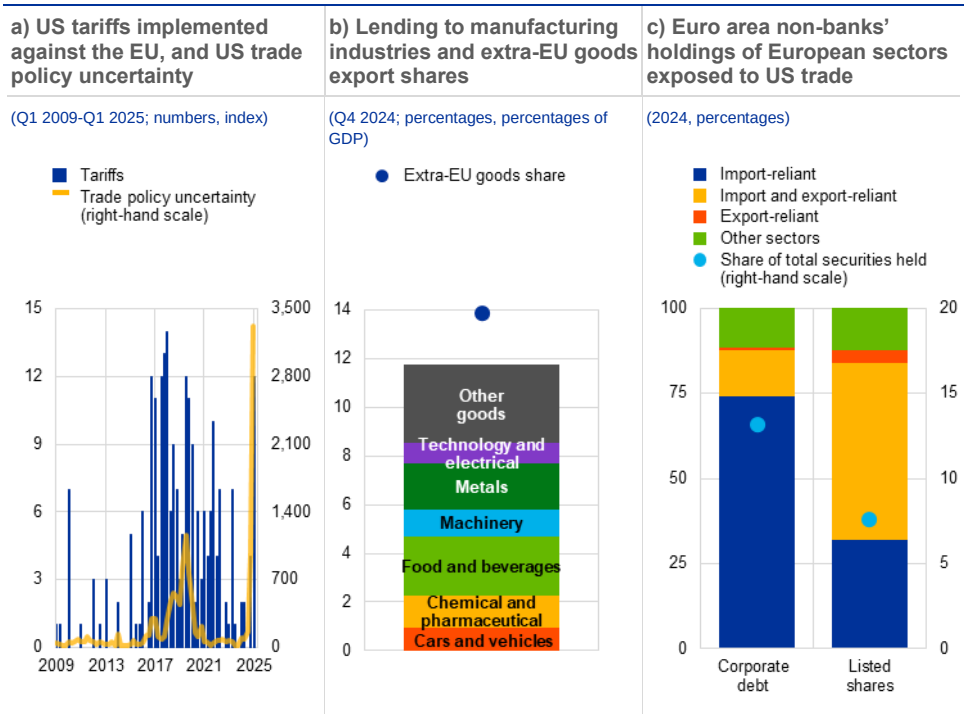
**Euro area firms and households have seen balance sheet fundamentals improve in recent years, but trade tensions, high funding costs and a weaker growth outlook point towards future headwinds.** On aggregate, euro area corporate and household balance sheets have improved markedly in recent years, with indebtedness falling below the levels observed prior to the global financial crisis. That said, higher interest costs continue to weigh on firm profitability even as new lending rates decline, while insolvencies have been rising across sectors and countries in light of continued weak and uncertain business prospects. On top of increased foreign competition, mounting global trade tensions could add to credit risk in the corporate sector (**Chart 4**, panel a), which would have a negative impact on the profitability of firms operating in highly export-oriented and tariff-sensitive sectors such as steel and carmaking. Households are currently continuing to benefit from stable labour markets, rising real wages and higher savings. However, this situation could reverse should trade-related corporate vulnerabilities unravel and lay-offs in the corporate sector rise, translating into possible adverse employment and consumption effects. Any notable tightening of financial and credit conditions induced by trade uncertainty could amplify these adverse effects, particularly if also accompanied by weakening consumer confidence and increased precautionary household savings.

**Euro area banks' asset quality remains robust, but non-performing loans and provisioning needs may rise in the wake of rising trade tensions.** On aggregate, euro area banks' non-performing loan (NPL) ratios remain near historic lows, despite a slight uptick in 2024 driven mainly by net NPL inflows in the corporate loan book (notably CRE and SME loans). That said, the credit risk outlook for corporate and household portfolios remains tilted to the downside, given weak macro-financial conditions, the lagged impact of high interest rates on borrowers and escalating trade tensions. As such, banks may yet face higher provisioning costs if risks in non-financial sectors materialise. In particular, any broader and longer-lasting macro-financial effects of trade policy uncertainty could lead to a deterioration of bank asset quality, with stronger effects on banks with higher exposures to sectors relying on extra-EU trade (**Chart 4**, panel b and **Special Feature B**).

**The ability of banks to absorb further asset quality deterioration is supported by the strength of profitability and ample capital and liquidity buffers.** Robust net interest income and strong non-interest income growth enabled euro area banks to maintain high levels of return on equity (above 9%) in 2024. Banks' resilience is also supported by capital and liquidity ratios that are well above regulatory requirements (**Section 3.5**). There are, however, persistent downside risks to bank profitability arising from lower net interest income, especially for banks with a higher share of floating-rate loans, and a higher cost of risk. A highly uncertain external environment reinforces the need for macroprudential capital buffer requirements to be kept at levels that preserve banking sector resilience. Existing borrower-based measures should be maintained to ensure sound lending standards in all phases of the financial cycle. The prevailing regulatory and supervisory framework, including in the macroprudential remit, has been effective in maintaining financial stability while also supporting economic growth. Nevertheless, there is 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.

**Chart 4**

Rising global trade frictions could add to credit risks in the corporate sector and translate into asset quality problems for banks and non-banks




Sources: Global Trade Alert, Baker, Bloom and Davis*, Eurostat, OECD, ECB (AnaCredit, SHS, CSDB) and ECB calculations.
Notes: Panel b: lending to manufacturing sectors (NACE codes C10-C35) as a share of total euro area corporate lending and extra-EU goods exports from euro area countries as a share of total GDP. Panel c: European US-import and US-export-reliant sectors are defined as those scoring above the 75th percentile in the OECD's foreign input reliance and foreign market reliance indicators respectively. Total securities holdings include debt securities, listed shares and investment fund units.
*) Baker, S., Bloom, N. and Davis, S., "Measuring Economic Policy Uncertainty", *The Quarterly Journal of Economics*, Vol. 131, No 4, November 2016, pp. 1593-1636.

**Asset quality in non-bank portfolios may be impaired by deteriorating corporate fundamentals and property market conditions.** Downgrades in the corporate debt

portfolios of euro area non-banks have remained relatively stable in recent years. However, weak economic conditions, coupled with rising protectionism and trade policy uncertainty, have led to a deteriorating credit risk outlook, exposing the NBFI sector to revaluation losses from unexpected downgrades and increasing default risk. In particular, trade tensions may weigh on corporate asset quality, with exposures to sectors that are both import and export-reliant primarily concentrated in equity funds (**Chart 4**, panel c). Risks also extend to non-banks' real estate portfolios. Any further decline in CRE prices – triggered by downside risk to the wider macroeconomic environment, for example – could lead to an increase in fund outflows. Strong linkages could cause any stress in the NBFI sector to spill over to euro area banks, especially via the funding channel.

## Defence spending needs and material downside risks to growth reinforce sovereign vulnerabilities

**Planned increases in defence spending may unlock positive growth effects if focused on productive investment and sourced from within the EU.** Risks to euro area sovereigns have shifted from political uncertainties tied to national elections to broader geopolitical concerns in recent months. The European Commission's recently announced "ReArm Europe Plan/Readiness 2030" aims to bolster national security across Europe. The plan includes unleashing public funding for defence at the national level by activating the national escape clause of the Stability and Growth Pact, enabling Member States to act swiftly. Higher defence spending has the potential to stimulate economic growth, provided spending is targeted towards productive investments in European defence industrial capabilities and R&D. Moreover, sourcing defence equipment from within the EU would imply a higher fiscal multiplier, with the stimulus possibly helping to absorb some of the slack currently affecting sectors like the automotive industry.

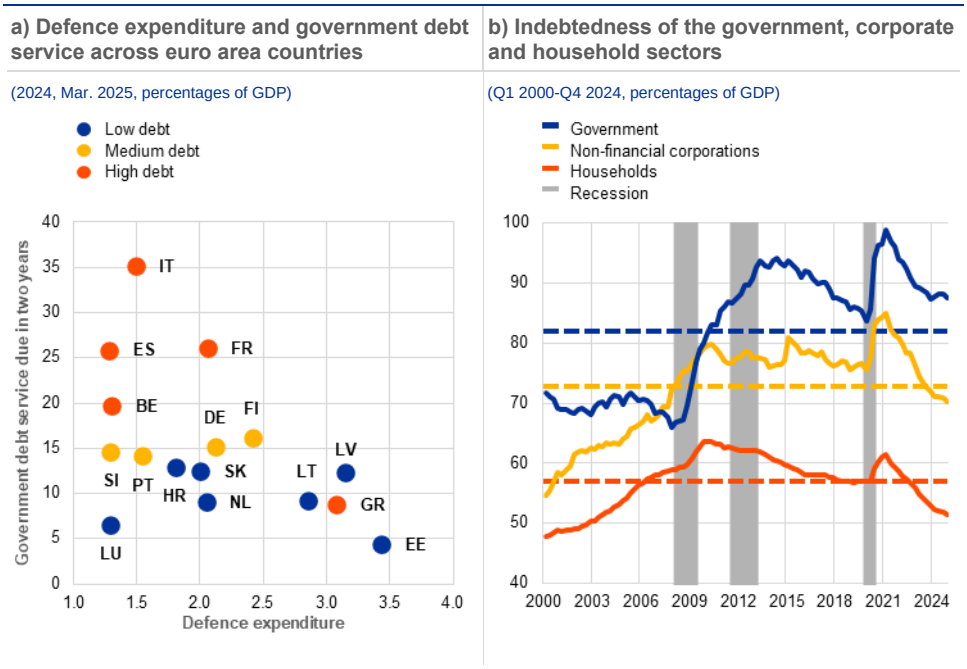
**However, planned fiscal expansion could also challenge the balance sheets of euro area sovereigns.** Higher defence spending, along with the substantial infrastructure investments announced in the euro area, is likely to lead to an increase in the supply of sovereign bonds. Against the backdrop of the Eurosystem's reduced footprint in bond markets, the capacity of the investor base to absorb any additional issuance will be key to the orderly functioning of sovereign bond markets. Market expectations of higher government financing needs as well as possible positive growth effects have contributed to a rise in ten-year euro area sovereign bond yields. The rise was, however, partly reversed as a result of flight-to-safety flows into euro area sovereign bond markets following US tariff announcements. Higher defence spending and an increase in the cost of servicing debt could further strain fiscal positions, especially in countries which have high short-term refinancing needs and are already burdened by large debt levels (**Chart 5**, panel a). That said, most of the more highly indebted countries have so far not pledged to greatly increase their defence spending. Moreover, risks to growth resulting from trade tensions and higher defence spending may limit the fiscal space needed to shelter the economy from future adverse shocks,

as well as to address structural challenges associated with digitalisation, low productivity, population ageing (**Special Feature C**) and climate change.

**Unless potential growth can be raised, concerns about sovereign debt sustainability could re-emerge in some countries.** Despite a post-pandemic decline, the government debt-to-GDP ratio is still above the long-term average for the euro area aggregate, unlike the corporate and household sectors (**Chart 5**, panel b). At the same time, the aggregate euro area public debt ratio remains well below that of international peers. Debt-financed increases in defence spending and further rising interest expenditures may complicate the path towards fiscal consolidation in some countries under the new EU fiscal framework and could cause debt levels to start rising again. This, together with structural headwinds to potential growth from factors like weak productivity, could rekindle concerns about the sustainability of sovereign debt. Any repricing of sovereign risk could spill over to the corporate and financial sectors via rating downgrades and higher funding costs.

**Chart 5**

Increased defence spending needs could exacerbate fiscal pressures for some highly indebted sovereigns with substantial short-term refinancing requirements



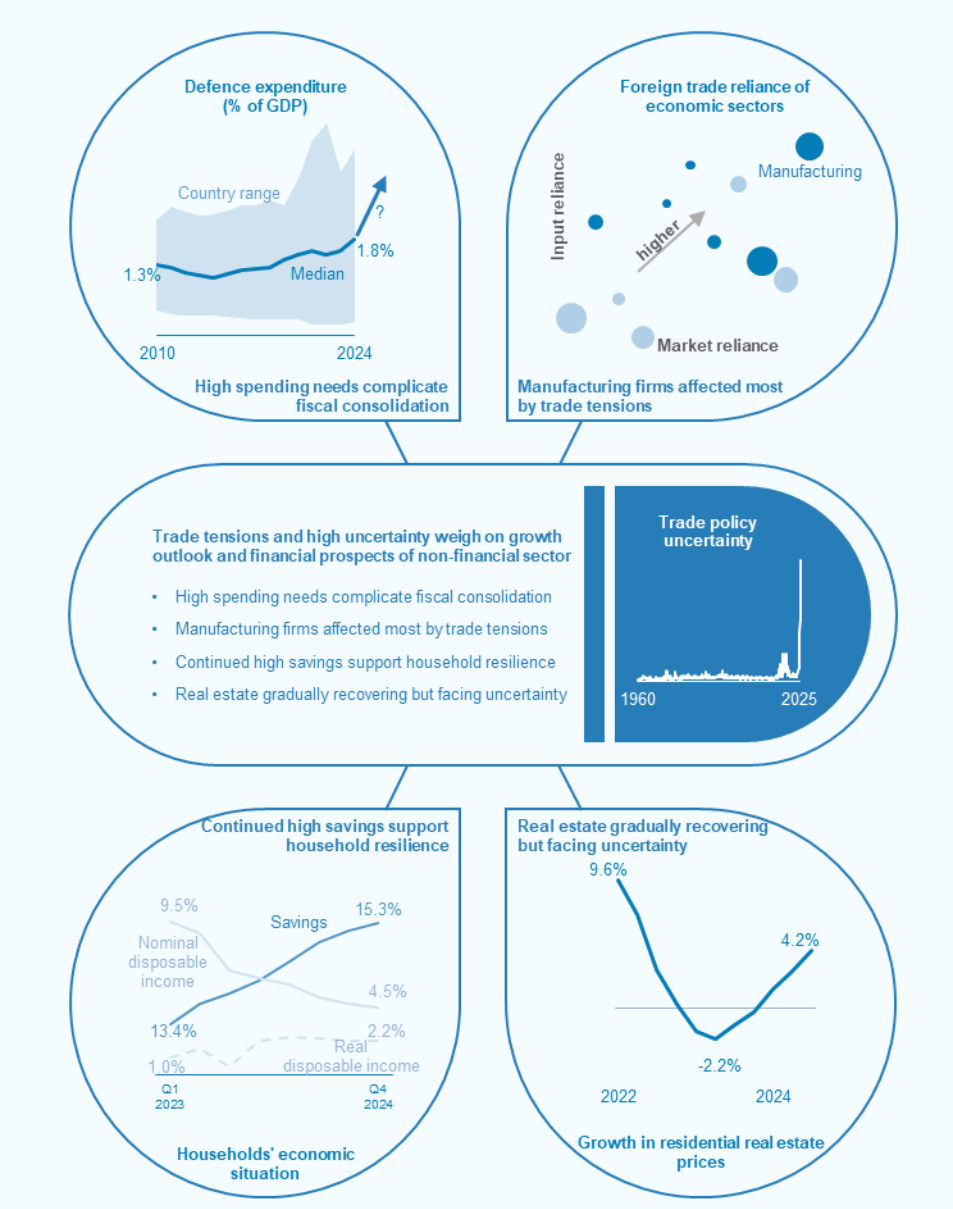

Sources: Eurostat, NATO, ECB (QSA, GFS, MNA) and ECB calculations.
Notes: Panel a: "low debt" refers to countries with debt-to-GDP ratios below 60%, "medium debt" to countries with debt-to-GDP ratios between 60% and 100%, and "high debt" to countries with debt-to-GDP ratios above 100%. "Government debt service due in two years" includes the face value of the sovereign bonds due within two years and the interest accruing on all outstanding sovereign bonds in two years or less as of March 2025. The chart shows only those euro area countries for which 2024 estimates of defence expenditure are available. Estimates of defence expenditures come from NATO, as official euro area data are not yet available for 2024 and may differ from NATO data due to differing classifications of defence expenditures. Panel b: non-financial corporate debt on a consolidated basis. The horizontal lines represent the average for the period. The grey areas show euro area recessions as defined by the Centre for Economic Policy Research.

## While the euro area financial system is resilient overall, shifting geopolitical conditions could test financial stability

**All in all, the financial stability landscape has seen a major uncertainty shock since the previous edition of the Financial Stability Review was published.** Despite multiple sources of resilience in both euro area financial and non-financial sectors, there is no room for complacency. Uncertainties arising from trade tensions, deregulation and reduced international cooperation are fuelling concerns about global economic and regulatory fragmentation. Rising trade tensions pose particular risks for the euro area, given its open economy and deep integration within global supply chains. In this highly uncertain and volatile environment, the likelihood of tail events remains high. Risk sentiment could deteriorate again as some risky asset valuations remain high. Increased defence spending, while having the potential to boost growth if well targeted and sourced from within the EU, may exacerbate fiscal vulnerabilities in some countries. While euro area corporates and households are resilient on aggregate, trade policy uncertainty could have an adverse impact on trade-reliant firms, with associated broader economic repercussions translating into rising credit risk for banks and non-banks.

**In addition, several cross-cutting structural issues remain critical for financial stability and could amplify existing cyclical vulnerabilities.** These include cybersecurity weaknesses in a challenging geopolitical landscape (**Box 1**), the growing importance of artificial intelligence (which provides both opportunities and risks of destabilisation along the innovation path), risks stemming from global regulatory fragmentation, challenges associated with ageing populations and climate-related risks on the way to a low-carbon economy. The potential for these cyclical and structural vulnerabilities to materialise simultaneously and amplify one another heightens the risks to financial stability. This could lead to adverse feedback loops across various sectors.

# 1 Macro-financial and credit environment




## 1.1 Trade tensions, policy uncertainty and geopolitical risks weigh on growth outlook

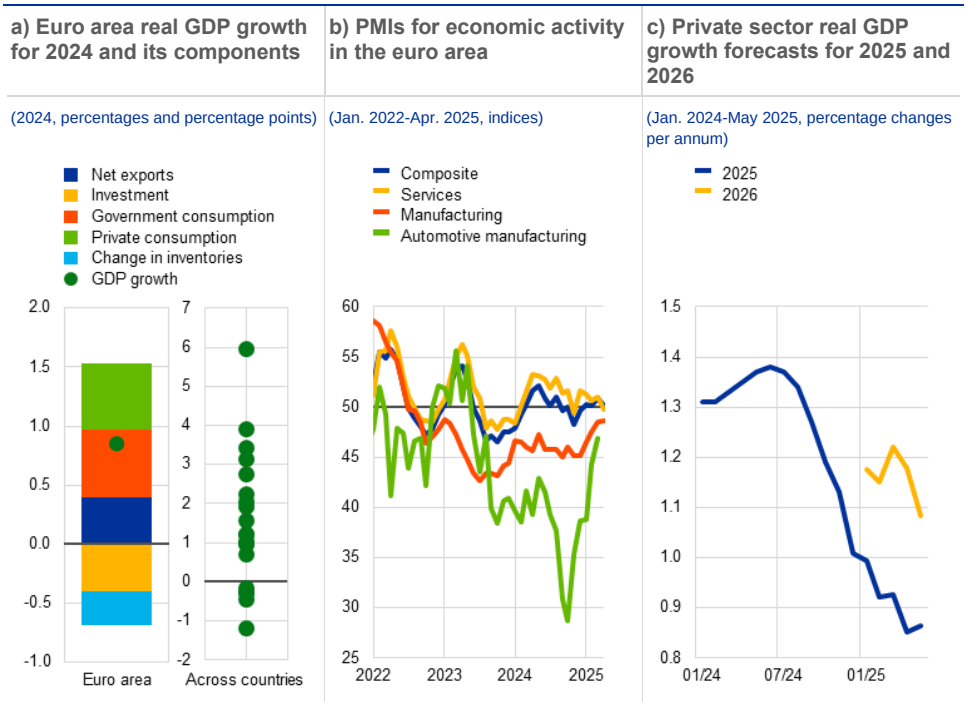
**Euro area growth has continued to recover at a moderate pace.** Euro area GDP grew by 0.9% in 2024. Growth was driven by private and government consumption and net exports, albeit with large differences across countries (**Chart 1.1**, panel a). Buoyed by stable real wage growth and high savings, households are in a good position to increase consumption still further (**Section 1.4**). Moreover, the easing of financing conditions following the ECB's policy rate cuts since June 2024 should

support the recovery going forward. In line with this, survey indicators point towards a notable easing of the downturn in the relatively interest-rate-sensitive industrial sectors (**Chart 1.1**, panel b), while services sectors have generally been performing better than industrials.

**Growth expectations for 2025 have been revised downwards as weak external demand and domestic structural challenges persist.** Low productivity growth and a loss of competitiveness, especially in industrial sectors such as the automotive industry, continue to weigh on economic growth. The higher energy costs seen since Russia's full-scale invasion of Ukraine have represented a particular competitive disadvantage for euro area firms. In addition, domestic demand in China has remained muted as a result of the housing sector crisis, leading to lower demand for European goods and overproduction in the manufacturing sector. Manufactured goods not absorbed in China are being exported instead, increasing competition for European firms. An appreciating euro may further compound these challenges, especially for export-oriented firms. As such, growth expectations for 2025 have been revised downwards since the previous edition of the Financial Stability Review was published (**Chart 1.1**, panel c).

**Chart 1.1**

Economic recovery remains uneven across countries and sectors: the outlook is gloomy



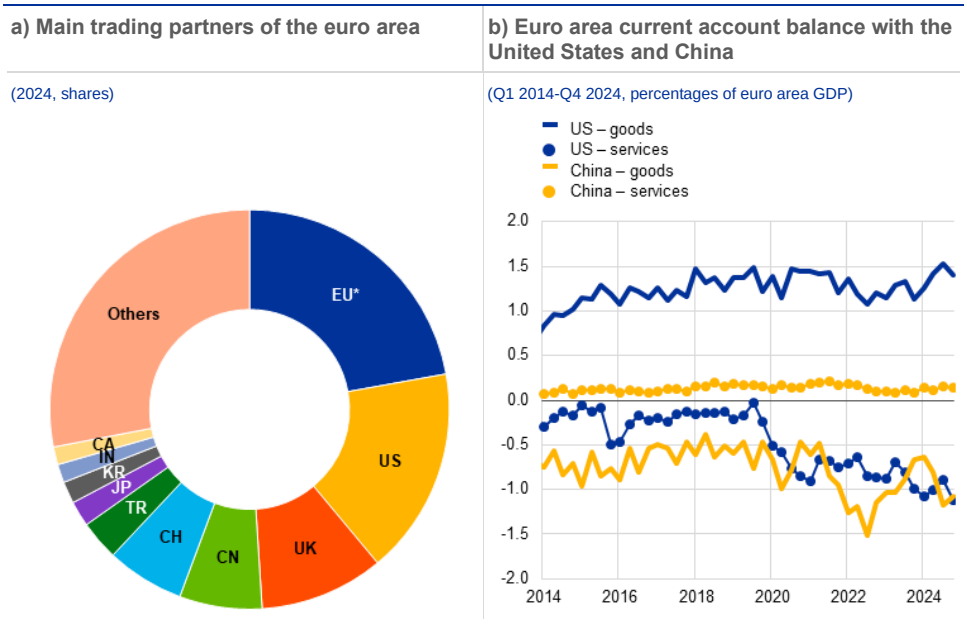

Sources: Eurostat, S&P Global Market Intelligence, Haver Analytics, Consensus Economics Inc. and ECB calculations.
Notes: Panel a: the chart shows the year-on-year GDP growth rate for 2024 and contributions from different components. Panel b: a PMI value above (below) 50 implies an improvement (deterioration) in economic activity.

**Trade tensions are a source of significant downside risks for euro area growth and may lead to global fragmentation.** The euro area economy is open to trade and is highly integrated into global supply chains (**Chart 1.2**, panel a). As such, the implementation of protectionist measures such as tariffs and other trade barriers by

major trading partners is expected to have a negative impact on euro area growth and, potentially, financial stability (**Special Feature B**). While the current account with the United States is relatively balanced overall, the euro area has a sizeable surplus in goods trade, rendering export-oriented euro area firms particularly vulnerable to US tariffs (**Chart 1.2**, panel b and **Section 1.3**). Firms could also be indirectly affected by tariffs on countries producing for the US market if trade were rerouted to the domestic or other third markets, resulting in intense competition. A renewed escalation of trade tensions with a cycle of retaliation would risk igniting a trade war, with significant downside risks to euro area and global growth and increasing geoeconomic fragmentation.

**Chart 1.2**

Trade tensions add to the downside risks to euro area growth




Sources: Eurostat (TRD, MNA), Eurostat and ECB (BPS) and ECB calculations.
Note: Panel a: CA = Canada, CH = Switzerland, CN = China, EU* = non-euro area EU, UK = United Kingdom, IN = India, JP = Japan, KR = Republic of Korea, TR = Türkiye, US = United States.

**The outlook for euro area growth is also clouded by high economic policy uncertainty and geopolitical risks, but increased defence spending may catalyse economic activity.** Uncertainty about economic policies beyond trade has been rising against the backdrop of a shifting geopolitical landscape. Since the 2024 US presidential election, uncertainty has surged further as the new US Administration has changed direction in several policy areas. Such sustained uncertainty is blurring the planning horizon for firms and households and could delay investment and consumption decisions. In addition, the war in Ukraine and the conflict in the Middle East remain unresolved, despite recent peace efforts. A further escalation in either or both of these could weigh on euro area growth, dampening firm and household confidence. It could also affect energy markets that are already posing challenges due to volatility and possible increases in natural gas prices. Firms could also face operational disruptions caused by incidents affecting critical infrastructures or by cyberattacks (**Box 1**). In this environment, the EU has forged ahead with a number of initiatives targeting greater self-reliance in the defence of Europe. These include a

push towards greater defence spending and the strengthening of defence capabilities and cooperation. Additional government outlays in this context could cushion the potential economic slack deriving from trade frictions. This could also act as a catalyst for longer-term growth, but only if well calibrated and accompanied by structural reforms aimed at tackling low productivity and fostering the innovation needed to promote the competitiveness of euro area economies (**Section 1.2**).

## Box 1
### Cyber threats to financial stability in a complex geopolitical landscape

**Prepared by Benjamin Klaus and Jonas Wendelborn**

**Both the prevalence of geopolitical risks and their actual manifestation have been rising in recent years.** Geopolitical threats have waxed and waned since the turn of the millennium, at times escalating into hostile action. This situation has been accompanied by a longer-standing trend of increasing geopolitical tension and global fragmentation (**Chart A**, panel a). In this context, cyberattacks are playing an increasingly important role in the perpetration of hybrid conflicts. While the precise number of cyberattacks – both successful and unsuccessful – remains unknown, publicly disclosed data indicate that the volume of such attacks has increased substantially over the past decade, with a significant number of state-sponsored attacks seen in some years (**Chart A**, panel b)[1]. Moreover, a number of countries conduct cyber activity not just via dedicated military or intelligence units but also via groups of cyber criminals acting on their behalf.[2] Against this backdrop, this box explores the threat to financial stability arising from state-sponsored cyberattacks.

**State-sponsored cyberattacks primarily target state institutions and critical infrastructures and are mainly aimed at data theft.** The principal targets of state-sponsored cyberattacks are state institutions such as governments and ministries, the armed forces and public administration (**Chart A**, panel c). Primary targets in critical infrastructures include the telecommunications, energy and financial sectors as well as defence and transport companies. In addition, other companies and social groups are targeted, including activists and political opposition groups and, to a lesser extent, the media and end users (e.g. individuals). Attacks on specific sectors (e.g. the financial industry[3]) tend to be clustered over time. There are many reasons why sovereign states engage in malicious cyber activities, although attacks are aimed predominantly at data theft, potentially linked to espionage. However, and especially in times of open conflict, the goal of sabotage and data destruction is to cause maximum disruption by interfering with an opponent's military operations or by destabilising civilian life. Disruptive attacks can also be used to exert pressure in the hope of forcing a change in behaviour or political position. As such, some cyberattacks can be a part of influence campaigns around important elections, for instance. In addition, some cyber activities are aimed at expropriation, in particular via ransomware attacks or the theft of crypto-assets.

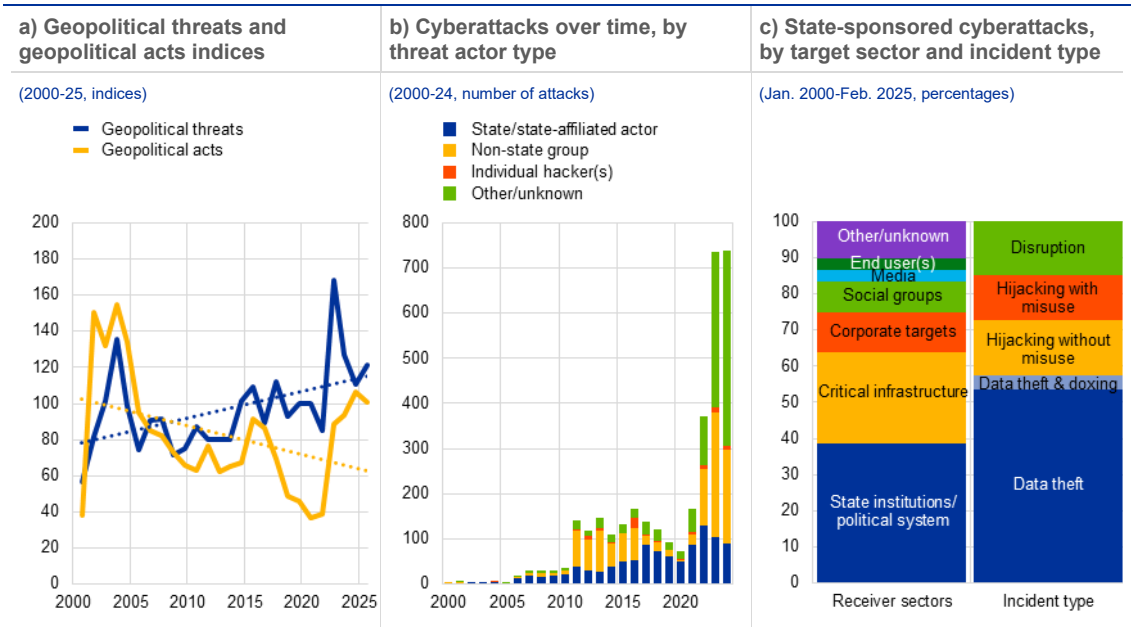
1 This box draws on data from the EuRepoC database, which collects information on cyber incidents based on publicly available sources such as newspaper reports, also tracking attributions of attacks to threat actors. As such, it is likely not fully representative of the true threat landscape. Patterns over time can be influenced by factors related to how data are collected, the extent to which cyberattacks are reported and changes to regulatory disclosure requirements. In addition, it is difficult to attribute cyberattacks to specific actors, especially due to an often high degree of plausible deniability. Data for this box were downloaded on 26 February 2025 and include incidents up until 25 February 2025. For a stable version of the data set see Zettl-Schabath, K., et al., "Global Dataset of Cyber Incidents (1.3.2)", *European Repository of Cyber Incidents*, 2025.

2 See, for instance, "ENISA Threat Landscape 2024", ENISA, September 2024, or "Microsoft Digital Defense Report 2024", Microsoft, October 2024.

3 See also "ENISA Threat Landscape: Finance Sector", ENISA, February 2025.

**Chart A**

Geopolitical tensions are increasingly accompanied by state-sponsored cyberattacks




Sources: Caldara and Iacoviello*, EuRepoC database and ECB calculations.
Notes: Panel a: the chart shows annual averages for the monthly geopolitical threats and acts indices. For 2025 the average covers January to April. Panel b and c: "State/state-affiliated actor" refers to attacks conducted by nation-state actors or non-state actors for whom a state affiliation is suggested. They are the same attacks as those labelled "state-sponsored cyberattacks" in panel c. Panel b shows the annual numbers of cyberattacks up until 2024, while panel c only shows the subset of state-sponsored cyberattacks, but for the full sample period of the EuRepoC database between January 2000 and 25 February 2025.
*) Caldara, D. and Iacoviello, M., "Measuring Geopolitical Risk", *American Economic Review*, Vol. 112, No 4, April 2022, pp. 1194-1225.

**Geopolitical rivalry is increasingly playing out in cyber space, with most state-sponsored cyberattacks originating from a handful of countries.** Historically, the main tool used to settle geopolitical disputes between countries has generally been armed conflict. However, the toolkit employed alongside diplomacy to achieve strategic goals without resorting to physical force has evolved. The effectiveness of the tools employed depends heavily on the geoeconomic and political position of the countries involved. At the same time, hybrid techniques, including espionage, infrastructure sabotage and influence campaigns, are increasingly being used to pursue conflicts by other means. While such techniques are not new, the rise of the internet and digitalisation since the 1980s has turned cyber space into a key battleground where such activities may be carried out and has opened up new avenues of attack. As such, the degree to which countries have used cyberattacks to further their national interests varies greatly, with a relatively small cluster of countries, often classified as authoritarian regimes, being responsible for the majority of state-sponsored attacks (**Chart B**, panel a). Such cyberattacks are clearly linked to geopolitical risk factors, but policy uncertainty in both sponsoring countries and targeted countries also seems to play a role at times. The frequency of state-sponsored cyberattacks tends to increase when sponsoring countries encounter geopolitical risks or economic policy uncertainties. Similarly, target countries experience more attacks under conditions of heightened geopolitical risk or economic policy uncertainty (**Chart B**, panel b).

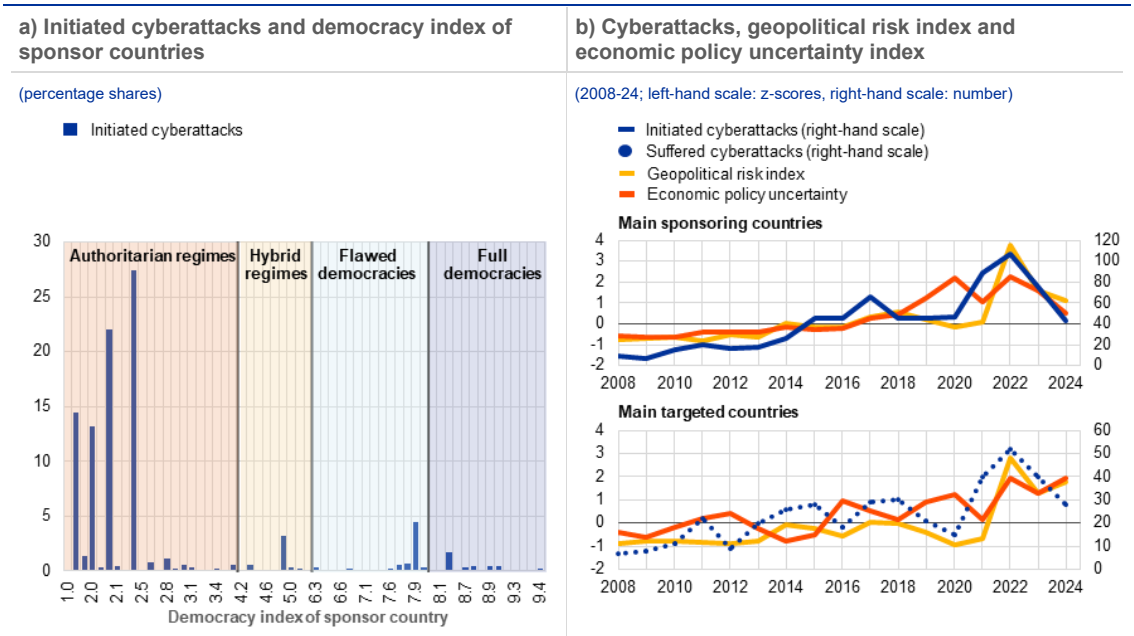
**The threat of cyberattacks to financial stability is significant, given the growing digitalisation and interconnectedness within the financial system.**[4] Cyberattacks can pose systemic risks by

[4] For details of general frameworks for systemic cyber risks to financial stability, see, for example, the article entitled "Towards a framework for assessing systemic cyber risk", *Financial Stability Review,* ECB, November 2022, and "Systemic cyber risk", European Systemic Risk Board, February 2020.

potentially disrupting critical financial services and operations, especially if an attack has an impact on a critical entity or if interconnections between non-critical entities lead to cascading effects. The propagation channels of these attacks include operational, financial and confidence avenues which can amplify the impact of attacks until they impair key economic functions. The potential for cyberattacks to threaten financial stability depends on the scope and severity of the impact, along with factors such as substitutability, risk correlation and interconnectedness. Attacks on infrastructures without ready substitutes or that expose vulnerabilities in other services can propagate widespread stress. As such, increasing dependence on third-party offerings, including centralised cloud technologies, opens up channels through which cyberattacks can cause stress in the financial system, even without targeting financial entities.

**Chart B**

Cyberattacks are predominantly deployed as geopolitical tools by a small set of autocratic states




Sources: Baker, Bloom and Davis*, Caldara and Iacoviello**, EuRepoC database, Economist Intelligence Unit, Our World in Data and ECB calculations.
Notes: Both panels only show cyberattacks conducted by nation-state actors or non-state actors for whom a state affiliation is suggested. Panel a: the democracy index and classification of political regimes refers to the 2024 democracy index of the Economist Intelligence Unit. It scores countries on a scale from zero to ten, based on 60 indicators from the following five categories: electoral process and pluralism; functioning of government; political participation; political culture; and civil liberties. Initiated cyberattacks include all attacks covered by the EuRepoC database between January 2000 and 25 February 2025. Panel b: the main sponsors are a group of four countries; the main targets are a group of seven countries. The number of cyberattacks initiated/suffered is the sum across these groups. The geopolitical risk index and the economic policy uncertainty index are available for two of the main sponsoring countries. Of the main targeted countries, the geopolitical risk index is available for all seven, while the economic policy uncertainty index is only available for five. Indices are averaged and standardised for each group across the countries for which the indices are available.
*) Baker, S., Bloom, N. and Davis, S., "Measuring Economic Policy Uncertainty", *The Quarterly Journal of Economics*, Vol. 131, No 4, November 2016, pp. 1593-1636.
**) Caldara, D. and Iacoviello, M., op. cit.

**State-sponsored cyberattacks will remain a major threat, with the potential to cause systemic disruptions in areas like financial stability.** In an environment of heightened geopolitical tensions and active conflicts, there is a particularly high risk of sovereign states employing cyberattacks to achieve their objectives. In contrast to cyber criminals, who are often driven by financial motives, state-sponsored attackers can deploy substantially larger resources when preparing their attacks, aiming to cause maximum disruption. These cyber threats can also pose risks to financial stability, as financial institutions and infrastructures could face major operational impediments if critical third-party providers or the critical infrastructures they rely on were severely disrupted. Although financial crises have been successfully dealt with in the past, the banking sector has much less experience of coping with a cyber-related crisis, and the playbook for such a scenario is less clear. It is therefore of the

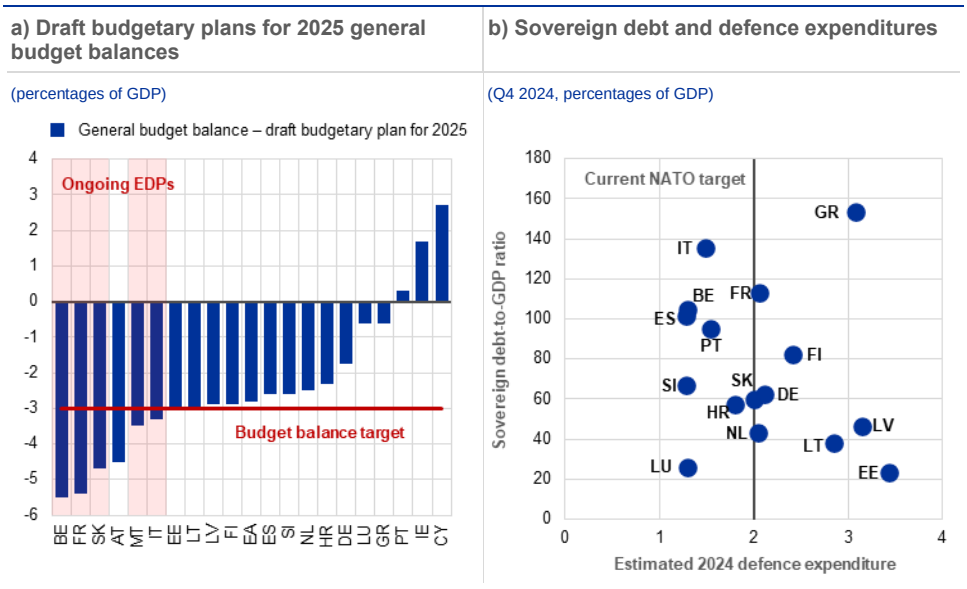
utmost importance that authorities and financial institutions alike continue to pay close attention to developments in the cyber threat landscape, while fostering a mutual understanding of related risks and cooperating to build resilience and develop mitigation measures.

## 1.2 High spending needs and low growth complicate fiscal consolidation

**Euro area sovereign budgets are facing cyclical and structural challenges in an uncertain international environment.** Many euro area countries, including some large economies, are expected to run sizeable budget deficits in 2025, complicating the path towards fiscal consolidation under the new EU fiscal framework (**Chart 1.3**, panel a). In addition, global trade tensions, coupled with high uncertainty about the outlook for other economic and regulatory policies as well as ongoing geopolitical conflicts, present pronounced downside risks to economic growth. As such, weaker growth would weigh on fiscal positions and further limit fiscal space to react to adverse shocks in many euro area countries. These conditions present obstacles to the high levels of investment and spending needed to tackle the structural challenges associated with climate change, digitalisation, ageing populations, low productivity and defence.

**Chart 1.3**

Euro area sovereign budgets are being challenged by geopolitical uncertainties and structural issues

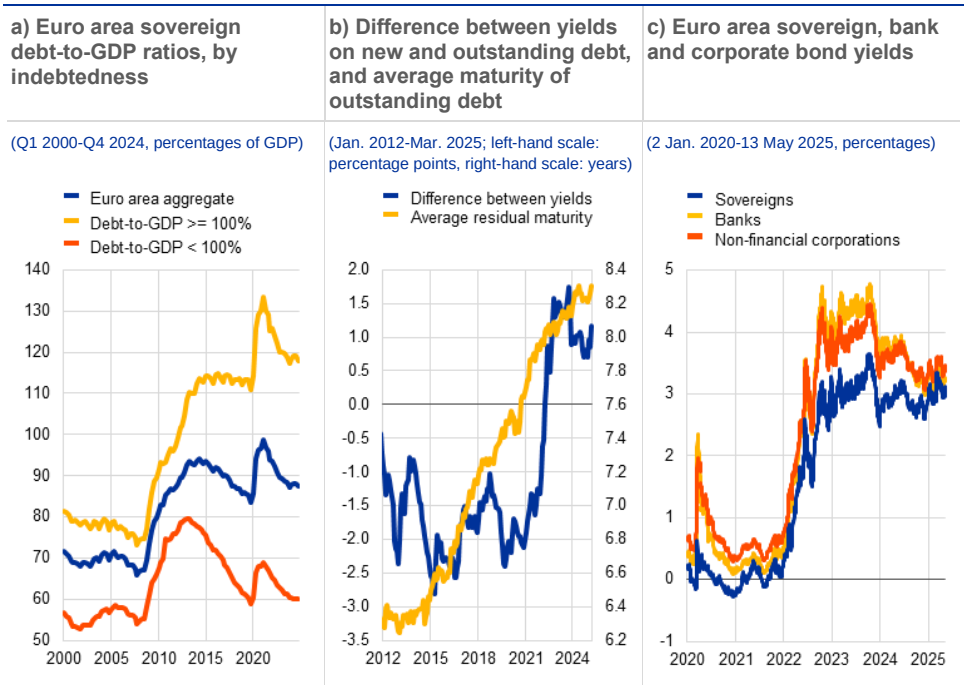



Sources: European Commission, Eurostat and ECB (GFS), NATO and ECB calculations.
Note: Panel a: Spain has not submitted draft budgetary plans. The chart shows the European Commission's autumn 2024 forecasts instead. France's planned budget balance is adjusted for the announcement made by the Bayrou Government on 3 February 2025. EDP stands for excessive deficit procedure. Panel b: data for sovereign debt-to-GDP ratios are for Q4 2024. The chart shows only those euro area countries for which 2024 estimates of defence expenditure are available. Estimates of defence expenditure come from NATO, as official euro area data do not yet cover 2024 and may differ from NATO's due to different classifications of defence expenditures.

**Necessary increases in defence spending could have a significant impact on budgets, requiring more fiscal space.** As European security parameters shift, some governments are aiming to boost self-reliance in defence. Given the wide range of current defence expenditures and the new spending target currently under discussion in European and international fora, some countries may need to make substantial increases. The short-term capacity to meet these needs varies greatly because refinancing needs and debt levels are uneven across countries (**Chart 1.3**, panel b). Accordingly, most of the more highly indebted countries have so far not pledged to greatly increase their defence spending. To create the required fiscal space, the European Commission's "ReArm Europe Plan/Readiness 2030"[5] suggests activating the national escape clause of the Stability and Growth Pact and disbursing loans from new joint borrowing using the Security Action for Europe (SAFE) instrument. In addition, the plan suggests repurposing parts of the existing EU budget and mobilising private capital by accelerating the formation of a savings and investment union. The European Investment Bank could also play a role.

**Chart 1.4**

Debt levels and interest costs are set to rise, while any reassessment of sovereign risk could increase funding costs and cause spillovers to banks and corporates




Sources: Eurostat and ECB (GFS, MNA), S&P Dow Jones Indices LLC and/or its affiliates and ECB calculations.
Notes: Panel a: countries are grouped based on their sovereign debt-to-GDP ratios in the fourth quarter of 2024 and resulting average sovereign debt-to-GDP ratios are weighted by 2024 GDP. Panel b: "Difference between yields" refers to the difference between current yield on outstanding debt and average yield at issuance of existing debt; "Average residual maturity" refers to the average residual maturity for total government debt securities. Panel c: "Sovereigns" shows the GDP-weighted average of euro area countries' ten-year sovereign bond yields, "Banks" shows the yields on senior unsecured bonds in the iBoxx EUR Banks Senior Index, and "Non-financial corporations" shows the yields on investment-grade bonds in the iBoxx EUR Non-financials Index.

**Debt levels and interest costs are set to rise and will weigh on government finances beyond the short to medium term.** After falling from the highs reached

[5] Initially announced as the ReArm Europe Plan. See "Press statement by President von der Leyen on the defence package", European Commission, Brussels, 4 March 2025 and "Commission unveils the White Paper for European Defence and the ReArm Europe Plan/Readiness 2030", European Commission, Brussels, 19 March 2025.

during the COVID-19 pandemic, sovereign debt levels may rise again as increases in defence spending and potential further stimulus packages will be financed largely by additional debt (**Chart 1.4**, panel a). Despite lower ECB policy rates, current borrowing costs exceed the interest rates sovereigns pay on existing debt (**Chart 1.4**, panel b). Given the relatively long average maturity of new sovereign debt, the refinancing of maturing debt issued at very low rates before 2022 at current market conditions, together with the issuance required to finance additional spending, is likely to increase interest payments relative to GDP for years to come.[6] As the Eurosystem is continuously reducing its presence in the bond market, the private sector needs to increasingly absorb new sovereign debt. Euro area banks, non-banks and foreign investors have increased their holdings of euro area sovereign bonds since the end of quantitative easing. While some investors may require higher yields, overall they seem well positioned to provide further liquidity if this is needed (**Sections 2.3** and **3.4**)[7].

**A well-planned fiscal expansion, combined with structural reforms, could foster long-term growth and ensure debt sustainability.** Debt-driven fiscal expansion must remain sustainable and comply with the new EU fiscal framework to retain the confidence of creditors. Over the medium to long term, higher defence spending should be funded out of government coffers, raised either by collecting new revenues or by reprioritising budgets to enable appropriate fiscal consolidation. Additional defence spending should therefore promote euro area growth while enhancing defence capabilities in a timely manner. For instance, the fiscal multiplier could be increased by sourcing from within the EU or investing in domestic military research and development which could result in technological spillovers to civilian industries.[8] Structural reforms are essential to tackle low productivity, and stimulus packages should focus on investments that enhance euro area growth potential. However, more fragmented parliaments may create political deadlock, causing crucial reforms to be delayed.[9] Consequently, funding costs for sovereigns could increase rapidly if market participants or rating agencies were to reassess sovereign risk. Given the benchmark role of sovereign bonds, any such repricing could easily spill over to funding conditions for banks and non-financial corporations (**Chart 1.4**, panel c). This would negatively affect investment and business activity, slow growth and add to debt sustainability concerns.

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6 See also *Global Debt Report 2025*, OECD Publishing, March 2025.

7 See the box entitled "Sovereign bond markets and financial stability: examining the risk to absorption capacity", *Financial Stability Review*, ECB, May 2023.

8 For a discussion of fiscal multipliers related to military spending, see Yesilyurt, F. and Yesilyurt, M.E., "Meta-analysis, military expenditures and growth", *Journal of Peace Research*, Vol. 56, No 3, 2019, pp. 352-363, and Sheremirov, V. and Spirovska, S., "Fiscal multipliers in advanced and developing countries: Evidence from military spending", *Journal of Public Economics*, Vol. 208, 2022.

9 See the "Overview", *Financial Stability Review*, ECB, November 2024.

## 1.3 Firms face higher debt service costs alongside trade tensions

**Improved financing conditions are shoring up firms' resilience, but interest expenses and macroeconomic uncertainty are weighing on balance sheets.** Even though interest rates on new business loans are falling, firms' debt servicing capacity remains weak because of compressed interest coverage ratios and revenue generation. In addition, weak economic activity and profitability are posing a challenge to corporate resilience in the euro area (**Chart 1.5**, panel a). Recent survey data signal that firms are becoming wary about the long-term effects of an environment riddled with geopolitical and macroeconomic uncertainty. More specifically, euro area banks have again reported a tightening of credit standards for loans to firms on the back of an increased perception of risk and lower risk tolerance. In addition, the reported share of rejected loan applications has increased for SMEs, driven by developments in Germany, with banks pointing to higher credit risk for smaller firms.[10] This is echoed by firms reporting muted demand for bank loans amid lower lending rates and slightly tighter other loan conditions.[11] For the time being, the prevailing wait-and-see dynamics suggest that corporate investment might trend sideways.

**Macroeconomic and financial headwinds are clouding the outlook for firm solvency in the short term.** The debt service ratio of euro area firms worsened further in 2024, driven by sluggish growth, the resultant stagnant net income and further increases in firms' interest expenses. Corporate insolvencies were on the rise up to the end of 2024, with significant differences across sectors (**Chart 1.5**, panel b). For example, insolvencies have decreased strongly in the transport sector of late while continuing to increase in industry (excluding construction). In particular, the automotive sector is struggling due to stagnating new car registrations, higher energy costs and the considerable spending needed to reduce the carbon footprint,[12] while also becoming a focal point of current trade tensions. Challenges that already existed before the trade tensions culminated in an increasing number of downgrades in 2023 and 2024, which clearly exceeded the number of upgrades (**Chart 1.5**, panel c). As net downgrades can be seen as an early indicator of future defaults, bankruptcies may be expected to increase further. At the same time, indicators of economic activity paint a mixed, but slightly more optimistic picture overall (**Section 1.1**). Most notably, the composite, manufacturing and services PMIs on expectations for future business activity in the next 12 months are signalling an expansion.

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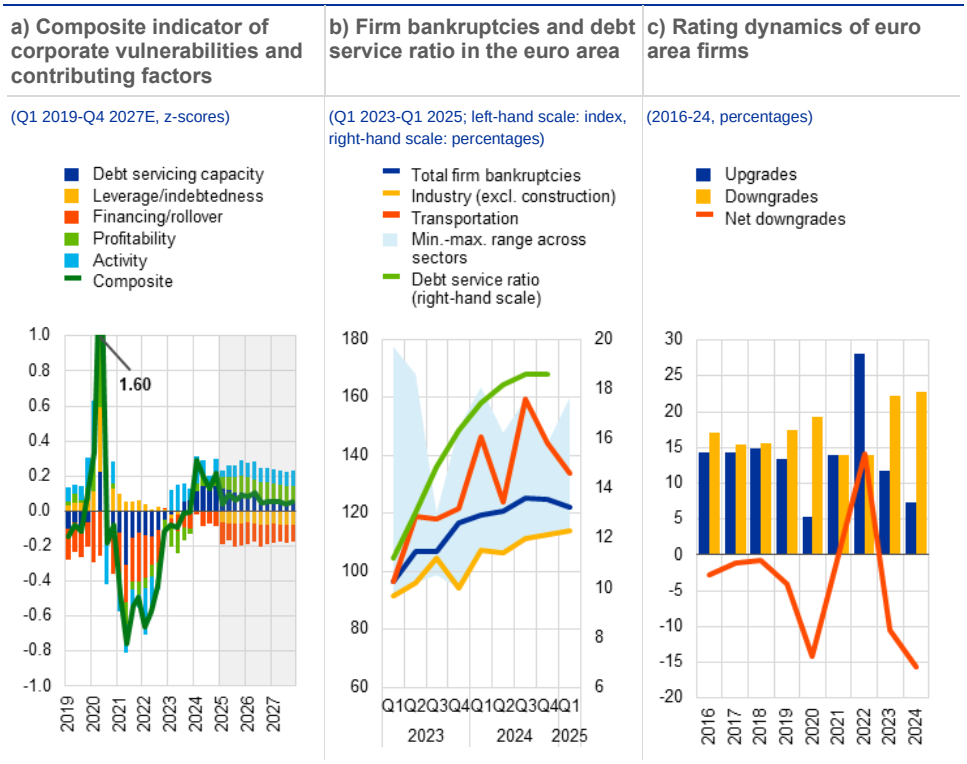
10 See "The euro area bank lending survey – First quarter of 2025", ECB, April 2025.

11 See the "Survey on the Access to Finance of Enterprises in the euro area in the first quarter of 2025", ECB, April 2025.

12 See the EU's "$CO_2$ emission performance standards for cars and vans", European Commission, undated.

**Chart 1.5**

Interest expenses are weighing on corporate balance sheets, despite decreasing leverage and improving financing conditions

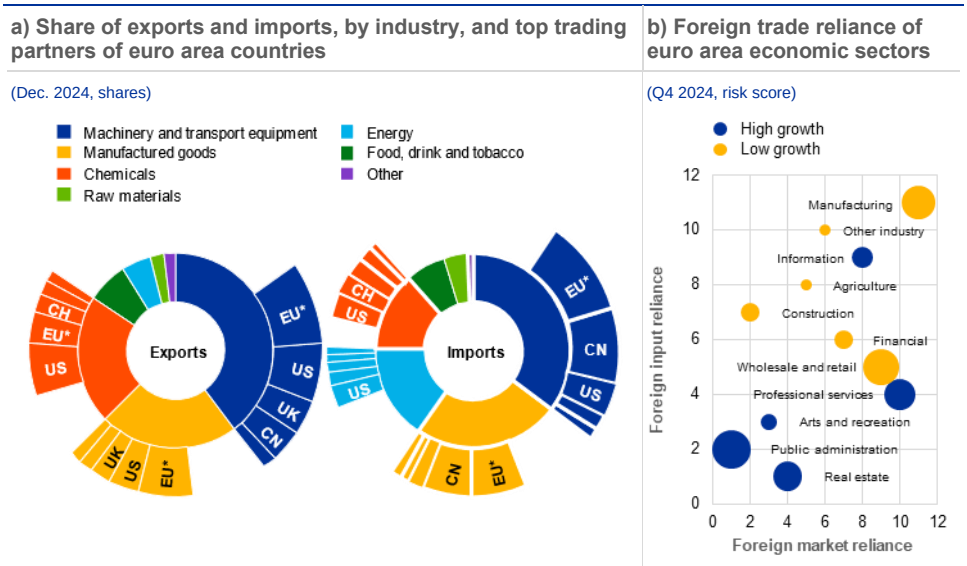



Sources: ECB (BSI, MIR), Eurostat, ICASs and ECB calculations.
Notes: Panel a: for details on the construction of the corporate vulnerability index, see the box entitled "Assessing corporate vulnerabilities in the euro area", *Financial Stability Review*, ECB, November 2020. Positive values indicate higher vulnerability while negative values indicate lower vulnerability. The grey shaded area refers to the forecast. Panel b: firm insolvencies are depicted as an index with Q4 2019 = 100. The blue area shows the minimum-maximum range of index values across sectors: construction, trade, transport, accommodation and food services, information and communication, finance and real estate and professional services, industry excluding construction, education and health care. The debt service ratio for the non-financial corporation sector 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. Panel c: issuer-weighted rating data (yearly frequency) are obtained from in-house credit assessment systems (ICASs) developed by euro area national central banks; they are an important source of credit risk assessment within the Eurosystem collateral framework. Rating changes are reported based on the credit quality steps of the Eurosystem's harmonised rating scale. "Net downgrades" is the difference between upgrades and downgrades.

**Trade frictions could significantly affect the resilience of euro area firms in key export-oriented industries.** As of 2024, firms in the machinery and transport, manufactured goods and chemicals industries alone accounted for 84% of all exports and 72% of all imports (**Chart 1.6**, panel a). Abstracting from intra-EU trade, which accounts for the vast majority of goods traded, the United States is the most important export market for euro area firms in these three industries. China, on the other hand, is the most important trading partner in terms of goods imported. Consequently, escalating trade frictions with the United States could have twin repercussions for the profitability and resilience of euro area firms. The first stems from higher tariffs imposed on goods exported by euro area firms themselves. The second relates to stronger competition not only from China but also from other countries facing tariffs imposed by the United States. Goods from these countries might be rerouted to domestic and other markets, reducing profit margins and limiting the growth of capital and investment for euro area firms. Both effects depend, however, on trade elasticities with less severe implications for euro area companies producing more differentiated and less substitutable goods.

**Chart 1.6**

Euro area companies in the manufacturing sector are the most exposed to changes in global trade and tariff policies




Sources: Eurostat, OECD and ECB calculations.
Notes: Panel a: intra-euro area exports and imports not included. CH = Switzerland, CN = China, EU* = non-euro area EU, UK = United Kingdom, US = United States. Panel b: economic sectors are ranked using the foreign market and foreign input reliance metric (for detailed information on data and methodology, see the special feature entitled "Risks to euro area financial stability from trade tensions" in this edition of the Financial Stability Review). High values indicate high reliance on either foreign markets or inputs. The size of the bubbles indicates the share of gross value added in Q4 2024. High-growth sectors are defined as economic sectors with a change in gross value added above the median value in Q4 2024 (index: Q4 2019 = 100). Low-growth sectors are defined as economic sectors equal to or below the median.

**Intensifying trade frictions could worsen the outlook of firms, especially in the manufacturing sector.** Euro area firms in the manufacturing, other industry and information sectors are most exposed to global trade conflicts, as they exhibit both large foreign market and large foreign input reliance (**Chart 1.6**, panel b and **Special Feature B**). Most notably, not only is manufacturing one of the biggest sectors in terms of gross value added, it has also experienced weak growth momentum. Given the already high levels of labour hoarding in industry, this could be a catalyst for rising lay-offs (**Section 1.4**). As European security parameters shift, however, governments are aiming to boost self-reliance in defence by creating fiscal space for future investments, preferably into European aerospace and defence manufacturing firms. Together with further fiscal stimulus packages, this could potentially offset losses from rising trade frictions, which is echoed by positive market sentiment following announcements of fiscal expansion in the euro area (**Chapter 2.3**). Unlocking additional investment capacity and stimulating growth dynamics through initiatives that aim to deepen the EU's Single Market[13] would help shore up euro area firms' financial resilience and global competitiveness.[14]

13 See, for instance, the European Commission's savings and investments union strategy, unveiled in March 2025; the Final Report of the High Level Forum on the Capital Markets Union, published in June 2020; the European Commission's communication entitled "A Competitiveness Compass for the EU"; and "The Future of European competitiveness", a report compiled by Mario Draghi in September 2024 at the request of the European Commission.

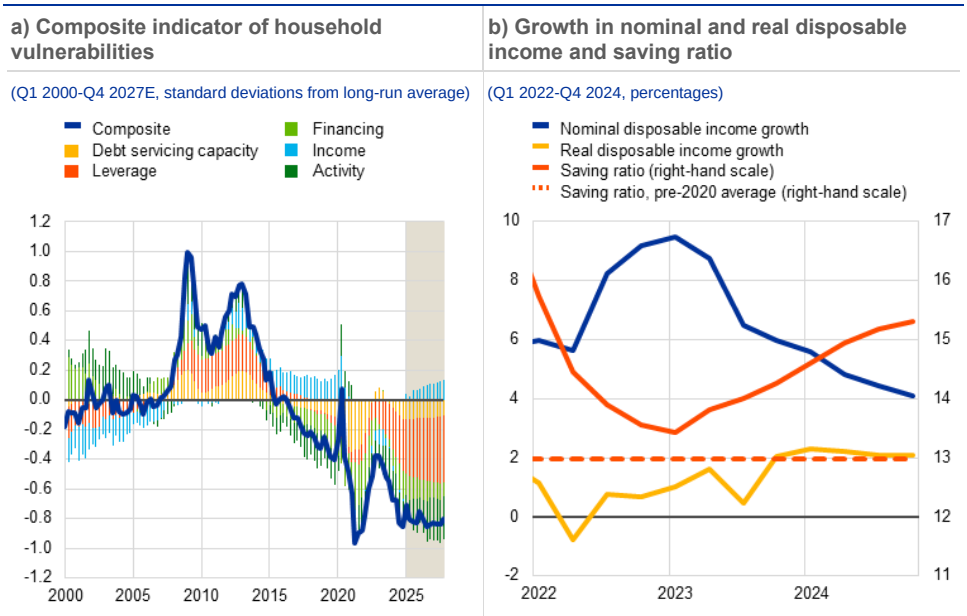
14 See Adilbish, O.E. et al., "Europe's Productivity Weakness: Firm-Level Roots and Remedies", *IMF Working Papers*, No 2025/040, International Monetary Fund, February 2025.

## 1.4 Elevated savings support household resilience

**Household vulnerabilities have eased slightly and are expected to remain low in the near future.** The ECB's composite indicator of household sector vulnerabilities suggests a continued decline in vulnerabilities over the past six months (**Chart 1.7**, panel a). Improvements in financing conditions, debt servicing capacity and, to a lesser extent, leverage contributed to this fall. Looking ahead, a further reduction in leverage and an increase in economic activity are expected to reduce the level of vulnerabilities even further from their current historical low. Conversely, the expected moderation in income growth may have a negative impact on overall vulnerabilities.

**Chart 1.7**

Household vulnerabilities have decreased slightly from already low levels, while savings remain elevated



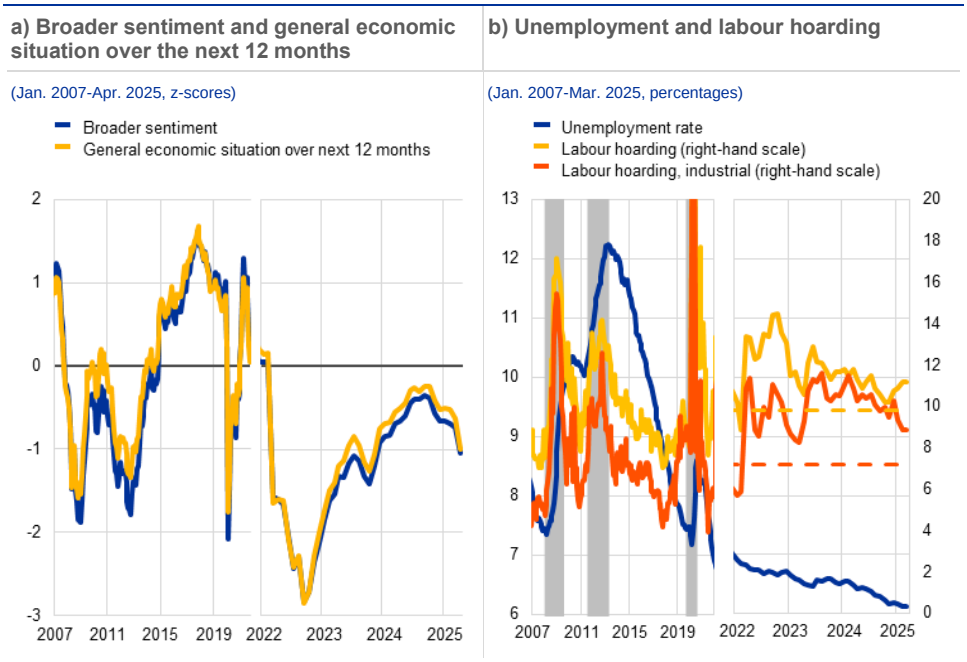

Sources: Eurostat and ECB calculations.
Notes: Panel a: the composite indicator is based on a broad set of indicators along five dimensions: (i) debt servicing capacity (measured by gross interest payments-to-income ratio, saving ratio and expectation of personal financial situation); (ii) leverage (gross debt-to-income and gross debt-to-total assets ratios); (iii) financing (bank lending rate, short-term debt-to-long-term debt ratio, quick ratio (defined as current financial assets/current liabilities) and credit impulse (defined as the change in new credit issued as a share of GDP)); (iv) income (real income growth and income-to-GDP ratio); and (v) activity (labour participation rate and unemployment expectations). The indicators are standardised by transforming them into z-scores, meaning that they are converted into a common scale with a mean of 0 and a standard deviation of 1. 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.

**Robust growth in real disposable income has coincided with a saving ratio that remains elevated compared with pre-pandemic levels.** As inflation approaches the ECB's target of 2%, nominal disposable income growth is declining from its peak in March 2023 (**Chart 1.7**, panel b). The catch-up dynamics of nominal income to recoup lost purchasing power during the period of high inflation, caused by the infrequent adjustments in negotiated wages, are losing steam. Real disposable income is maintaining a healthy growth rate of around 2%. Despite a modest rise in consumption, the aggregate saving rate is reaching historical highs, aside from the exceptional surge during the pandemic. Households' propensity to save more is likely influenced by precautionary motives amid an uncertain economic outlook and

heightened macroeconomic risks (**Section 1.1**). In such an environment, deep uncertainty and a possible tightening of financial conditions may induce households to cut back consumption, exacerbating the decline in the demand directed to firms associated with the trade tensions.

**Chart 1.8**

Household sentiment remains below the long-term average as rising trade frictions and uncertainty could affect the labour market




Sources: Eurostat, European Commission, Haver Analytics, OECD, CEPR and ECB calculations.
Notes: Panel a: indices are shown as z-scores, i.e. standard deviations from their long-term averages since 2000. The latest observations for indices are for April 2025. The broader sentiment index is the first principal component of a broad set of household surveys. Panel b: the grey areas show euro area recessions as defined by the Centre for Economic Policy Research. Dashed lines indicate the non-recession averages. The peak in labour hoarding during the pandemic can be explained by policy measures reducing the cost of labour hoarding for firms.

**Household sentiment has plateaued following an earlier rebound, with expectations remaining clouded.** Recent household sentiment, which aggregates a broad set of individual surveys, indicates stabilisation, albeit significantly below the long-term average (**Chart 1.8**, panel a). After the initial shock stemming from Russia's full-scale invasion of Ukraine, there was a partial recovery in overall sentiment. However, a recent survey indicated a decline in the broader sentiment over the past six months and a more pronounced decline in households' expectations for their economic situation over the coming year, likely accelerated by the rising trade uncertainty.

**Upon first examination, the labour market appears robust, yet potential risks are beginning to emerge.** Unemployment is historically low, and gains in other indicators, such as the labour participation rate, also point towards a relatively strong labour market (**Chart 1.8**, panel b). However, these indicators typically lag the business cycle, which can conceal underlying vulnerabilities. The European Commission's labour hoarding indicator reflects the proportion of firms with a

deteriorating outlook that do not anticipate reducing their workforce.[15] The longer labour hoarding persists above the non-recession average, the higher the risk to employment. At the aggregate level, and especially for the industrial sector, labour hoarding exceeds non-recession averages. Furthermore, labour hoarding in the industrial sector has been trending upwards since the start of 2022, albeit with a mild reversal in the recent past. Given that the industrial sector is particularly vulnerable to trade tensions and other structural challenges, it could become a catalyst for future increases in unemployment.

## 1.5 Recovering real estate markets may face headwinds from elevated uncertainty

**Falling borrowing costs have supported demand for mortgages, but construction activity has remained subdued.** Following the decline in borrowing costs and the easing of lending standards in recent quarters, the demand for mortgage loans from households has increased of late (**Chart 1.9**, panel a). The main driver of this has been the fall in interest rates and to a lesser extent a slightly improved outlook for the residential real estate (RRE) market. RRE investment growth has continued to decline, however, even if the pace of that decline has moderated recently. In addition, forward-looking indicators of construction activity and construction prices signal subdued activity and expectations of higher prices, although these expectations are substantially less marked than at the peak of the cycle (**Chart 1.9**, panel b). This imbalance between supply and demand in the RRE market could potentially exert upward pressure on prices in the medium term.

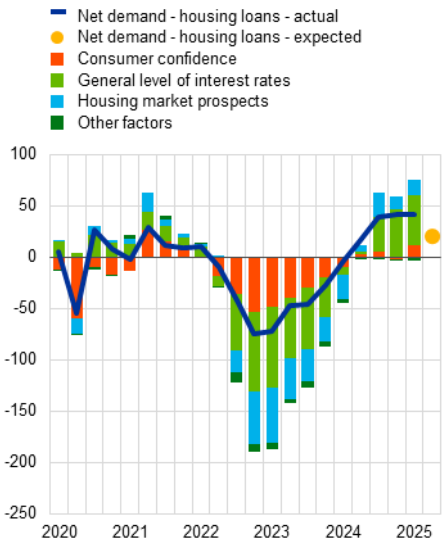
[15] For further information, see the box entitled "Higher profit margins have helped firms hoard labour", *Economic Bulletin*, Issue 4, ECB, 2024.

**Chart 1.9**

Demand for mortgages has picked up gradually in recent quarters, while investment and construction activity has remained weak

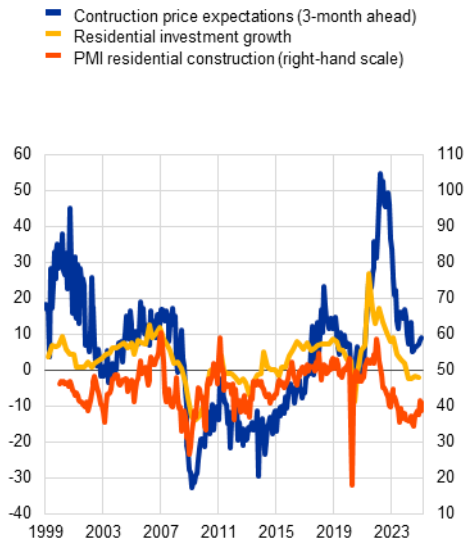
**a) Changes in demand for housing loans in the euro area and contributing factors**

(Q1 2020-Q2 2025, net percentages)




**b) Survey indicators for residential construction PMI and residential investment growth**

(Jan. 1999-Mar. 2025; left-hand scale: net percentages and percentages, right-hand scale: index)

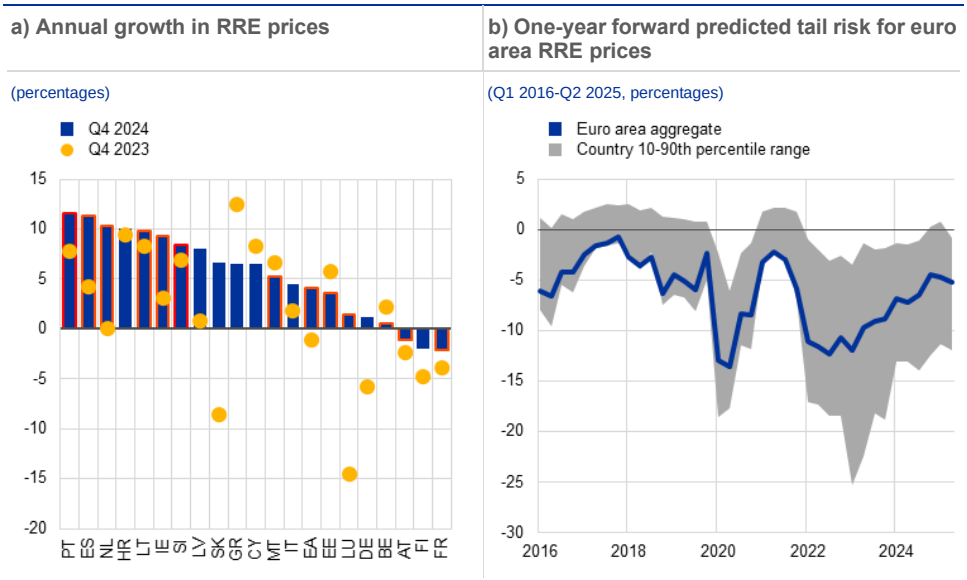



Sources: ECB, European Commission, S&P Global Market Intelligence and ECB calculations.

**The likelihood of a severe contraction in RRE prices is lower than at the peak of the cycle, but tail risks are still present.** In the fourth quarter of 2024, RRE prices in the euro area increased by 4.2% year on year, following a decline of 1.1% in the equivalent quarter of the previous year. The situation differed markedly among countries. While some countries experienced robust price growth, a few still witnessed a contraction in prices, even though this was generally less pronounced than in the previous year (**Chart 1.10**, panel a). The recent correction in house prices has reduced estimates of overvaluation in most countries. Combined with improved financial conditions, this has led to a decrease in tail risks compared with the situation at the peak of the cycle in 2022 (**Chart 1.10**, panel b). That said, conditions vary greatly across the euro area, and some countries still face significant tail risks due to persistent overvaluation, low affordability and economic headwinds. A sharp increase in unemployment and associated income uncertainty in the event of a significant deterioration in the economic outlook could therefore lead to renewed downward pressure on house prices (**Section 1.4**).

**Chart 1.10**

RRE price growth differs markedly across countries, and while lower than at the peak of the cycle in 2022 RRE tail risks are still elevated in some countries




Sources: ECB and ECB calculations.
Notes: Panel a: the solid red lines around the blue bars indicate positive deviations from the long-term average of the house price/income ratio, signalling potential overvaluation in domestic housing markets. The long-term average is calculated from Q1 1996 to the respective end quarter. RRE price growth data for Q4 2024 are not available for Belgium, Cyprus and the Netherlands, so data for Q3 2024 are shown instead. Overall, estimates from the valuation models are subject to considerable uncertainty and should be interpreted with caution. Alternative valuation measures may point to lower/higher estimates of overvaluation. EA stands for euro area. 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.

**Confidence in commercial real estate (CRE) markets has continued to strengthen in light of easing monetary policy, although downside risks remain.** Sentiment indicators point towards a sharp drop in the share of investors reporting adverse credit conditions and a downturn in CRE markets. The number of investors who view CRE as expensive has also fallen. This suggests that the market downturn may be bottoming out and that the recent price correction may have reduced broader overvaluation in the market (**Chart 1.11**, panel a). While the easing of monetary policy will directly benefit CRE valuations via reduced discount factors, the recent downturn has also been driven by structural factors which affect demand for CRE. These include the shift towards remote working and falling demand for lower-quality offices.[16] Indeed, those office markets which have seen the sharpest decline in capital values since the COVID-19 pandemic have typically also seen the biggest increase in vacancy rates (**Chart 1.11**, panel b). These structural challenges are likely to persist, even in an environment of further monetary easing. Given their exposure to both international capital flows and local economic conditions, CRE markets are also highly vulnerable to the ongoing macroeconomic and geopolitical uncertainty. As previous editions of the Financial Stability Review have noted, the outlook for the lower-quality end of the market is particularly poor.

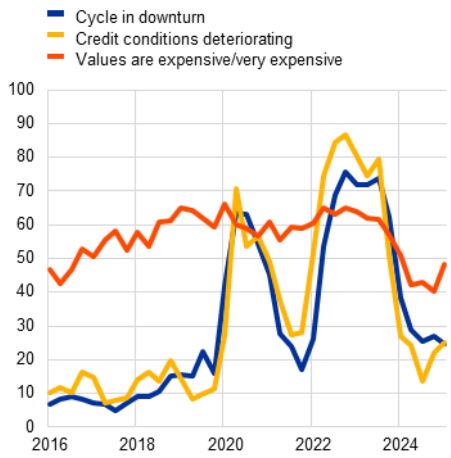
16 See the box entitled "Rents or rates: what is driving the commercial real estate market?", *Financial Stability Review*, ECB, November 2024.

**Chart 1.11**

Investor sentiment in CRE markets has strengthened significantly, although office markets may continue to face structural challenges

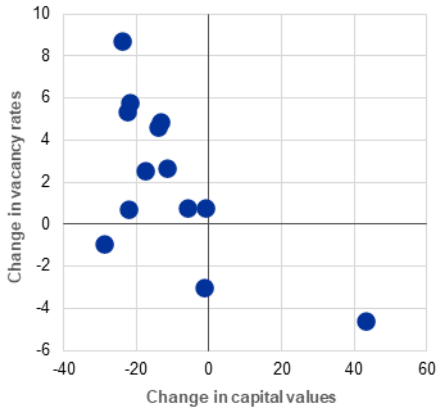
**a) CRE investors reporting end of market downturn, improving credit conditions and less overvaluation**

(Q1 2016-Q1 2025, percentages of investors surveyed)




**b) Office markets with falling capital values and rising vacancy rates**

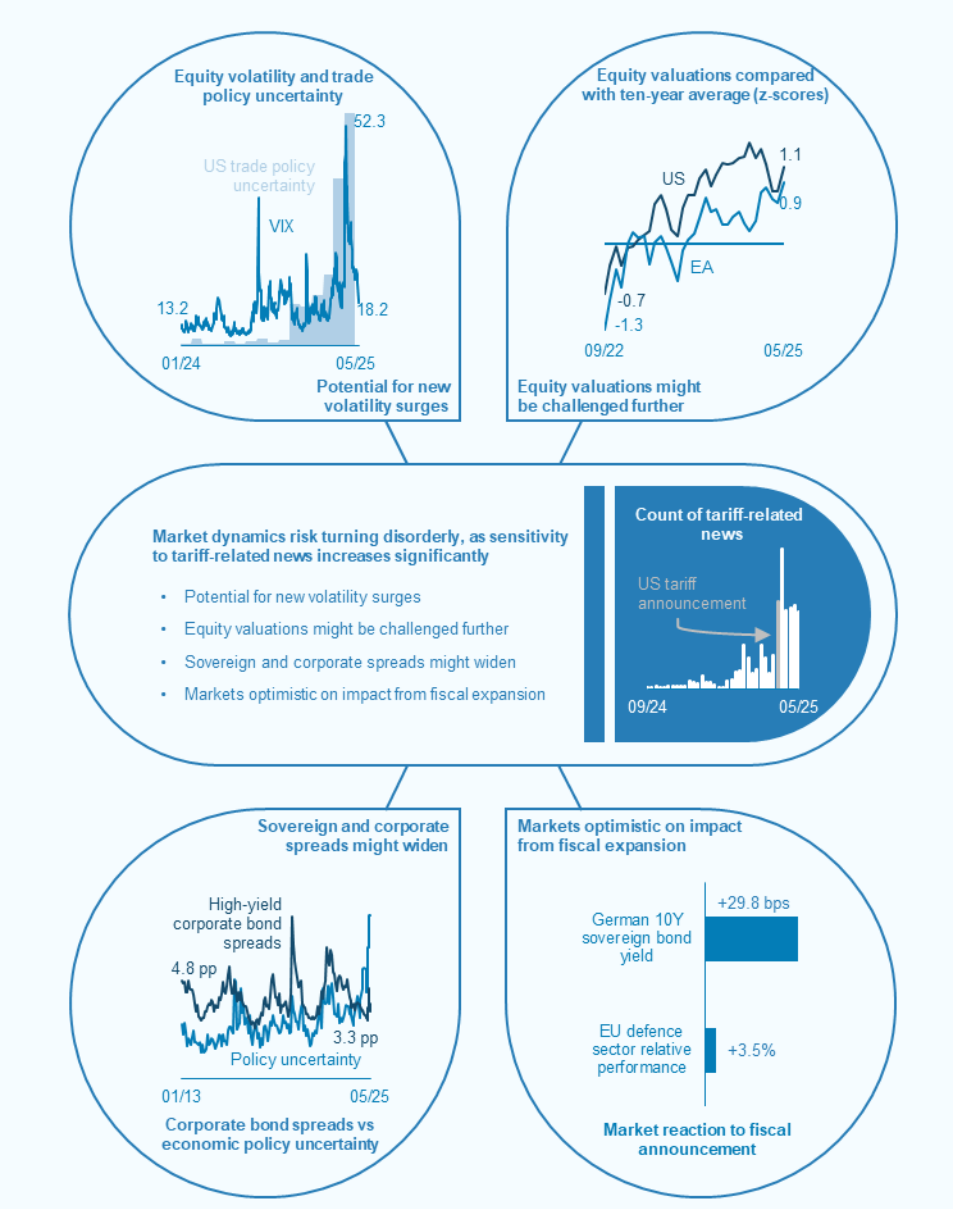
(Q4 2019-Q1 2025; x-axis: percentages, y-axis: percentage points)




Sources: RICS, JLL and ECB calculations.
Note: Panel b: the dots represent national aggregates based on the prime office market in major cities. Simple averages are applied where data are available for more than one city.

**Despite signs of a gradual recovery in real estate markets, financial stability risks could still materialise and should be closely monitored.** Real estate markets are highly sensitive to fluctuations in long-term interest rates and real economy developments. This implies that tail risks are still present, in light of current economic policy uncertainty and geopolitical risks. Given the size of banks' residential mortgage portfolios (22.2% of total assets as of the third quarter of 2024), a significant rise in unemployment could pose financial stability risks where it results in a substantial increase in credit risk in this portfolio. While CRE markets may be even more vulnerable to a deterioration in the economic environment – given ongoing structural challenges and a particularly high sensitivity to real economy demand – these exposures are more contained and are unlikely to endanger the solvency of the euro area banking system as a whole (5% of total assets as of the third quarter of 2024). However, these exposures are not evenly spread across the banking system, and stress could arise among the euro area's most exposed banks. An adverse real estate market outcome could also be amplified where outflows from real estate funds result in (forced) procyclical selling (**Chapter 4.2**).

# 2 Financial markets



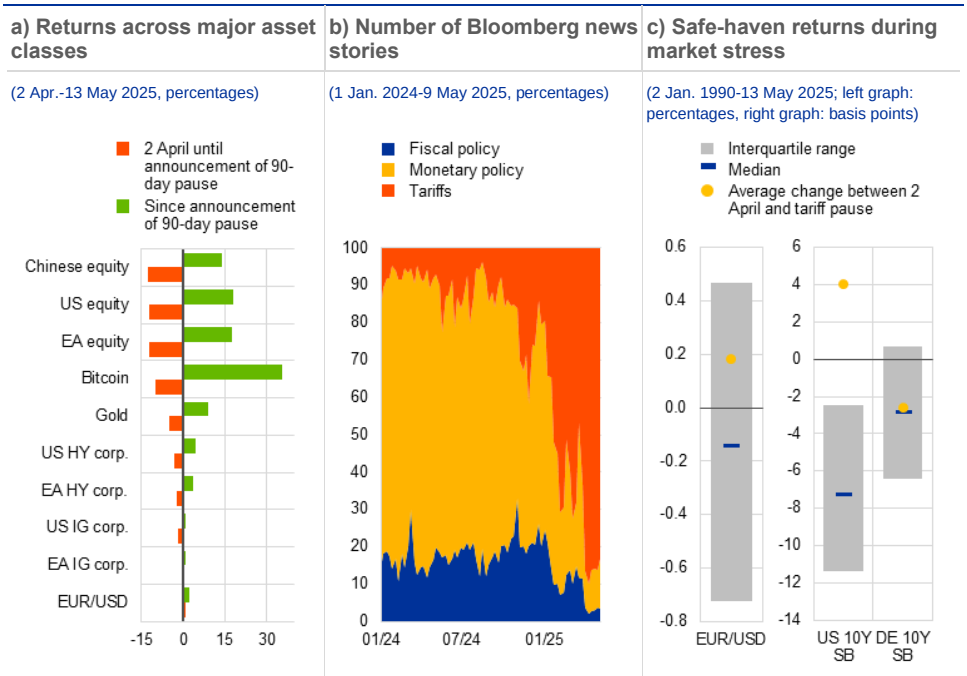

## 2.1 Financial markets have been volatile

**The announcement of significantly higher than expected US import tariffs on 2 April led to a sharp increase in market volatility and a sell-off in risky assets.** Increasing trade tensions following the US tariff announcement on 2 April 2025 and subsequent retaliation by China led to a broad-based sell-off in risky assets (**Chart 2.1**, panel a). This came to a halt when the US Administration announced a 90-day tariff pause for most countries which was followed by a strong rebound in risky assets. The S&P 500 climbed 9.5% on 9 April, its highest gain since 2008, and euro

area equities have also seen unusually strong gains since 9 April. Driven by further positive news on easing trade tensions, in particular between the United States and China, US and euro area equities had mostly recovered the losses incurred after 2 April by the cut-off date of this edition of the Financial Stability Review (**Overview**). In line with the way tariffs have dominated the financial headlines since the start of the year (**Chart 2.1**, panel b), these price swings illustrate the strong sensitivity of markets to both positive and negative tariff-related news.

**Chart 2.1**

Market pricing has become highly sensitive to tariff-related news, while the US dollar and US Treasuries have not performed in line with other safe-haven assets



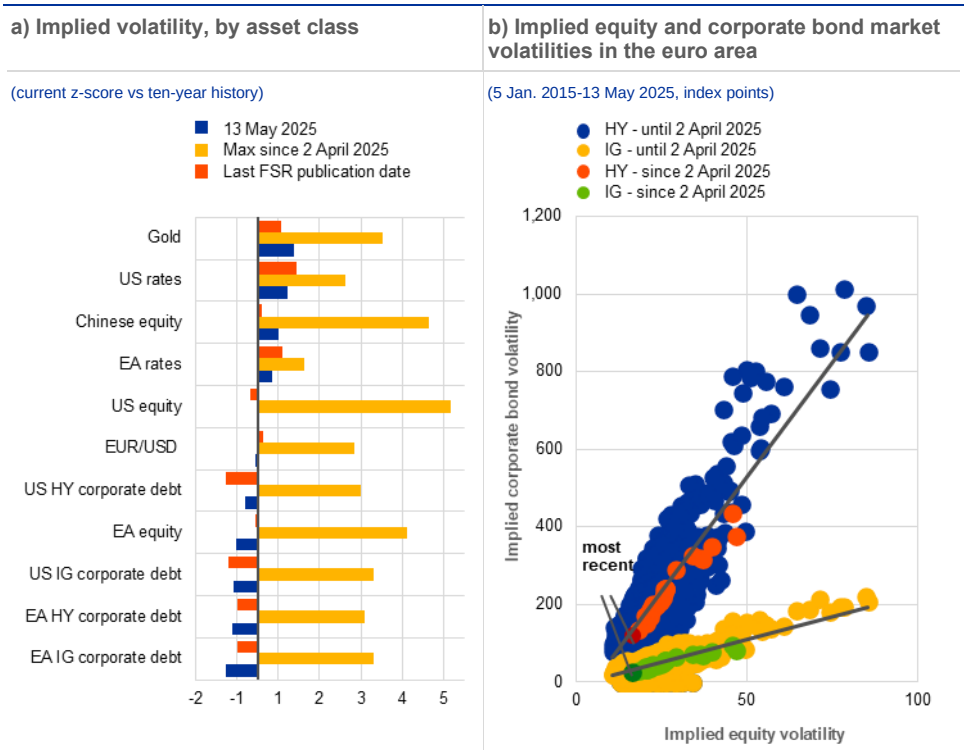

Sources: Bloomberg Finance L.P. and ECB calculations.
Notes: Panel a: day of 90-day pause announcement varies for different asset classes, depending on market opening hours. EA stands for euro area; HY stands for high-yield; IG stands for investment-grade; "corp." stands for corporate bonds. Panel b: number of news articles published on Bloomberg and tagged by Bloomberg with fiscal policy, monetary policy or tariffs. Expressed as a share of total number of articles on the three topics. Panel c: US 10Y SB and DE 10Y SB is the respective ten-year sovereign bond yield. Distribution across market developments on days with highly negative returns of the S&P 500 since 1990, defined as returns that are 2 standard deviations below the average. Yellow dots are the average exchange rate or yield changes between the announcement of the tariffs on 2 April and the announcement of the 90-day pause.

**The decline in value of US safe-haven assets during the April market sell-off may reflect higher liquidity needs or a broader reassessment of US assets.** The April market sell-off was characterised by a breakdown in standard cross-asset correlations. While there were inflows into euro area sovereign bonds and German sovereign debt yields declined in a flight to safety, US Treasury yields increased, indicating a sell-off. This is unusual in times of market stress (**Chart 2.1**, panel c). In addition, the US dollar depreciated, including against the euro, despite an increasing interest rate differential. At the same time, currencies like the Japanese yen and the Swiss franc appreciated, supported by flight-to-safety flows. Gold prices temporarily dipped but have generally continued their long-term trend in registering new record highs (**Box 2**). There may be technical reasons for these unusual moves away from some traditional safe-haven assets. Investors needed to raise liquidity to meet fund redemptions or margin calls as market volatility rose (**Chapter 4**), and an unwinding of

asset swap or basis trade positions has contributed to the decline in US Treasuries.[17] Furthermore, the breakdown of standard correlations, the basis of risk management frameworks, drove the sell-offs, as a lack of diversification benefits led to higher portfolio losses. At the same time, these moves might also have reflected a more fundamental reassessment of US assets. The unpredictability of a broad range of US policies seems to have led investors to require higher risk premia on US assets. At the same time, it could also have shaken confidence in the US dollar as the global reserve currency and US sovereign bonds as safe-haven assets.

**Chart 2.2**

Market volatility spiked in April, but has since returned to subdued levels




Sources: Bloomberg Finance L.P. and ECB calculations.
Notes: HY stands for high-yield; IG stands for investment-grade; EA stands for euro area; Panel a: "Last FSR publication date" refers to 20 November 2024.

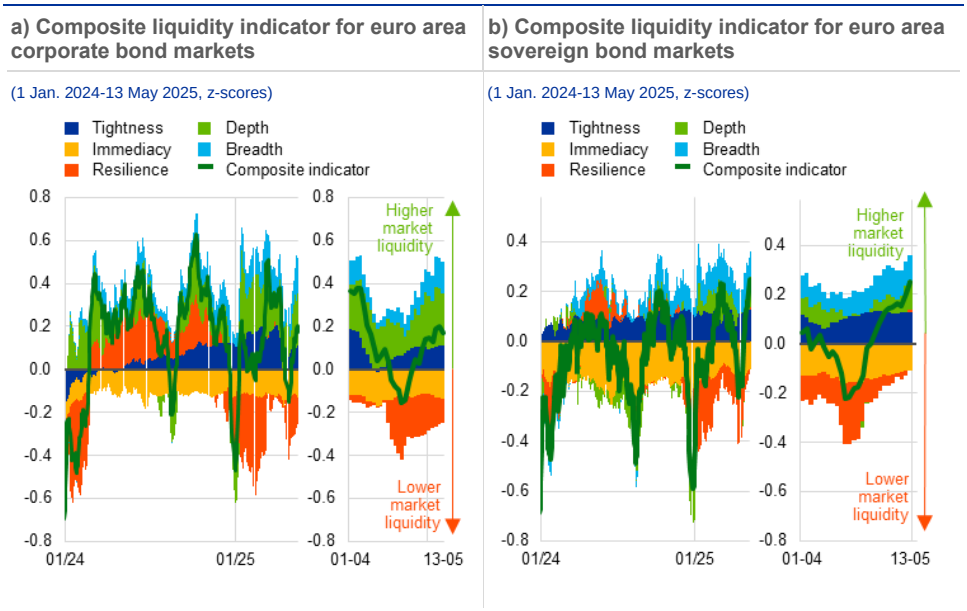
**Implied equity volatility spiked in April but then fell again to levels that appear disconnected from the prevailing still-high uncertainty.** Implied volatility in risky assets spiked after 2 April but then fell back to levels close to those seen when the previous edition of the Financial Stability Review was published (**Chart 2.2**, panel a). A similar pattern was observed across other risky asset classes, including corporate bonds, where implied volatility currently stands below its historical average. This swift retracement in market-implied volatility is notable, particularly in the context of persistently high levels of perceived economic policy uncertainty. By contrast, measures of realised volatility remain elevated. Moreover, futures for implied equity volatility suggest that price fluctuations are expected to remain moderate. This may

[17] For a more detailed discussion of basis trades, 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.

reflect market perceptions that downside risks, such as those stemming from global trade tensions, have diminished. However, such dynamics could also signal a degree of investor complacency, heightening the risk of abrupt volatility spikes should any adverse news emerge. In the euro area, market pricing, and hence volatility, remains highly sensitive to further tariff-related shocks across all euro area equity sectors, with markets considering the automotive, consumer products, IT, industrials, materials and financial sector to be the most exposed (**Box A, Special Feature B**).

**Chart 2.3**

Market conditions in euro area bond markets have remained orderly, as the decline in market liquidity was limited and short-lived




Sources: Bloomberg Finance L.P., Euro MTS Ltd, S&P Dow Jones Indices LLC and/or its affiliates, MarketAxess and ECB calculations.
Notes: Market liquidity indicators are based on the methodology set out in "Systemic liquidity risk: a monitoring framework", ESRB, February 2025. Indicators are smoothed by a five-day moving average to adjust for seasonal patterns in weekdays. Panel a: composite liquidity indicator based on bid-ask spread, bid-ask spread dispersion, market efficiency coefficient, share of non-quoted or non-traded securities, transaction spread, traded volume, turnover ratio and average number of market-makers. Some indicators are available with a time lag and hence not included in the most recent data points. Panel b: in addition to the measures in panel a, this composite indicator is also based on the Amihud ratio, effective spread, trade size, number of trades and Bloomberg liquidity measures. Z-scores since 2012.

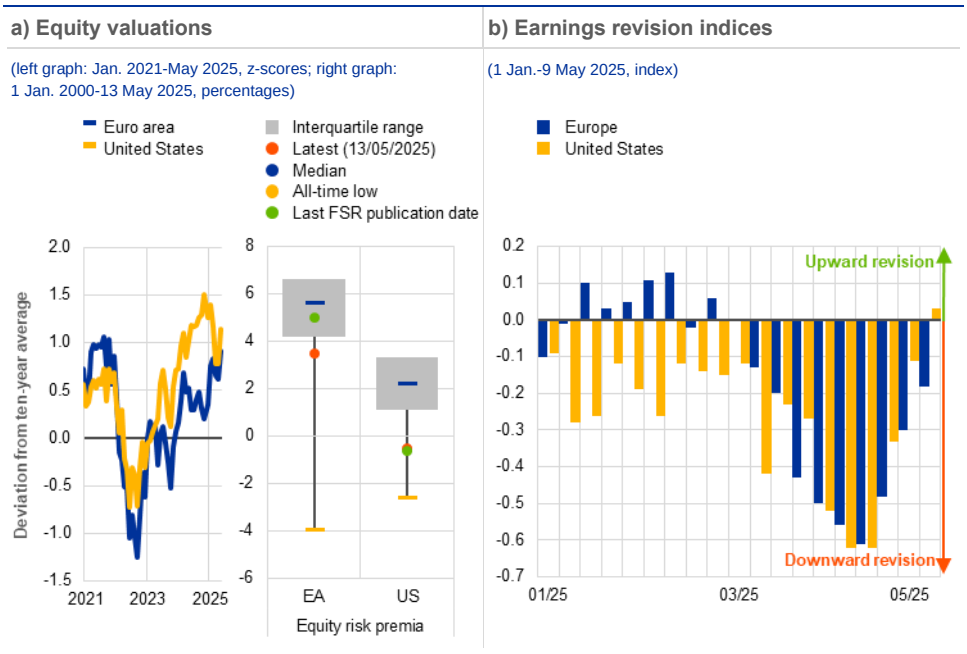
**Despite the increase in volatility, financial markets have continued to function in a rather orderly manner, with only a limited decline in euro area bond market liquidity.** Volatility in euro area corporate bond markets has more or less increased in line with equity volatility (**Chart 2.2**, panel b). Liquidity conditions in euro area corporate bond markets have declined somewhat, the fall being driven mainly by a decrease in tightness (which measures the cost and price impact of executing a trade), but have stayed at levels which are about average (**Chart 2.3**, panel a). Liquidity conditions in euro area sovereign bond markets remained resilient during the sell-off in risky assets in April. They then deteriorated, before subsequently recovering to above-average levels (**Chart 2.3**, panel b). As volatility may surge again, coupled with the risk that market dynamics may turn disorderly in the event of further market stress, market liquidity indicators warrant further monitoring.

## 2.2 The medium-term implications of tariffs might still challenge risky asset valuations

**Equity valuations moved towards their long-term average but remain elevated and could be further challenged by a deteriorating economic outlook.** Equity valuations have declined in recent months (**Chart 2.4**, panel a), particularly in the United States. As long as market functioning remains generally orderly, this decline reduces overvaluation concerns and is beneficial from a financial stability viewpoint. Valuations remain elevated, however, and might be further challenged. This could occur as the medium-term implications of higher tariffs for the global economic outlook, despite the recent easing of trade tensions, become clearer and market participants adjust their positions accordingly. Markets are pricing in some slowing of growth, but a global recession is not the baseline expectation.[18] Decreasing earnings expectations would likely cause prices to fall further. Earnings momentum has been mostly negative for both the United States and Europe in recent weeks (**Chart 2.4**, panel b). Another trigger for further price corrections might be if tariffs have a greater impact on inflation than expected, resulting in a repricing of future interest rate paths.

**Chart 2.4**

Valuations in equity markets might be further challenged if slowing global growth hits earnings expectations



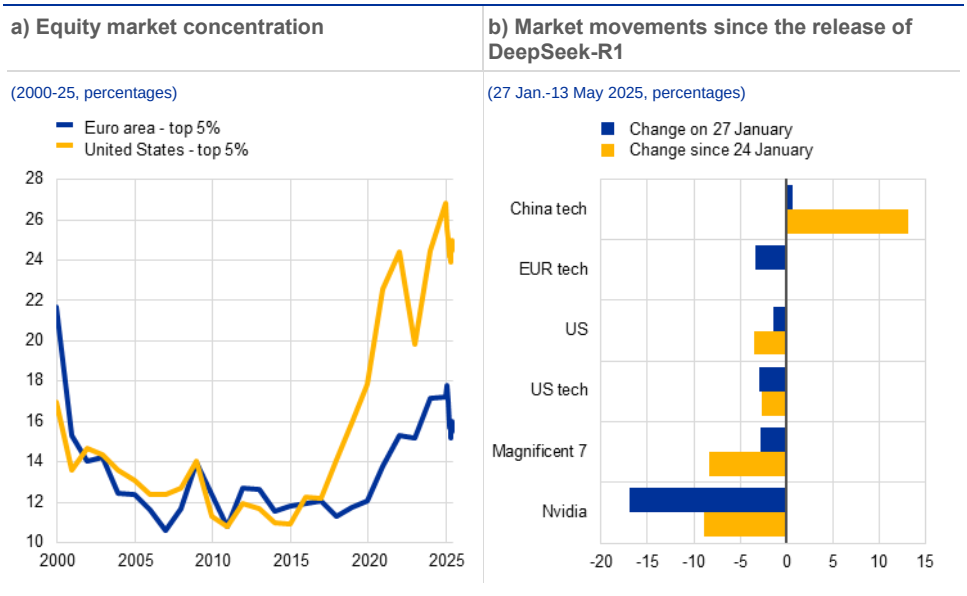

Sources: Bloomberg Finance L.P., Citigroup via Bloomberg and ECB calculations.
Notes: Panel a: left graph: z-scores are calculated based on data since January 2015. Lines show a composite indicator, which is a simple average of z-scores of five valuation indicators for the S&P 500 and the EURO STOXX index: price-to-book ratio, 12-month forward price/earnings ratio, long-term price/earnings ratio, PEG ratio and five-year excess CAPE yield. The latest observations are for 13 May 2025. Right graph: equity risk premium is calculated as equity earnings yield minus ten-year sovereign bond yield. "Last FSR publication date" refers to 20 November 2024. Panel b: Citi Earnings Revision Index measures the weekly number of consensus earnings per share upgrades and downgrades (calculated as the number of upgrades minus the number of downgrades, divided by the total number of upgrades and downgrades). "Europe" refers to equity analyst FY2 earnings forecast changes for companies within the MSCI Europe ex UK Index; "US" refers to companies in the S&P 500 Index. FY2 is the next forecast year after the present year.

[18] For example, in the March and April editions of the Bank of America's Global Fund Manager Survey, a global recession triggered by an escalation in trade tensions was seen as the biggest tail risk, whereas in the May survey only 1% of respondents said a global recession was likely, down from 42% in April. Also, Bloomberg one-year recession probability forecasts remain at levels well below 50% for both the United States and the euro area.

**Persistently elevated concentration in US equity markets poses additional downside risks, as illustrated by shifts in AI sector valuations at the start of the year.** Market concentration remains elevated, especially in US equity markets, despite declining somewhat (**Chart 2.5**, panel a). This remains a critical vulnerability, as idiosyncratic risks related to key sectors and technologies could easily result in market-wide adverse dynamics. The sharp decline in AI-related stock valuations after the release of the DeepSeek-R1 model in January underscores this vulnerability (**Chart 2.5**, panel b).[19] The stock prices of the seven dominant US technology companies, known collectively as the "Magnificent 7", fell by 16.5% between the release of the model and 2 April, which also affected euro area technology sector valuations and the wider market. Trade tensions then led to further price fluctuations. Additional tariffs imposed on key resources or companies in the AI sector might cause this vulnerability to translate into larger price losses.

**Chart 2.5**

Market concentration and technological shifts in AI present a risk to asset valuations, as evidenced by the release of the DeepSeek-R1 model




Sources: Bloomberg Finance L.P. and ECB calculations.
Notes: Panel a: the lines show the share of the top 5% of the EURO STOXX and S&P 500 Index constituents by market capitalisation, in the total market capitalisation of the index. The latest observations are for 13 May 2025. Panel b: China tech = Hang Seng TECH Index, EUR tech = EURO STOXX Technology Index, US = S&P 500, US tech = NASDAQ, Mag 7 = Bloomberg Magnificent 7 Total Return Index; yellow bars represent the change in index levels since the close on 24 January 2025, as more details became known about the DeepSeek-R1 model's performance and cost effectiveness on the weekend thereafter. The "Magnificent 7" comprises the stocks of Alphabet, Amazon, Apple, Meta, Microsoft, Nvidia and Tesla.

**Corporate bond spreads seem low in light of the unprecedented levels of economic policy uncertainty.** Corporate bond spreads widened during the tariff-related market downturn, but mostly recovered since then (**Chart 2.6**, panel a).[20] They appear disconnected from policy uncertainty levels, which reflects a change from

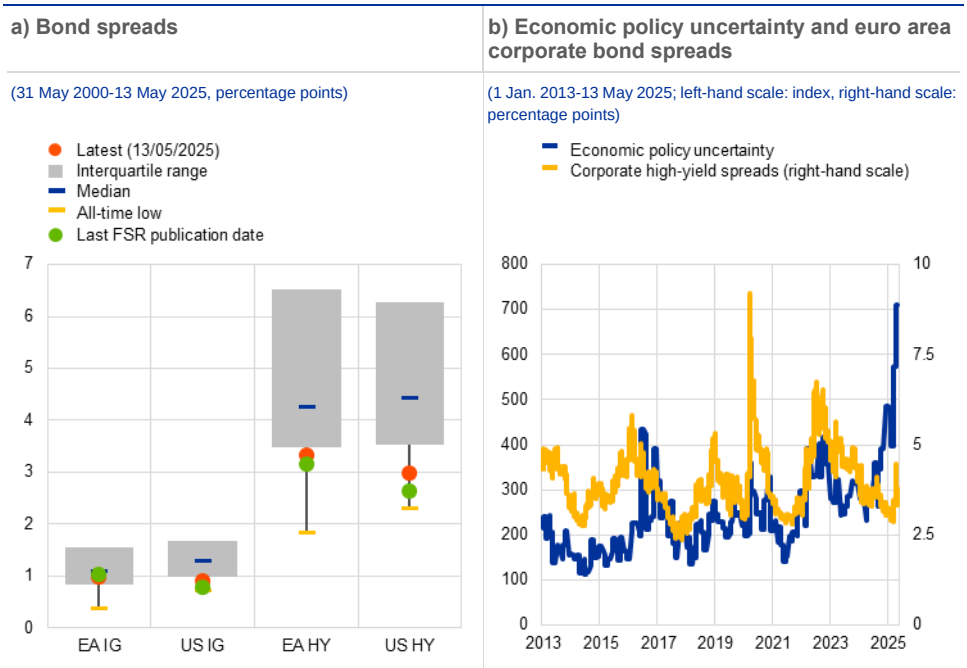
[19] DeepSeek's R1 model was released on 20 January, but its impact on market pricing only materialised on 27 January, following the subsequent disclosure of additional information regarding the model's performance and cost efficiency.

[20] The overall resilience of US corporate bond spreads in light of historically elevated yields has primarily been driven by strong risk appetite, but also by a compositional shift towards better credit quality in new issuances; see the box entitled "Challenges to the resilience of US corporate bond spreads", *Economic Bulletin*, Issue 3, ECB, 2025.

the generally positive correlation between the two over the last few years (**Chart 2.6**, panel b). Increased uncertainty may lead firms to take a more cautious stance on corporate investments, which could be positive for debt holders. At the same time, general market sentiment could turn negative again with spillovers to corporate bond markets and slowing economic growth might lead to credit losses.

**Chart 2.6**

Despite some short-lived widening, bond spreads remain low and are not in line with unprecedented economic policy uncertainty

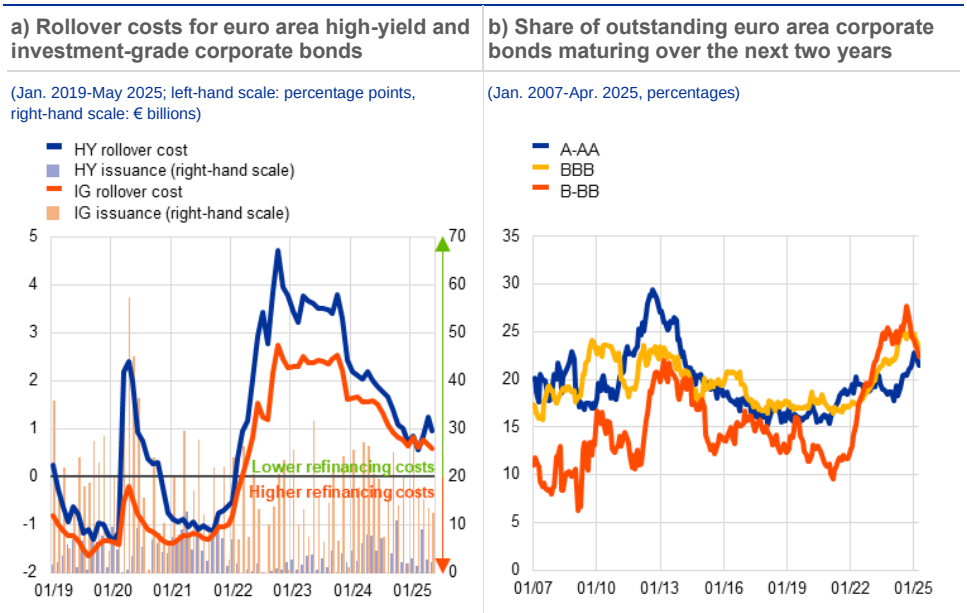



Sources: Bloomberg Finance L.P., Baker, Bloom and Davis* and ECB calculations.
Notes: Panel a: distribution of option-adjusted spreads for Bloomberg bond indices for investment-grade (IG) and high-yield (HY) corporate bonds. EA stands for euro area. "Last FSR publication date" refers to 20 November 2024. Panel b: "Economic policy uncertainty index" is as set out in Baker, Bloom & Davis*; it is an aggregate of country-level uncertainty indices as available in Bloomberg. The yellow line is the option-adjusted spread of the Bloomberg Pan-European High Yield Index.
*) Baker, S., Bloom, N. and Davis, S., "Measuring Economic Policy Uncertainty", *The Quarterly Journal of Economics*, Vol. 131, No 4, November 2016, pp. 1593-1636.

**Pressure on corporate bond spreads might increase, as a substantial amount of maturing debt securities will need to be refinanced at a higher cost.** Corporate bond issuers took advantage of falling rollover costs, which are the costs associated with issuing new debt to replace maturing debt, in the course of 2024 (**Chart 2.7**, panel a). Since the start of 2025, issuance has been significantly weaker than it was in the same period of the previous year. This might be due to uncertainty weighing on corporate business and investment activity, together with volatile market conditions. Although rollover costs had been falling, they have turned again and increased for lower-rated credit, in line with the widening of corporate spreads. With an exceptionally high share of outstanding debt rated at or below BBB set to mature in the next few years (**Chart 2.7**, panel b), corporates might need to refinance under less favourable conditions, which could reduce their debt servicing capacities, especially if they are not offset by higher growth. This could trigger a repricing of corporate debt and result in losses, especially for investment funds, which could further amplify adverse market movements (**Chapter 4.2**).

**Chart 2.7**

A substantial amount of maturing debt securities of lower-rated corporates will need to be refinanced at a higher cost




Sources: Dealogic, a service of ION Analytics, Bloomberg Finance L.P., ICE and ECB calculations.
Notes: Panel a: face value-weighted average difference between yield to worst and coupon rate of individual bonds in the ICE BofA Euro Corporate Index and ICE BofA Euro High Yield Index. Average of daily data per month. HY stands for high-yield; IG stands for investment-grade. May 2025 includes data until 13 May. Panel b: outstanding bonds broken down by rating.

## Box 2

### What does the record price of gold tell us about risk perceptions in financial markets?

**Prepared by Maurizio Michael Habib, Oscar Schwartz Blicke, Emilio Siciliano and Jonas Wendelborn**

**Gold prices have seen an unprecedented surge since 2023, reaching a series of all-time highs.** Gold has a long history as a store of value. Given its limited industrial use, demand for gold comes traditionally from retail customers (e.g. for jewellery), although it is also employed as an investment asset and used by central banks as a reserve asset.[21] From an investment perspective, gold differs from other asset classes. Unlike most bonds and equities, it does not provide cash flow.[22] Instead, its appeal reflects two unique features, particularly in times of high uncertainty. First, it is not a liability of any counterparty and thus carries no default risk. Second, given its limited and relatively inelastic supply, it retains its intrinsic value and cannot be debased. Accordingly, gold is often seen as a portfolio diversifier, a hedge against inflation and US dollar depreciation, and a safe haven[23] in times of severe financial market or geopolitical stress.[24] Against this backdrop, this box analyses

21 The World Gold Council estimates that in Q1 2025, 33% of gold production was used for jewellery, 6% for technology, 19% by central banks and 42% as an investment. See "Historical demand and supply", World Gold Council, 30 April 2025, accessed 6 May 2025.

22 However, gold can be used as collateral to borrow against or can be lent to yield a lease rate.

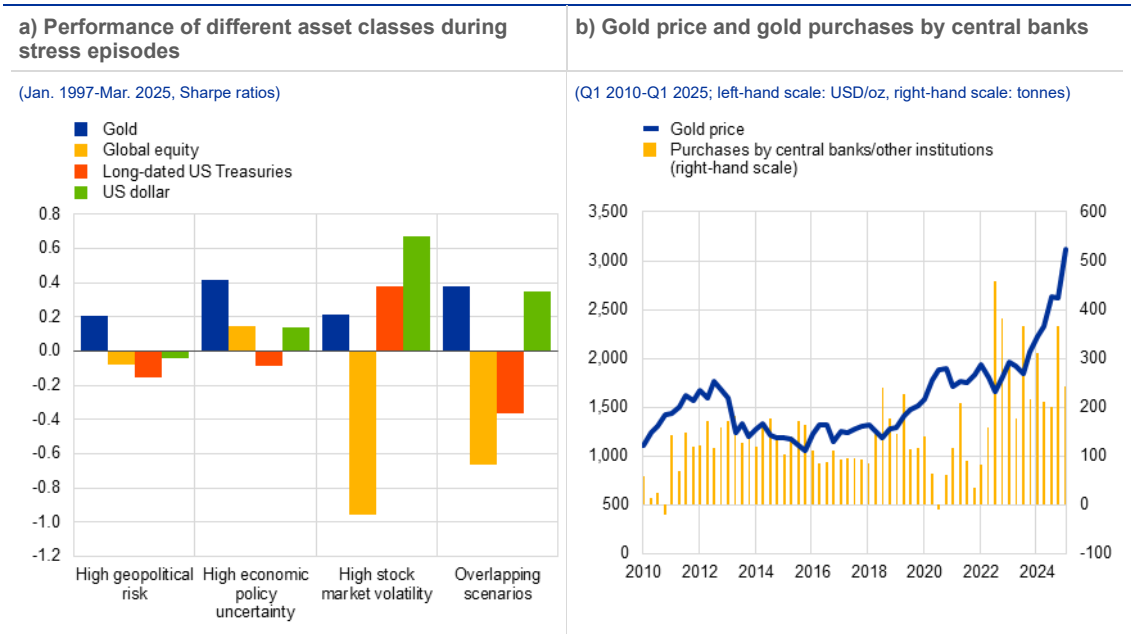
23 A safe haven is an asset that is expected to retain or increase its value in times of market stress or turmoil, which usually means that it is either uncorrelated or negatively correlated with risky assets. See, for example, Baur, D.G. and Lucey, B.M., "Is Gold a Hedge or a Safe Haven? An Analysis of Stocks, Bonds and Gold", *The Financial Review,* Vol. 45, Issue 2, May 2010, pp. 217-229.

24 See O'Connor, F.A., Lucey, B.M., Batten, J.A. and Baur, D.G., "The financial economics of gold – A survey", *International Review of Financial Analysis*, Vol. 41, October 2015, pp. 186-205. Recent research also shows that gold fulfils the criteria for high-quality liquid assets; see Baur, D.G., Gornall, D., Hoang, L.T. and Palmberg, J., *Is Gold a High-Quality Liquid Asset?*, SSRN, December 2024.

gold's performance during episodes of stress as well as developments in gold derivatives markets, the aim being to assess risk perceptions and gauge the implications for financial stability.

**Chart A**

Gold prices have surged as gold acts as a hedge against geopolitical risks and policy uncertainty




Sources: IMF IFS, respective central banks, World Gold Council, Bloomberg Finance L.P., Haver Analytics, Caldara and Iacoviello*, Baker, Bloom and Davis** and ECB calculations.
Notes: Panel a: the Sharpe ratios are calculated as the average return of the asset class during periods of high geopolitical risk, high economic policy uncertainty, high stock market volatility or a combination of the three where at least two of the conditions are met at the same time (overlapping scenarios), divided by the standard deviation. Levels of risk indicators are regarded as high when they fall within the 90th percentile over the sample period. Geopolitical risk is measured by the geopolitical risk index developed by Caldara and Iacoviello*, whereas economic policy uncertainty is evaluated based on the methodology of Baker, Bloom and Davis**. The VIX index is used to measure stock market volatility.
*) Caldara, D. and Iacoviello, M., "Measuring Geopolitical Risk", *American Economic Review*, Vol. 112, No 4, April 2022, pp. 1194-1225.
**) Baker, S., Bloom, N. and Davis, S., "Measuring Economic Policy Uncertainty", *The Quarterly Journal of Economics*, Vol. 131, No 4, November 2016, pp. 1593-1636.

**Gold generally offers a safe haven in times of stress, particularly during episodes of high geopolitical risk or policy uncertainty.** A comparison of average returns from global equities, gold, US Treasuries and the US dollar over the last three decades shows that gold performs well during episodes of stress (**Chart A**, panel a). Gold prices tend to rise during episodes of elevated geopolitical risk while stock and bond prices tend to fall. For example, over the past three years central banks, especially those from emerging market economies, have increasingly purchased gold, most likely to insulate themselves from the effects of geopolitical tensions or potential sanctions (**Chart A**, panel b).[25] During periods of greater economic policy uncertainty, gold outperforms equities and the US dollar, whereas bond prices generally decrease. Also, in times of extreme stock market volatility, gold provides a relatively good hedge against abruptly falling stocks.[26] Finally, in extreme cases, when investors face elevated geopolitical risks, stock market volatility and policy uncertainty at the same time (such as during the 9/11 terror attacks, the onset of the COVID-19 pandemic or the Russian invasion of Ukraine), gold prices tend to rise alongside the value of the US

[25] See the box entitled "Gold demand: the role of the official sector and geopolitics", *The international role of the euro*, ECB, forthcoming. Notably, the increase in demand for gold has led to a reversal in the negative correlation between long-term real rates and the gold price. See Chapter 2 of the Financial Stability Review, ECB, November 2024.

[26] Sovereign bonds and the US dollar perform even better, indicating a stronger rotation towards these assets during more traditional episodes of financial stress.

dollar, while stock and bond prices decline markedly. Overall, this confirms that gold is a safe haven during times of stress in financial markets or elevated geopolitical or policy uncertainty.

**Recent developments in gold futures markets such as COMEX, particularly in futures contracts with physical delivery, confirm the close correlation between elevated policy uncertainty and the price of gold.**[27] Policy uncertainty, especially that related to global trade arrangements, has spiked since the US presidential election of November 2024 (**Chart B**, panel a). According to surveys conducted in February and March 2025, 58% of asset managers would expect gold to be the best-performing asset class in a full-blown trade war scenario.[28] Against this backdrop, COMEX vaults saw significant increases in gold inventories, while the number of gold futures contracts noticed for delivery has been historically high in 2025, January 2025 delivery notices being the highest since July 2007. (**Chart B**, panel a). The preference shown by COMEX participants towards acquiring physical gold through the futures market indicates that investors are favouring long positions in physical gold over non-physically settled contracts. These long positions are likely to benefit from gold's reputation as a safe haven during a period of high economic and trade policy uncertainty.

**Trade policy uncertainty and increased demand for gold has led to higher gold borrowing costs and gold futures prices.** Prior to the US tariff announcement on 2 April this year, worries about gold being subject to sweeping import tariffs and higher prices on the futures exchange in New York than in the cash market in London reportedly led to gold held in London being shipped to New York.[29] As a result, the costs of borrowing and sourcing gold in the London market increased.[30] Sudden market stress[31] and disruptions to sourcing, shipping and delivering physical gold in derivatives contracts raise the question of whether counterparties obliged to deliver physical gold could be at risk of incurring increased margin calls and suffering losses. This has been seen in other non-energy commodity markets in the past.[32]

**Euro area investors are exposed to gold through derivatives, pointing to large foreign counterparty exposures.** In the euro area, gross notional exposures to gold derivatives amounted to €1 trillion in March 2025, an increase of 58% since November 2024.[33] A significant share of these derivatives contracts are traded over-the-counter (OTC) and are not centrally cleared. Approximately 48% of gold derivatives contracts have a bank counterparty (**Chart B**, panel b). The majority of euro area banks' gold derivative exposures are with non-euro area domiciled counterparties, suggesting some exposure to external shocks in the gold market. By contrast, exposures in the euro area to gold

27 Besides the London Bullion Market, COMEX in New York is the major trading centre for gold. Historically, the London market has been the main centre for trading in physical gold and non-physically settled OTC gold derivatives while the COMEX market has been the main centre for physically settled gold derivatives.

28 Bank of America Global Fund Manager Survey, February 2025 and March 2025.

29 Gold, along with other metals, has been exempted from the proposed import tariffs.

30 See Hook, L., "US gold rush drives up borrowing costs for precious metal in London", *Financial Times*, 5 February 2025; Lipsky, C., "Trump's tariff threats stress London gold market", *FX Markets*, 20 February 2025; and Hook, L., "Gold stockpiling in New York leads to London shortage", *Financial Times*, 29 January 2025.

31 Stress could be exacerbated by manipulation in commodity markets, leading to corners, squeezes and unanticipated price disruptions in commodity markets. For a theoretical explanation, see Pirrong, C., "The economics of commodity market manipulation: a survey", *Journal of Commodity Markets*, Vol. 5, March 2017, pp. 1-17.

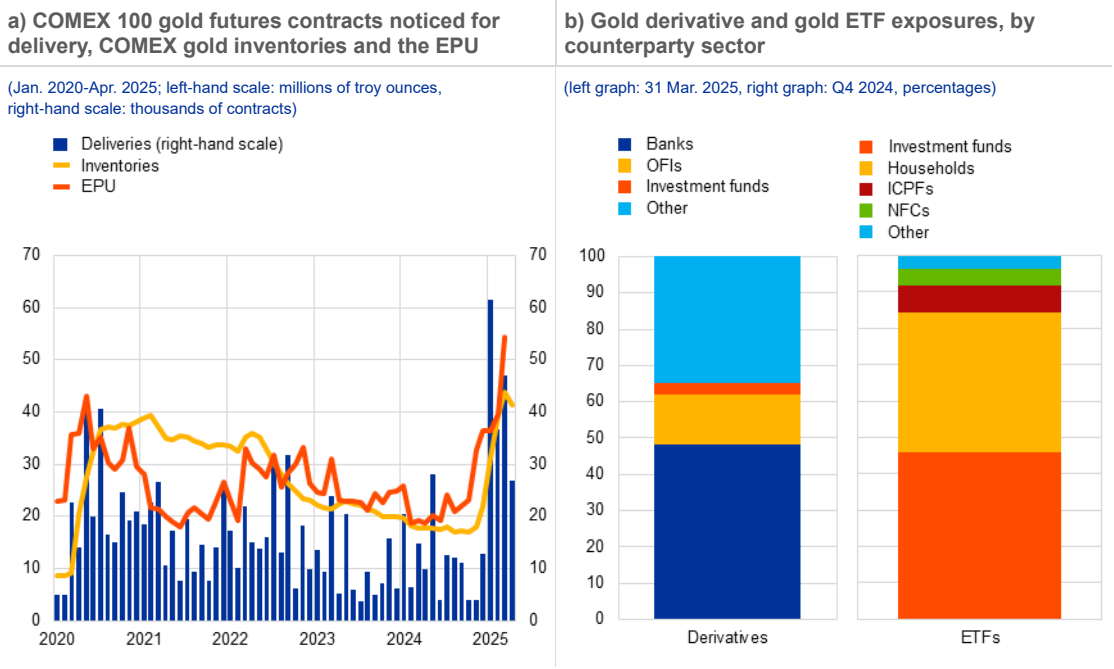
32 In 2022, for instance, the London Metal Exchange experienced severe disruptions with regard to nickel. See Heilbron, J., "Central Clearing and Trade Cancellation: The Case of LME Nickel Contracts on March 8, 2022", *Working Papers*, No 24-09, Office of Financial Research, December 2024.

33 This compares with gross notional volumes of €106 billion in aluminium, €52 billion in silver, €46 billion in nickel and €20 trillion in equity derivatives at 31 March 2025.

through exchange-traded funds (ETFs) amounted to €50 billion in the fourth quarter of 2024 and were rather small compared with counterparties' total financial assets. Gold ETFs were held predominantly by households and investment funds.

**Chart B**

Recent developments in the COMEX market confirm the correlation between gold prices and uncertainty, as investors increase their demand for physical gold through the derivatives market




Sources: Bloomberg Finance L.P., ECB (SHS, EMIR), Baker, Bloom and Davis* and ECB calculations.
Notes: Panel a: EPU stands for economic policy uncertainty index, rescaled on the left axis. The index is based on the methodology of Baker, Bloom and Davis*. Inventory is calculated as the sum of eligible and registered gold COMEX inventory stocks. Panel b: derivative exposures by counterparty look at both legs of derivatives contract exposures and their counterparties. All aggregated derivatives contracts include a euro area counterparty. Shares of derivative exposures are weighted by gross notional volume of contracts. Gold ETF exposures show euro area counterparties' gold ETF exposures. OFIs stands for other financial institutions; ICPFs stands for insurance corporations and pension funds; NFCs stands for non-financial corporations.
*) Baker, S., Bloom, N. and Davis, S., op. cit.

**Gold markets appear to partly reflect elevated geopolitical risk and substantial economic policy uncertainty, with tail scenarios potentially having adverse effects on financial stability.** While gold prices are driven by many factors, investors showed high demand for gold as a safe-haven asset and, at the beginning of 2025, a notable preference for gold futures contracts to be settled physically. These dynamics hint at investors' expectations that geopolitical risks and policy uncertainty could remain elevated or even intensify in the foreseeable future. Should extreme events materialise, there could be adverse effects on financial stability arising from gold markets. This could occur even though the aggregate exposure of the euro area financial sector appears limited compared with other asset classes, given that commodity markets exhibit a number of vulnerabilities.[34] Such vulnerabilities have arisen because commodity markets tend to be concentrated among a few large firms, often involve leverage and have a high degree of opacity deriving from the use of OTC derivatives. Margin calls and the unwinding of leveraged positions could lead to liquidity stress among market participants, potentially propagating the shock through the wider financial system. Additionally, disruptions in the physical gold market could increase the risk of a squeeze. In this case, market participants could be subject to significant margin calls and/or have

[34] See "The Financial Stability Aspects of Commodities Markets", *Financial Stability Board,* February 2023.

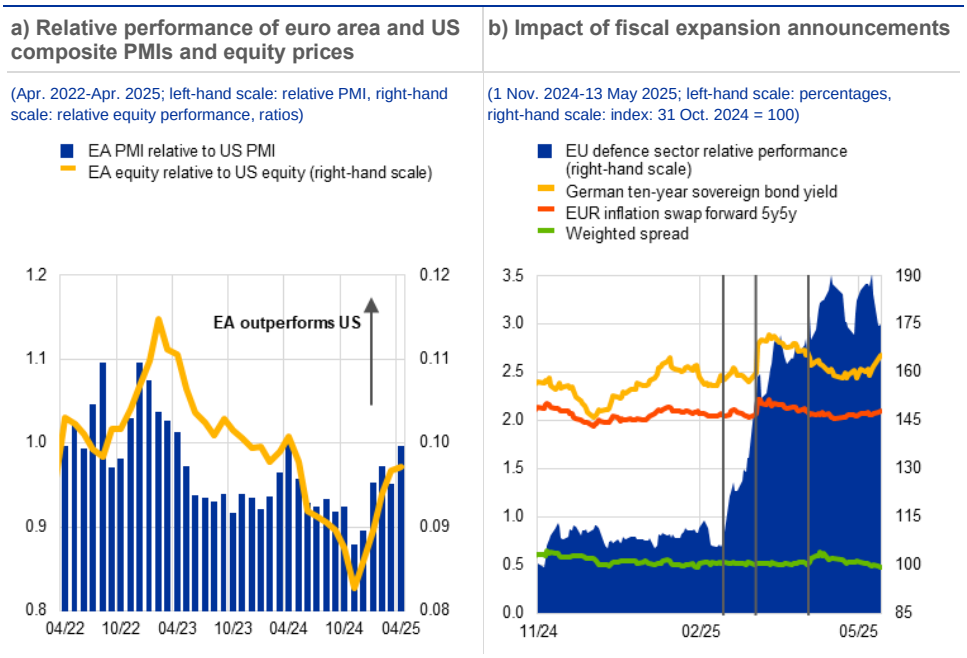
trouble sourcing and transporting appropriate physical gold for delivery in derivatives contracts, leaving themselves exposed to potentially large losses.

## 2.3 Higher inflows and the prospect of fiscal expansion could support euro area financial markets

**The more positive stance taken by markets on the euro area might continue as global investment portfolios might move away from their previously strong US overweight.** Markets started the year by shifting to a more positive stance on the euro area, driven by diverging trends in economic outlook, as indicated by the purchasing managers' indices (PMIs) for both regions (**Chart 2.8**, panel a). Until March, growth sentiment for the euro area had been gradually improving, albeit from much lower levels than those in the United States, where sentiment declined. In addition, while sentiment for the euro area deteriorated in response to the 2 April tariff announcement, the impact of the announcement has so far been smaller on the euro area than on the United States. This is reflected in the outperformance of euro area equities since the start of the year and slightly smaller aggregate losses in April. In addition, there are initial indications of a rotation out of US markets and into euro area markets (**Overview** and **Section 4.2**).

**Chart 2.8**

The planned fiscal expansion contributed to an improved market sentiment for the euro area relative to the United States




Sources: Bloomberg Finance L.P., LSEG and ECB calculations.
Notes: Panel a: ratio of EURO STOXX to S&P 500, and of euro area composite PMI to US composite PMI. EA stands for euro area. Panel b: the first vertical line marks the Munich Security Conference, the second line the announcement of the German and EU fiscal expansion packages and the third line refers to 2 April. Ratio of defence sector sub-index (UBS EU Defence Spending Index) to broad market index (EURO STOXX). "Weighted spread" is the difference in the GDP-weighted ten-year yields of higher- and lower-rated euro area sovereigns.

**Before the tariff shock, markets were optimistic that the planned fiscal expansion in the euro area would improve its economic outlook.** Announcements of a major expansion in defence and infrastructure spending, along with the proposed reform of the German "debt brake", led to an increase in Bund yields (**Chart 2.8**, panel b). Corroborated by a model-based decomposition and by market intelligence, this was primarily due to the positive impact on growth the fiscal expansion is expected to have for the German economy and the euro area economy as a whole. In line with the limited increase in inflation swap rates – which fully reversed their initial rise over subsequent weeks – the decomposition also suggests that markets appear less concerned about potential inflationary pressures stemming from the announced fiscal expansion.[35] The initial increase in sovereign bond yields has fully reversed, driven by the tariff-related market turmoil and further policy rate cuts. However, market intelligence and surveys indicate that a large share of market participants remain hopeful that the longer-term growth impact of the fiscal expansion will be substantial, despite near-term tariff-related headwinds.[36] A reassessment of this sentiment would likely trigger revaluations.

**The planned fiscal expansion could harm sovereign debt sustainability and challenge markets' optimistic views on sovereign credit risk.** Euro area spreads remained stable despite the initial increase in sovereign bond yields after the planned fiscal expansion was announced. Risks to spreads are, however, skewed to the upside. A simple model suggests that raising defence spending to 2.5% of GDP or higher could lead to uneven increases in bond yields across the euro area (**Chart 2.9**, panel a), some of which might already be priced in. This is due to differing current levels of defence spending (**Chapter 1.2**) and to varying sensitivities to changes in deficits across countries. At the same time, most of the more highly indebted countries have not so far pledged major increases to their defence spending and markets have shown limited sensitivity to fiscal deficits in recent years.[37] This trend could reverse if fiscal consolidation efforts stutter and growth expectations are disappointed. In addition, the fiscal expansion taking place alongside the ongoing normalisation of the ECB's balance sheet will result in a larger amount of net bond supply, which might also affect euro area sovereign bond spreads. Higher issuance by less-indebted countries could lead to higher yields overall and challenge more-indebted countries, especially if

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35 The decomposition indicates that the real rate component was the main driver behind this rise in euro area risk-free rates and sovereign bond yields in response to Germany's fiscal event. It also suggests that it was the inflation risk premium rather than genuine inflation expectations that helped to push up swap rates and bond yields, potentially reflecting the high degree of uncertainty associated with the fiscal package. The real rate is found by subtracting the inflation-linked swap rate from the nominal overnight index swap (OIS) rate. The ten-year spot OIS rate is broken down into nominal expected rates and term premia using two affine term structure models, including one using survey data and a lower bound model using survey data, following Geiger, F. and Schupp. F, "With a little help from my friends: Survey-based derivation of euro area short rate expectations at the effective lower bound", *Discussion Papers*, No 27/2018, Deutsche Bundesbank, 2018. The real counterpart is obtained by subtracting expected inflation and inflation risk premia from the ten-year ILS rate decomposition, as detailed in the box entitled "Decomposing market-based measures of inflation compensation into inflation expectations and risk premia", *Economic Bulletin*, Issue 8, ECB, 2021.

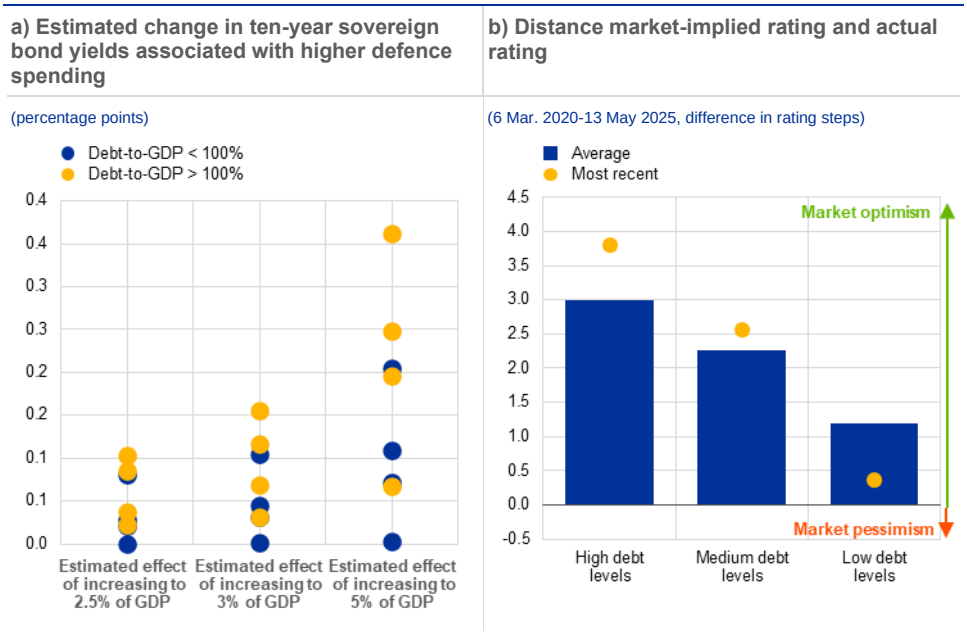
36 For example, in the April and May editions of the Bank of America's European Fund Manager Survey, almost half of the respondents indicated that they see "German fiscal and European defence spending as a game changer".

37 Further results from the model indicate that since 2020 yield sensitivities to changes in debt-to-GDP ratios have been significantly lower than in the preceding five-year period (2015-19). Model results illustrate the variability across countries; the estimated size of the yield increases is sensitive to model specifications.

spreads widen. That said, sovereign bonds might be particularly attractive in times of increased uncertainty and there have been capital inflows into the euro area which could support absorption capacity. Shifts in global portfolio flows could pose an additional challenge for euro area bond markets, as Japanese bond yields have significantly increased since the previous edition of the Financial Stability Review was published. This could potentially trigger repatriation flows by Japanese investors, who are important players in euro area bond markets.[38] Despite these risks, market sentiment in sovereign bond markets has generally been broadly optimistic. This is reflected in market-implied ratings which continue to be significantly better than actual sovereign ratings, especially for more-indebted countries (**Chart 2.9**, panel b).

**Chart 2.9**

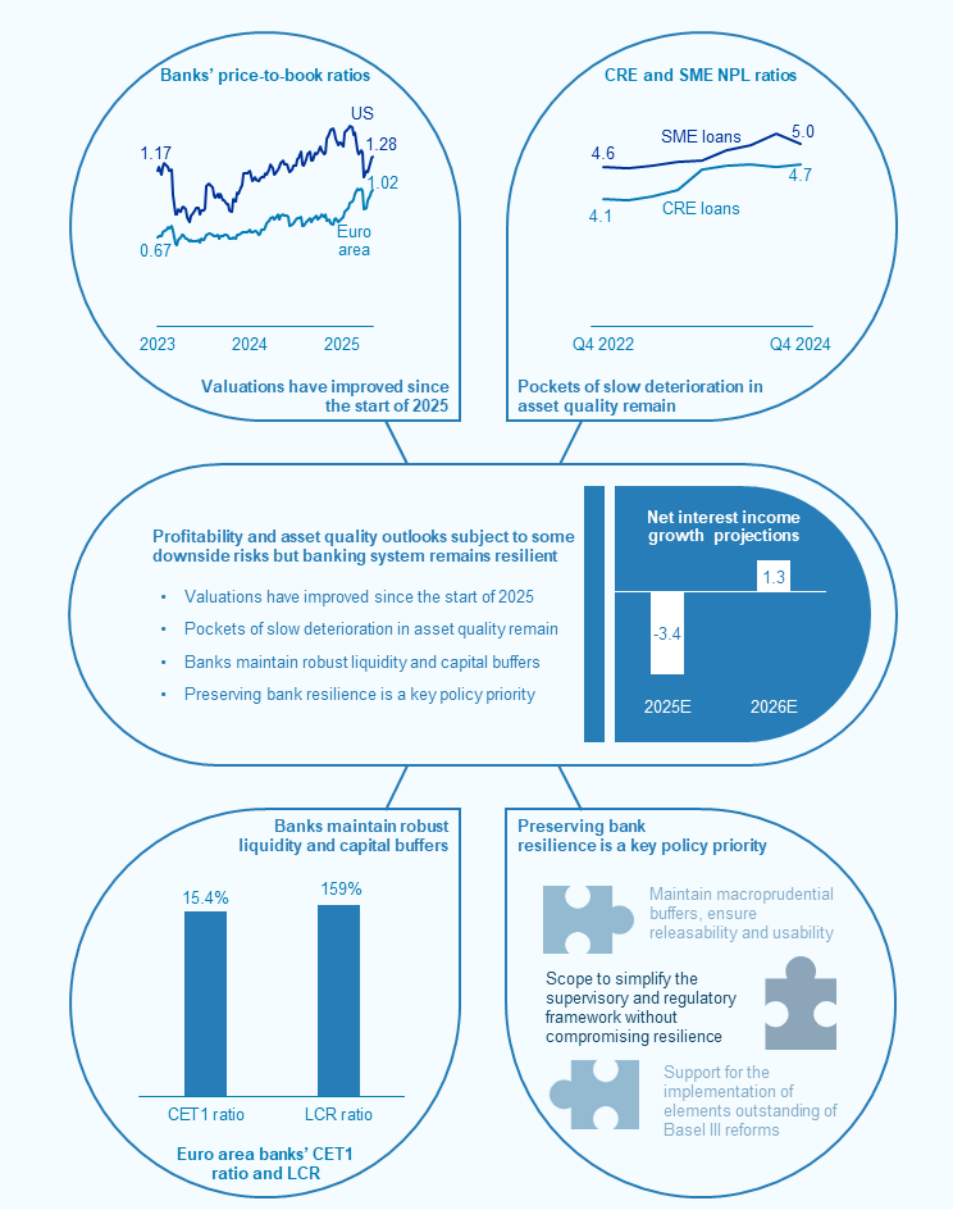
Sovereign bond spreads could rise with higher defence spending, especially given the recent investor optimism reflected in higher market-implied sovereign ratings




Sources: Bloomberg Finance L.P., European Defence Agency, ECB (BSI, GFS), Eurostat, Moody's Analytics, Goldman Sachs and ECB calculations.
Notes: Panel a: the x-axis shows three different scenarios, whereby defence spending rises from the individual euro area country's levels as a share of GDP to 2.5%, 3% and 5% of GDP. The y-axis shows the estimated change in ten-year sovereign bond yields. Countries included in the sample are Belgium, Germany, Spain, France, Italy, Netherlands, Austria and Finland. The model consists of a system of linear regression equations at a monthly frequency, with ten-year sovereign bond yields for each country as the dependent variables and the following independent variables: one-year-ahead nominal growth expectations, debt-to-GDP ratio (quarterly data interpolated to monthly), one-year-ahead EC forecasts of primary balance (percentage of GDP), CBOE Option Implied Volatility Index, ECB public sector purchase programme sovereign debt holdings (percentage outstanding), the ECB's euro area systemic stress indicator composite index and the ECB's deposit facility rate. One-year-ahead forecasts are the geometric moving average of current and next-year expectations. To control for the impact of the COVID-19 pandemic on bond yields, including the ECB's support efforts through the public sector purchase programme, a COVID-19 dummy variable is included, which takes a value of 1 for all dates from 1 January 2020 to 31 August 2024, and 0 otherwise. Interaction terms between the COVID-19 dummy and each of the independent variables are included to debias the debt estimator. The model is estimated jointly using seemingly unrelated regression to account for potential correlations in the factors affecting the sovereign yields across the different countries. The sample period is from 2015 to August 2024. It is assumed that the additional defence spending will be financed by additional sovereign debt. Panel b: high debt levels are defined as debt-to-GDP above 100%, medium between 60% and 100%, and low below 60% at the end of 2024. Average of market-implied ratings from bond and credit default swap pricing, based on Moody's MIR methodology.*
*) See Dwyer, D.W., Moore, D. and Wang, Y., "Moody's Market Implied Ratings: Description and Methodology", Moody's Analytics, 2019.

[38] Yield differentials between the euro area and Japan remain high and FX hedging costs, as indicated by volatility in the EUR/JPY exchange rate, have been stable or declining. These provide mitigating factors, but at some point absolute yield levels may become an increasingly relevant consideration for Japanese investors.

# 3 Euro area banking sector



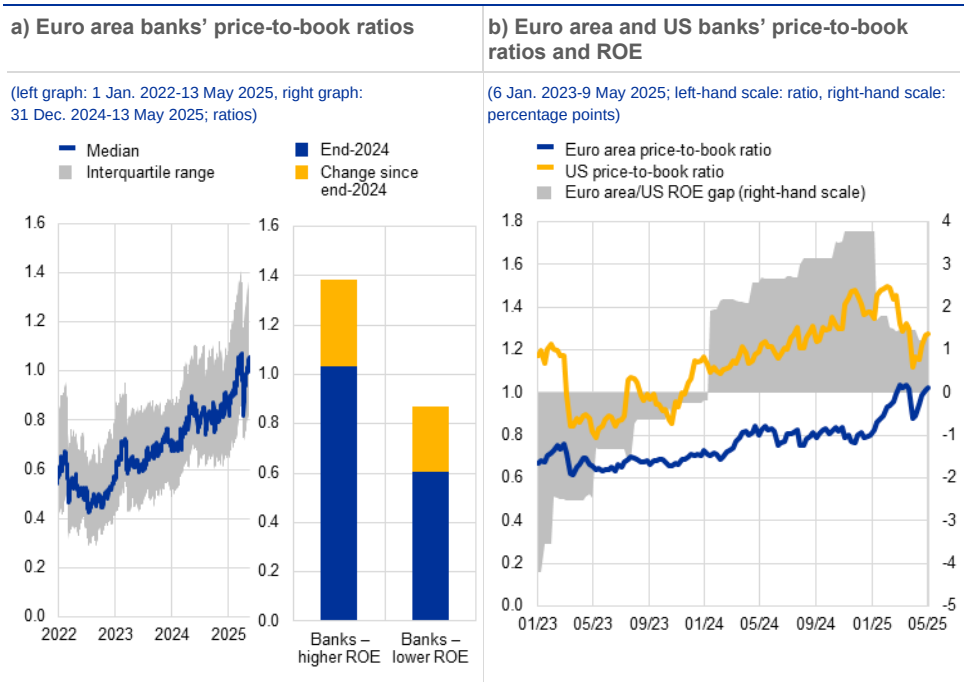

## 3.1 Bank profitability remains solid but faces headwinds

**The valuations of euro area banks improved up until late March but have been volatile since then amid increased uncertainty about the outlook for banks' earnings.** Euro area banks' share prices outperformed the broad market indices in the first three months of 2025, and their median price-to-book ratio rose above 1 in late March. This was supported by robust earnings and an improvement in investor sentiment towards the euro area (**Chapter 2**), including towards banks (**Chart 3.1**, panel a, left graph). However, bank share prices have been more volatile since 2 April,

experiencing a sharp fall after the initial US tariff announcement followed by a recovery upon the news on a 90-day tariff pause for most countries and, subsequently, on easing trade tensions, in particular between the United States and China. Looking at year-to-date changes in price-to-book ratios, banks with higher expected profitability have been outperforming their peers since the beginning of 2025 (**Chart 3.1**, panel a, right graph). Over a longer time horizon, higher deposit franchise values are also associated with higher market valuations (**Box 3**). Notwithstanding the increased volatility, the valuation gap between US and euro area banks has narrowed significantly since the beginning of 2025, due to a general shift in sentiment towards euro area banks and better profitability from euro area banks as of 2024 (**Chart 3.1**, panel b). It is also due to a decline in US banks' market valuations that had started even before the US tariff announcement.

**Chart 3.1**

Euro area banks' valuations improved up to March 2025 but have been volatile since the US tariff announcement, while the valuation gap versus US banks has narrowed



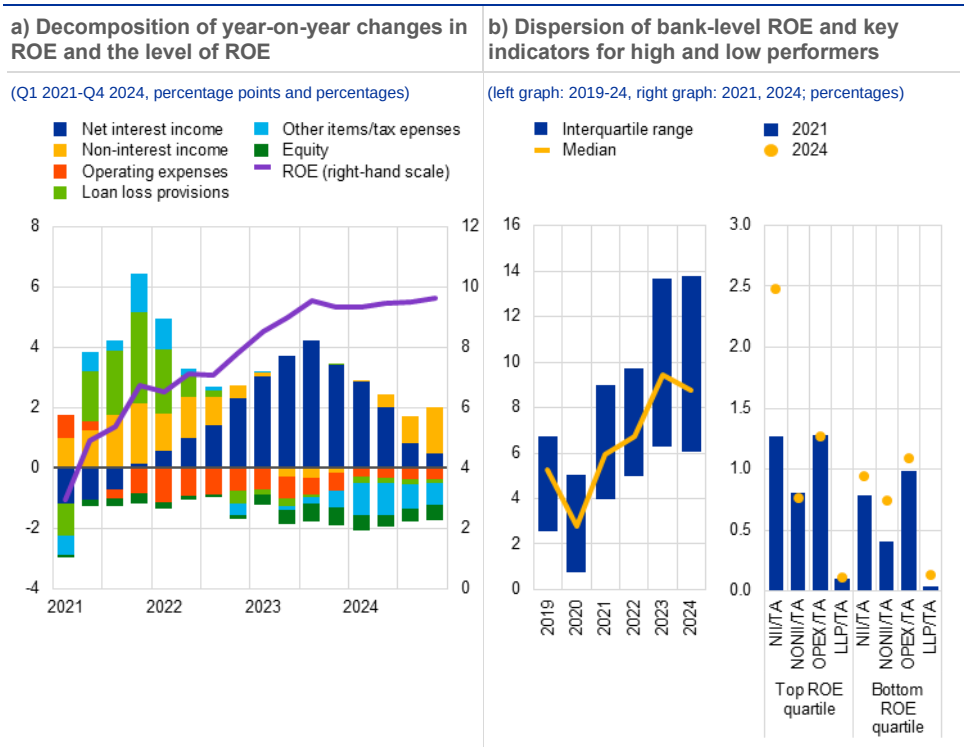

Sources: Bloomberg Finance L.P. and ECB calculations.
Notes: Panel a: based on banks in the EURO STOXX Banks index. Panel a, right graph: median price-to-book ratios for banks in the top/bottom 50% of the distribution of 2025 ROE estimates. Panel b: based on the EURO STOXX Banks and KBW Bank indices covering 27 banks in the euro area and 23 banks in the United States. The shaded area depicts the difference between the average ROE of euro area banks and US banks.

**Bank profitability stabilised in 2024, albeit at still-high levels, as net interest income growth had stalled due to falling interest rates.** Banks' trailing return on equity (ROE) continued to hover at around 9.5% during 2024, a level it first reached in the third quarter of 2023. Growth in net interest income made a positive contribution to the change in ROE on an annual basis, but it stalled in the second half of 2024 due to a combination of slightly tighter margins and subdued volume growth. As a result, growth in operating income has increasingly been driven by non-interest income in recent quarters. The impact of higher revenues was offset by moderate increases in operating expenses and equity as well as a stronger negative impact from other items

(**Chart 3.2**, panel a). The dispersion in bank profitability has remained wide, with a quarter of banks showing an ROE of above 14% and another quarter of banks recording less than 6% (**Chart 3.2**, panel b, left graph). The main differentiating factor is that the top quartile of banks entered the hiking cycle with operating income that was already higher and these banks increased their revenues (notably net interest income) at a much faster pace between 2021 and 2024 than the lowest quartile of banks. This is partly due to differing sensitivities to the rate cycle, as many banks in the lowest ROE quartile are based in countries where fixed-rate loans are prevalent and this group of banks also includes some specialised, not-for-profit institutions. To a lesser extent, differing trends in cost efficiency and the cost of risk also contributed to the divergence (**Chart 3.2**, panel b, right graph).

**Chart 3.2**

Profitability remained solid overall, but the dispersion of bank-level ROE is still wide, with limited improvement in the lowest quartile of banks




Sources: ECB (supervisory data) and ECB calculations.
Notes: Based on a balanced sample of 87 euro area significant institutions. Panel a: based on four-quarter trailing values. Panel b, right graph: median values for banks in the top and bottom ROE quartiles based on 2024 ROE. NII stands for net interest income; NONII stands for non-interest income; OPEX stands for operating expenses; LLP stands for loan loss provisions; TA stands for total assets.

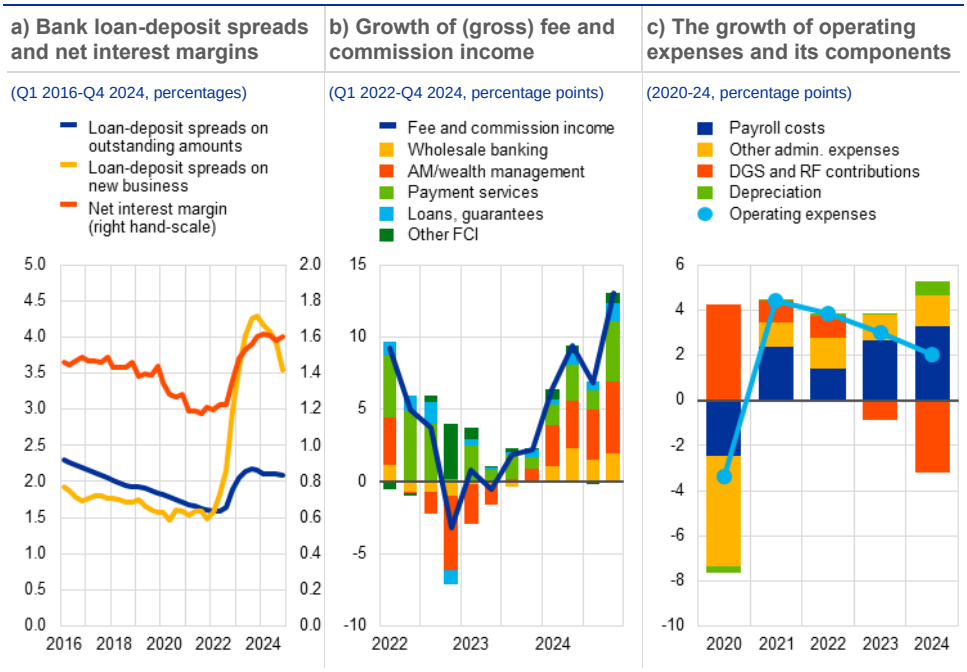
**Revenue growth is expected to slow in 2025, as net interest income is set to decline.** Banks' loan-deposit spreads on new business have continued to decline (**Chart 3.3**, panel a), as a significant share of their loan books is tracking falling short-term rates. This is expected to gradually feed through to net interest margins on outstanding amounts and thus put pressure on revenue growth, in particular for banks with a larger share of floating-rate loans. At the same time, growth in fee and commission income picked up in 2024, partly driven by asset/wealth management activities (**Chart 3.3**, panel b). This item tends to be more volatile than items related to commercial banking activities (e.g. payment services, loans and guarantees) and

could be vulnerable to adverse market shocks affecting investment fund flows (**Section 4.2**).

**Cost control will remain important for offsetting slower revenue growth, but rising cybersecurity challenges require investment.** However, banks' operating expenses grew at a faster pace over the course of 2024, when adjusted for contributions to deposit guarantee schemes and resolution funds, driven mainly by payroll costs (**Chart 3.3**, panel c). Furthermore, banks face upward pressure on costs due to the increasing need to invest in IT and cybersecurity, given that cyber threats continue to pose substantial risks to financial institutions amid heightened geopolitical uncertainty (**Box 1**). Almost half of significant cybersecurity incidents reported by financial institutions in the EU from January 2023 to June 2024 concerned banks,[39] and the number of significant cyber incidents affecting banks supervised by the ECB rose to a new high in 2024. Survey data reveal that cybersecurity remains the primary concern among the chief risk officers of global banks, with 75% of them agreeing it is the main risk over the next 12 months, slightly up from 73% a year earlier.[40]

**Chart 3.3**

Net interest income is set to decline, with revenue growth expected to be more reliant on continued growth in fee and commission income




Sources: ECB (BSI, MIR, supervisory data) and ECB calculations.
Notes: Panel a: loan-deposit spreads are based on all euro area banks (quarterly averages), while the net interest margin is based on the full sample of significant institutions. Panel b: based on a sample of 87 significant institutions. Year-on-year growth of quarterly fee and commission income. AM stands for asset management; FCI stands for fee and commission income. Panel c: based on a sample of 87 significant institutions. DGS stands for deposit guarantee schemes; RF stands for resolution funds.

**Banks' profitability is expected to fall slightly in 2025, driven by a decline in net interest income and, to a lesser extent, by an increase in the cost of risk.** For a sample of listed banks, private sector analysts project that aggregate ROE will decline

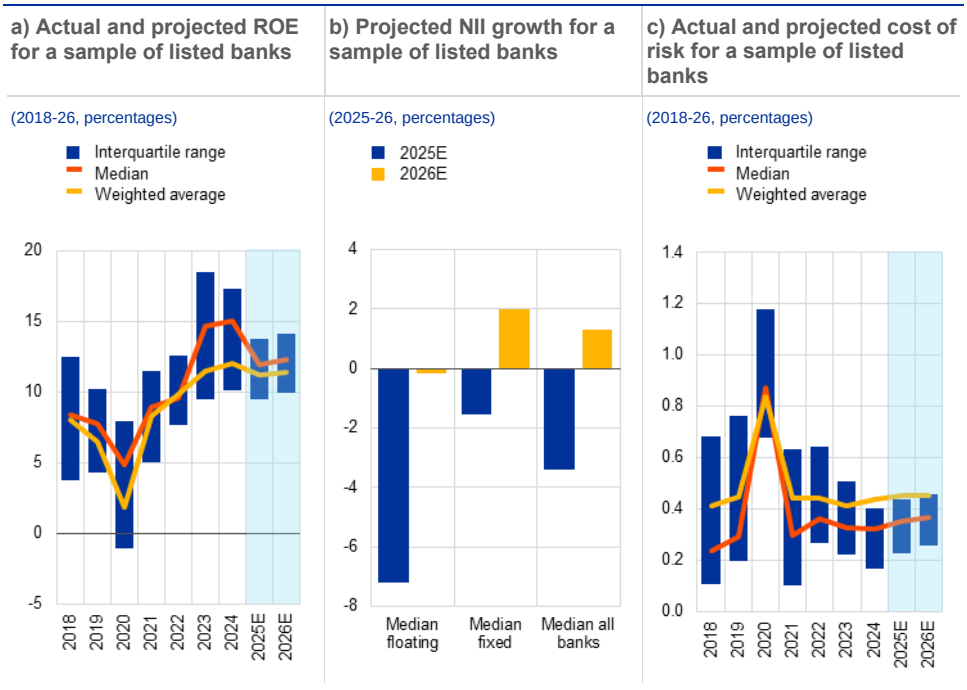
[39] See "ENISA threat landscape: finance sector", European Union Agency for Cybersecurity, 2024.

[40] See "Agility in volatility: Rebalancing CRO priorities in a shifting risk matrix", EYGM Limited, 2025.

slightly in 2025 before stabilising in 2026 (**Chart 3.4**, panel a). For the median listed bank, a moderate decline in net interest income is forecast for 2025, but banks with a higher share of floating-rate loans are expected to see their net interest income fall more significantly (**Chart 3.4**, panel b). The negative effect of lower rates on margins could be offset, at least in part, by structural hedging, a gradual pick-up in bank lending flows in home markets and, in some cases, continued growth in higher-margin lending activities outside the euro area. Differences in rate sensitivity across banks are also apparent in the wide range of estimated declines in net interest income under the scenario of a downward shift in the yield curve.[41] As at the end of 2024, the median bank would see its net interest income fall by 11% relative to the baseline under such a scenario, but there is a wide dispersion across banks, with an interquartile range of between -6% and -16%. Finally, in spite of a still weak macroeconomic outlook for 2025, analysts expect only a slight increase in banks' cost of risk in 2025 and a stabilisation in 2026 (**Chart 3.4**, panel c). That said, banks' provisioning needs may increase further amid increased downside risks to banks' credit risk outlook (**Section 3.2**)

**Chart 3.4**

Profitability is expected to decline slightly in 2025 due to pressure on net interest income and slightly higher cost of risk




Sources: Bloomberg Finance L.P., ECB (supervisory data) and ECB calculations.
Notes: Panel a: based on market analyst projections of ROE for a sample of 32 listed euro area banks. Panel b: listed banks are divided into two groups, based on their share of floating-rate loans. The median share of floating-rate loans is 48% and 36% for the "floating" and "fixed" groups respectively. NII stands for net interest income. Panel c: cost of risk is defined as the ratio of loan loss provisions to total loans.

41 For the euro and other major currencies (e.g. the US dollar, the pound sterling), the parallel downward shock used to calculate net interest income sensitivities is -200 basis points.

## Box 3
## The deposit franchise value of euro area banks

Prepared by Cosimo Pancaro, Valerio Passantino and Allegra Pietsch

**Banks' deposit franchises can act as a stabilising force in the banking system by supporting profitability and containing interest rate risk.** The value of a bank's deposit franchise is defined as the long-term present value of its earnings from attracting and retaining low-cost and stable deposit funding, minus any operating expenses incurred (e.g. due to operating branches and marketing expenses). In providing steady, low-cost funding, strong deposit franchises are a key source of bank profitability and, as such, have contributed to the recent surge in profitability. They also help banks to manage interest rate risk in a volatile interest rate environment, as changes in the economic value of a bank's deposit franchise can offset valuation changes in long-term fixed-rate assets. High deposit franchise values may also reduce banks' risk-taking incentives and moral hazard by representing an economic asset that banks aim to protect, potentially resulting in higher market valuations.[42]

**The interest rate environment is the key determinant of the deposit franchise value.**[43] Customers deposit cash with banks as they provide safety, liquidity and access to cashless payments (the "deposit franchise"). Their deposits are remunerated at rates that are both low and relatively insensitive to market interest rates. This allows banks to earn a spread between market rates and deposit rates that generally increases with the market rate. Banks' operating expenses do not vary much over time and are therefore also insensitive to interest rates. This means that the value of a bank's deposit franchise is higher when interest rates are high. During the low-for-long interest rate environment, the deposit franchise was a liability in economic terms for virtually all euro area banks (**Chart A**, panel a) as they were unable to generate a spread income in excess of their operating expenses.[44] The exit from the low interest rate environment pushed the deposit franchise value back into positive territory, turning it into an economic asset. The negative modified duration of the deposit franchise value protected banks from the interest rate risk stemming from unrealised losses on long-term fixed-rate assets. Across the euro area, positive deposit franchise values have been observed when long-term interest rates have exceeded 1.8%.

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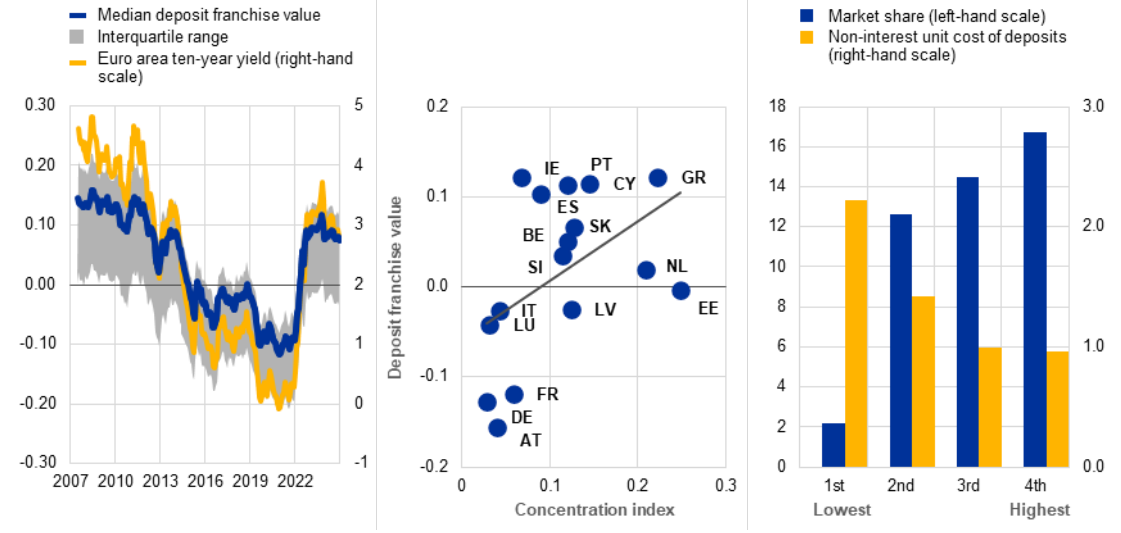
42 See (i) Drechsler, I., Savov, A. and Schnabl, P., "Banking on Deposits: Maturity Transformation without Interest Rate Risk", *The Journal of Finance*, Vol. 76, No 3, February 2021, pp. 1091-1143; (ii) Drechsler, I., Savov, A. and Schnabl, P., "How to value the deposit franchise", New York University Stern School of Business, 2023; (iii) Drechsler, I., Savov, A., Schnabl, P. and Wang, O., "Deposit Franchise Runs", *Working Paper Series*, No 31138, National Bureau of Economic Research, April 2023; (iv) DeMarzo, P.M., Krishnamurthy, A. and Nagel, S., "Interest Rate Risk in Banking", *Working Paper Series*, No 33308, National Bureau of Economic Research, December 2024; (v) Demsetz, R.S., Saidenberg, M.R. and Strahan, P.E., "Banks with Something to Lose: The Disciplinary Role of Franchise Value", *Economic Policy Review*, Vol. 2, No 2, Federal Reserve Bank of New York, October 1996, pp. 1-14; and (vi) Kwan, S. and Martinez, Z., "Bank Franchise as a Stabilizing Force", *Economic Letters*, No 2024-20, Federal Reserve Bank of San Francisco, August 2024.

43 The analysis in this box estimates the deposit franchise value for a sample of euro area banks. Following the approaches proposed by Drechsler et al. (see (ii) and (iii) in footnote above) and DeMarzo et al. (see (iv) in footnote above), a bank's deposit franchise value can be computed as the present value of a ten-year discounted cash flow of the difference between the deposit spread income and the operating expenses of the deposit franchise. The deposit spread income is a hypothetical profit that banks can earn by borrowing at the deposit rate and placing funds in the money market at the risk-free overnight rate. Estimates for bank-level deposit betas, fixed deposit spreads and the costs of deposit provision as a share of operating expenses are used as inputs. Model inputs are derived from a regression of individual banks' deposit rates on the euro short-term rate, two-year swap spreads and five-year swap spreads. The euro area ten-year sovereign bond yield is used to discount cash flows and to proxy the long-run overnight money market rate, including a risk premium and a term premium.

44 While deposit spread income, in isolation, consequently did not contribute positively to bank earnings, the deposit franchise may still have generated indirect value, e.g. through customer relations providing opportunities for selling services, thus boosting fee income.

**Chart A**

The deposit franchise value changes with the interest rate environment, the degree of market concentration and operating expenses




Sources: ECB (supervisory data, MIR, BSI, SSI) and ECB calculations.
Notes: Changing sample over time of 88 significant institutions. Cost estimates are only available as of Q4 2014 and are backward-filled over the entire time frame. Panel b: the country-specific yearly concentration (Herfindahl) index for credit institutions' total assets is available up to 2023 and forward-filled for 2024. For further explanations on the underlying methodology, see Guideline 2021/830 of the European Central Bank on balance sheet item statistics and interest rate statistics of monetary financial institutions (ECB/2021/11). Long-term median over the entire time frame for countries with more than three banks. Panel c: long-term median over the entire time frame and sample. "Unit cost of deposits" refers to the operating expenses associated with each euro of deposits, while "market share" refers to individual banks' share of total assets in a given country.

**Higher market concentration, market power and cost efficiency are associated with higher deposit franchise values.** Banks in countries with more concentrated banking sectors (Greece and Cyprus) tend to have higher deposit franchise values than those in less concentrated markets (Germany, France and Austria) (**Chart A**, panel b). Higher market concentration is often associated with a lower pass-through of interest rate changes to deposit rates[45] which is linked to the prevailing level of competition for deposits[46]. The relationship is also visible at the individual bank level, as banks with larger market shares, and hence greater market power, have higher deposit franchise values (**Chart A**, panel c). Another factor that contributes to the differences in banks' deposit franchise values is cost efficiency. For example, banks with lower unit operating expenses require a lower deposit spread income to achieve a positive deposit franchise value.

**Banks with higher deposit franchise values are more attractive to investors.** Higher deposit franchise values are also associated with higher market valuations, across both time and banks. Since 2008 banks' average deposit franchise values and average price-to-book ratios have followed similar patterns (**Chart B**, panel a). This positive relationship also holds at the cross-sectional level, as banks with higher deposit franchise values receive higher valuations from investors (**Chart B**,

[45] The deposit franchise value thus also partly reflects varying degrees of monetary policy transmission to deposits across euro area countries.

[46] See Drechsler, I., Savov, A. and Schnabl, P., "The Deposits Channel of Monetary Policy", *The Quarterly Journal of Economics*, Vol. 132, No 4, pp. 1819-1876, November 2017, and Kho, S., "Deposit market concentration and monetary transmission: Evidence from the euro area", *European Economic Review*, Vol. 173, No 104933, April 2025.

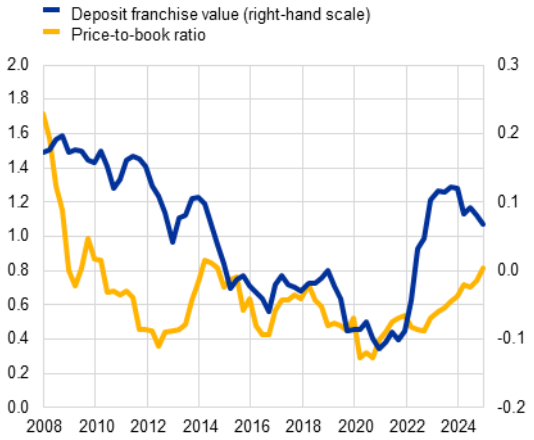
panel b). This is relevant in terms of financial stability, as weak valuations can impede the ability of banks to raise capital and provide credit to the real economy.

**Chart B**

Higher deposit franchise values are associated with higher market valuations

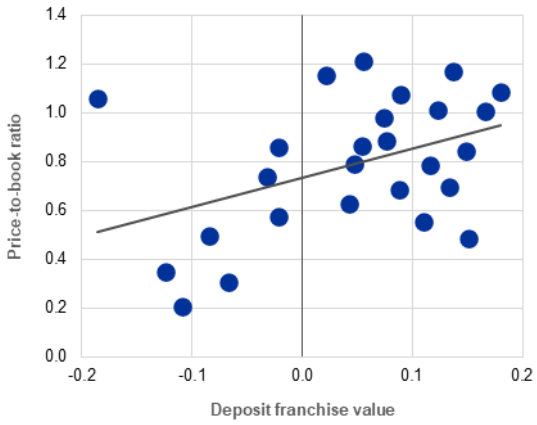
**a) Average deposit franchise value and price-to-book ratio**

(Q1 2008-Q4 2024; left-hand scale: percentages, right-hand scale: value per euro of deposits)




**b) Market valuations and deposit franchise value**

(Dec. 2024; x-axis: value per euro of deposits, y-axis: percentages)




Sources: ECB (supervisory data, MIR, BSI), Bloomberg Finance L.P. and ECB calculations.
Notes: Panel a: a changing sample of 42 listed significant institutions over time. Panel b: a comparison of market valuations and deposit franchise values for a sample of 26 listed significant institutions.

**The value of euro area banks' deposit franchises has important implications for financial stability in the euro area.** Banks provide services to customers in the form of security, short-term liquidity and cashless payment systems. In return, as the only deposit-taking institutions in a sector with high barriers to entry, they benefit from the incomplete pass-through of interest rate changes to deposit funding costs and low customer deposit remuneration. In this context, a sustainable and profitable deposit franchise acts as a stabilising force in the banking system. This business model does, however, entail the risk of deposit runs in the event of a confidence shock.[47] Moreover, greater competition in the deposit market or greater household participation in financial markets, instead of placing savings with banks directly, could put pressure on deposit franchise values. Understanding the differences and dynamics of the deposit franchise value is important for the assessment of banks' interest rate risk exposures and market valuations.

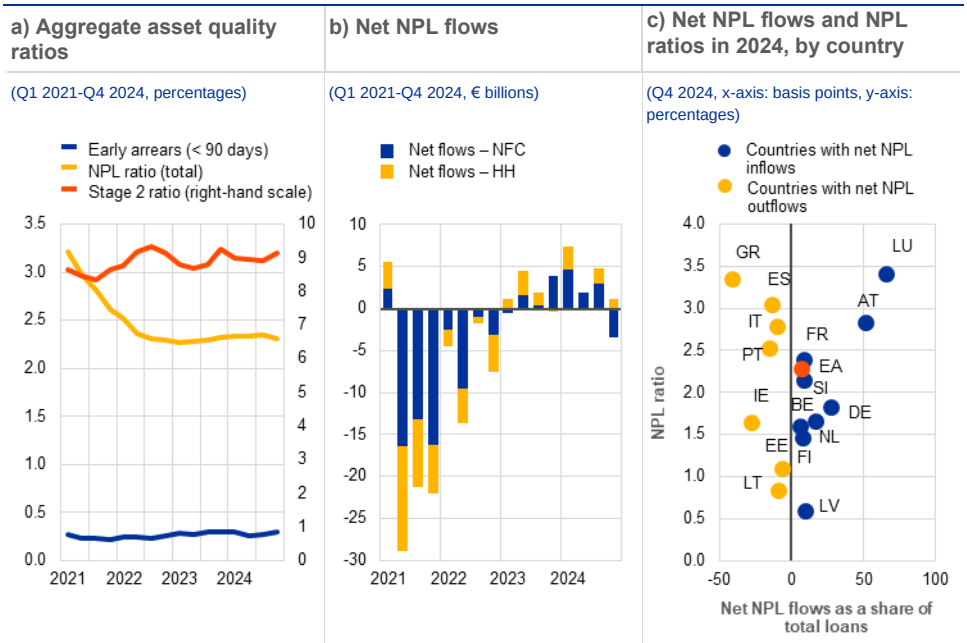
[47] The deposit franchise value is a function of the stickiness of deposits, which is affected by several factors, including digitalisation. In fact, digital banking can reduce the stickiness of deposits and influence the deposit franchise value of deposits, which may in turn have an impact on the stability of the banking sector. For further details on this topic, see Koont, N., Santos, T. and Zingales, L., "Destabilizing Digital 'Bank Walks'", *Working Paper Series*, No 32601, National Bureau of Economic Research, June 2024. For information on digital banking in the euro area, see the box entitled "Digital banking: how new bank business models are disrupting traditional banks" in this edition of the Financial Stability Review.

## 3.2 Asset quality deterioration has remained contained, but credit risk and provisioning needs are likely to increase

**As a whole, euro area banks' asset quality remains robust, albeit with some divergence at the country level.** The aggregate non-performing loan (NPL) ratio of euro area banks remains close to its historical low, despite a marginal increase in 2024, while the Stage 2 ratio is broadly unchanged from a year earlier (**Chart 3.5**, panel a). Net NPL flows were positive over 2024 as a whole, driven mostly by NPLs in the corporate loan book, although they turned negative in the last quarter of 2024 for the first time since the end of 2022 (**Chart 3.5**, panel b). However, a benign asset quality picture overall masks diverging trends at the country level, as banks located in some euro area countries where NPL ratios used to be low saw an increase in their NPL stocks in 2024 (**Chart 3.5**, panel c). By contrast, countries which had experienced a significant increase in NPL ratios during the sovereign debt crisis saw further declines in NPL stocks in 2024, driven by the continued disposal of long-dated NPLs.

**Chart 3.5**

Asset quality remains robust overall, but this masks diverging trends at country level




Sources: ECB (supervisory data) and ECB calculations.
Notes: Panel b: excludes loans held for sale. NFC stands for non-financial corporations; HH stands for households. Panel c: x-axis shows four-quarter rolling net NPL flows as a share of total loans in Q4 2024. In the calculation of the NPL ratio, cash balances at central banks and other demand deposits are excluded. Blue dots represent countries which experienced net NPL inflows over the period, while yellow dots represent countries which experienced net NPL outflows. Countries with fewer than three significant institutions are not shown. Country refers to the domicile of the bank. EA stands for euro area.

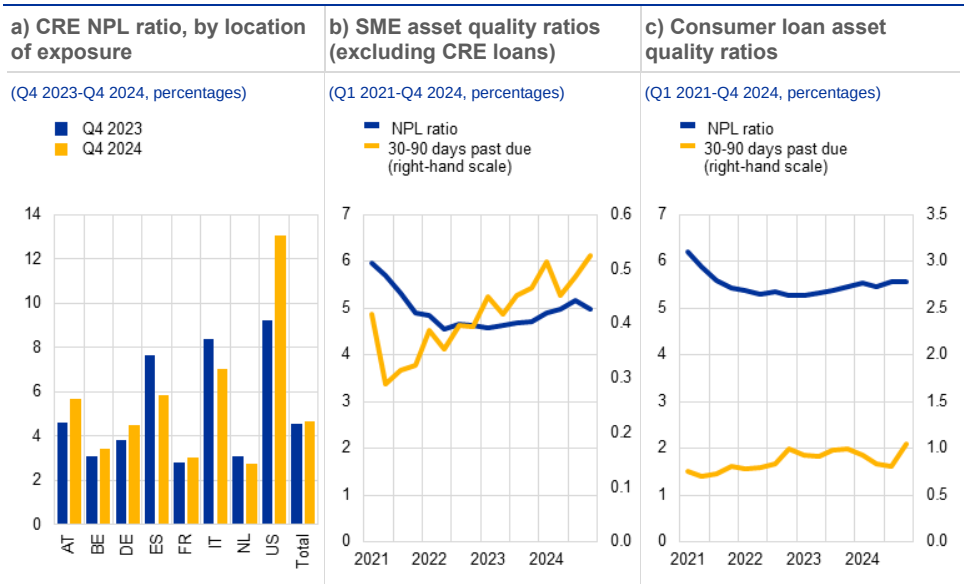
**Pockets of slow deterioration in asset quality remain, however, with a further (albeit decelerating) deterioration evident in commercial real estate (CRE) lending.** The aggregate CRE NPL ratio increased marginally in 2024, with the pace of deterioration slowing compared with a year earlier, partly reflecting diverging trends by borrower location (**Chart 3.6**, panel a). In particular, the CRE NPL ratio for US exposures continued to rise significantly, up by nearly 4 percentage points since the

end of 2023. CRE NPLs on US exposures accounted for 18% of the total at the end of 2024, but these continue to be largely concentrated in a few, mostly German, banks. Exposures to euro area CRE borrowers are performing significantly better, with only contained deterioration or even improvements recorded over the course of 2024 (**Section 1.5**).

**The quality of SME and consumer loans has also deteriorated slightly**. The aggregate SME NPL ratio continued to rise gradually for much of 2024, before declining slightly in the last quarter. By contrast, early arrears picked up again in the second half of 2024, although their share in total SME loans remained relatively contained (**Chart 3.6**, panel b). In the household segment, the quality of consumer loans also showed small signs of deterioration as early arrears picked up in the fourth quarter of 2024, although the NPL ratio remained broadly stable (**Chart 3.6**, panel c). Due to their higher cyclical sensitivity, banks face the prospect of a further decline in the credit quality of their SME and consumer loans portfolios amid a weakening economic outlook.

**Chart 3.6**

Pockets of slow deterioration in asset quality remain in CRE, SME and consumer loan portfolios

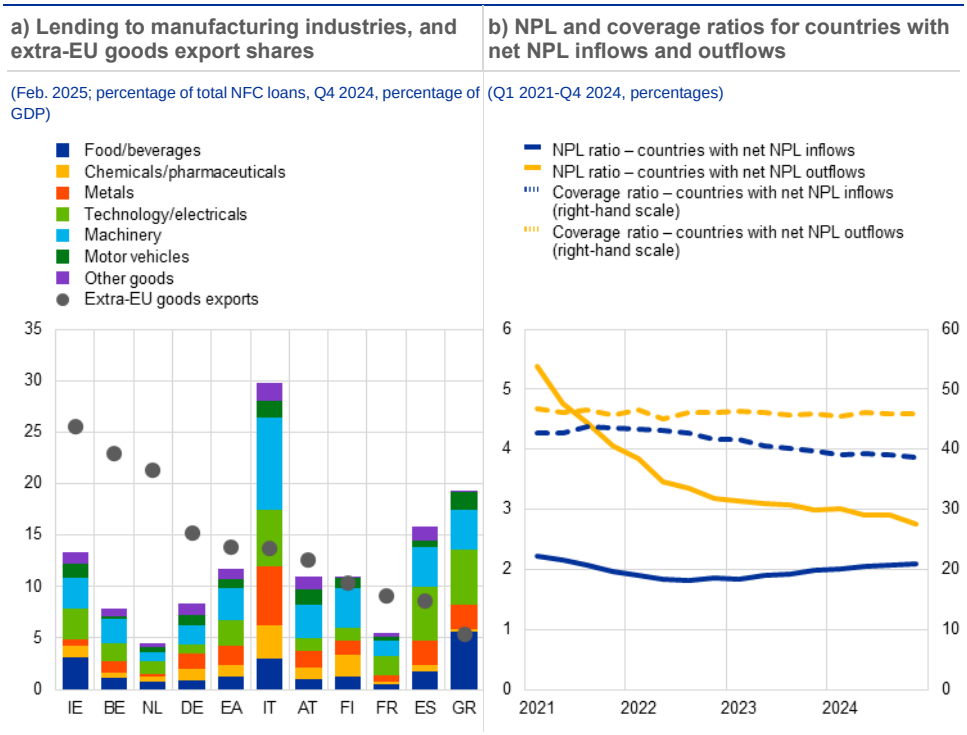



Sources: ECB (supervisory data) and ECB calculations.
Notes: Based on a balanced sample of 87 significant institutions. Panel a: CRE NPL ratios are based on loans collateralised by commercial immovable property. NPL ratios are shown for countries with the largest CRE exposures (by location of borrower).

**Rising global trade tensions could also add to credit risk in the non-financial sector.** Firm profitability may be negatively affected by the implementation of tariffs in some manufacturing segments which are highly exposed to extra-EU trade, such as carmaking and machinery (**Chart 3.7**, panel a). The broader and longer-lasting macroeconomic effects of trade policy uncertainty could also lead to a deterioration of bank asset quality, albeit with stronger impacts for banks with higher exposures to sectors relying on extra-EU trade (**Special Feature B**). In an adverse scenario, where escalating trade tensions could also lead to lay-offs in affected sectors, the negative impact on asset quality could extend to parts of banks' household loan portfolios.

**Chart 3.7**

Credit risk may rise for some non-financial corporations in a weaker economic environment, which could also cause banks' provisioning needs to increase



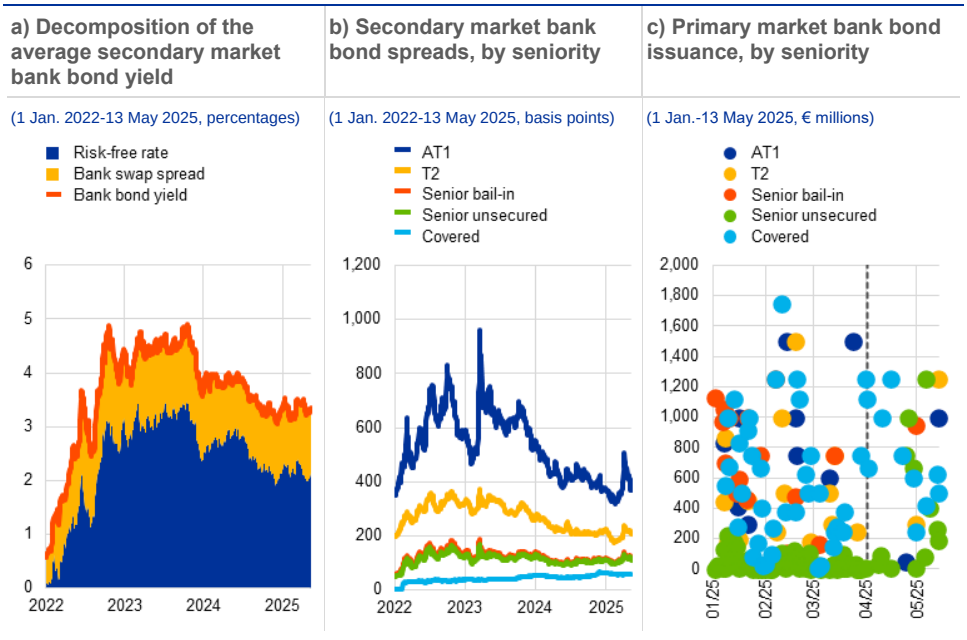

Sources: Eurostat, ECB (supervisory data, AnaCredit, RIAD) and ECB calculations.
Notes: Panel a: loan exposure is expressed as a share of total NFC lending. Manufacturing sectors are those with NACE code C (10-32). Extra-EU goods exports as a share of GDP is calculated as at Q4 2024. Countries with the ten largest loan exposures to manufacturing sectors are shown. EA stands for euro area. Panel b: based on a full sample of significant institutions. Countries are grouped based on whether they had net NPL inflows or outflows in 2024.

**Provisioning costs remain subdued but may rise again as new NPLs age and guarantees are phased out.** As stated in the November 2024 edition of the Financial Stability Review, banks' NPL coverage ratios for corporate loans have declined over the last few years, driven by the disposal of legacy NPLs with higher coverage, the inflow of new NPLs with lower coverage and the use of substantial public credit guarantees during the pandemic. However, this reduction in coverage ratios may start to reverse in 2025 as two factors that contributed to this decline fade away. First, new NPLs will likely require higher provisions as they age, with the average provision coverage on NPLs rising from 44% when they are less than a year old to 68% for loans that are more than two years old (as of end-2024). This will mostly affect countries which have seen NPL inflows in recent years and where this dynamic has been more prevalent (**Chart 3.7**, panel b). Second, the share of government-guaranteed loans stock will continue to decrease in 2025, with 42% estimated to have already left the portfolio since the end of 2022. Beyond these structural factors, banks may see some increase in provisioning costs due to the worsening growth outlook for 2025 (**Section 1.1**), which could lead to higher expected loss estimates under the IFRS 9 framework.

## 3.3 Banks' funding costs have fallen but are encountering frictions on their downward path

**Bank bond yields have declined over the past year, but spreads have been volatile recently.** Bank bond yields have fallen considerably, reaching their lowest levels since the onset of the last round of monetary policy tightening. Much of this decline had already occurred before policy rates started to fall, as markets priced in policy cuts earlier (**Chart 3.8**, panel a). Bank bond yields have, however, been volatile recently, affected by fluctuations in both the underlying risk-free rate and bond spreads since the announcement of trade tariffs by the US Administration on 2 April. Credit spreads for more junior instruments have risen notably and contributed to an increase in the average secondary market yield. By contrast, spreads on covered bonds have narrowed, with market participants favouring these assets in a flight to safety (**Chart 3.8**, panel b). In response, some banks delayed primary market bond issuances of more junior instruments, timing them with the return of more favourable market conditions after temporary tariff pauses had been announced (**Chart 3.8**, panel c).

**Chart 3.8**
Bank bond yields have fallen, but spreads have been volatile recently



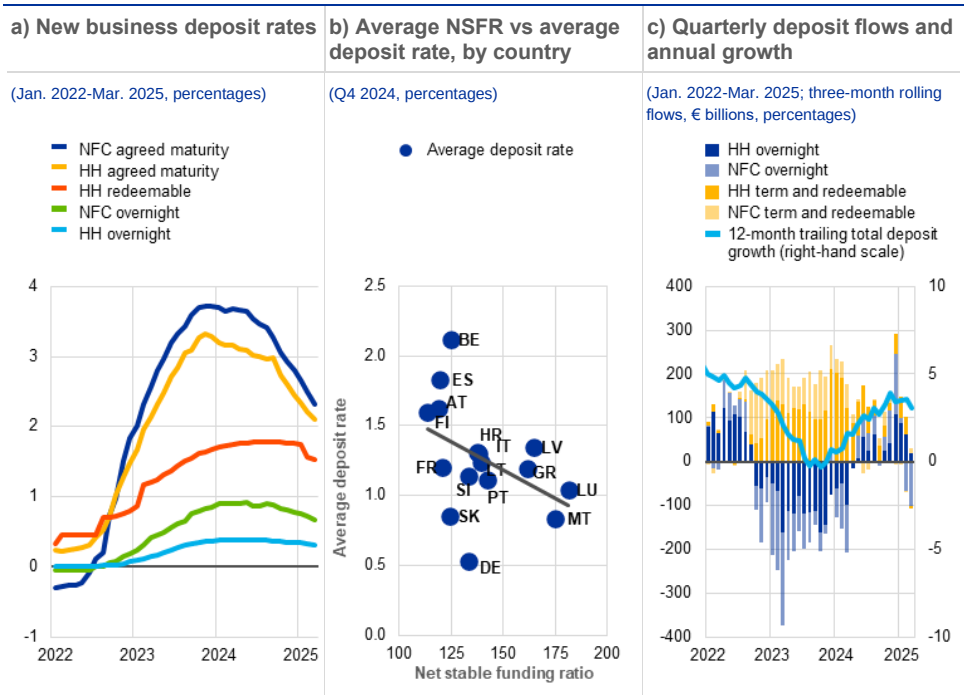

Sources: S&P Dow Jones Indices LLC and/or its affiliates, Dealogic, a service of ION Analytics and ECB calculations.
Notes: Panel a: the risk-free rate is the weighted average benchmark swap rate matching the maturity of banks' outstanding bonds. The bank swap spread is the weighted average asset swap spread over the benchmark swap rate. Panel c: Dashed line marks 2 April 2025, the day of the announcement of trade tariffs by the US Administration.

**Deposit rates have also declined, but differences in funding conditions across banks persist.** Since the ECB's first policy rate cut in June 2024, euro area banks have substantially reduced interest rates on term deposits. Meanwhile, interest rates on shorter-maturity accounts, such as overnight deposits and deposits redeemable at notice, have changed little from their peak. This is, however, consistent with the more muted pass-through of rate increases during the hiking cycle (**Chart 3.9**, panel a). Across banks, differences in deposit rates persist and may be partly explained by

differences in net stable funding ratios (NSFRs) (**Chart 3.9**, panel b). As retail deposits represent stable funding, a lower share of deposit financing decreases banks' NSFRs but might also allow them to pay higher deposit rates, depending on their business model. However, there could also be a more structural relationship between funding liquidity and deposit rates: those banks with ample funding liquidity might not feel the same pressure to bid up for deposits as those with lower NSFRs.

**Chart 3.9**

Deposit rates decline but differences across countries persist, while deposit supply has shifted towards overnight accounts




Sources: ECB (MIR, BSI, supervisory data) and ECB calculations.
Notes: Panel a: deposit rates on new business. NFC stands for non-financial corporation; HH stands for household. Panel b: country aggregates are weighted averages. Panel c: flows are calculated as changes in stock compared with three months ago.

**Deposit growth has contributed to ample funding liquidity, but the composition of deposits is shifting towards demand accounts.** Deposit growth has been positive since the beginning of the easing cycle, supported most by inflows into overnight deposits. This marks a reversal in the dynamics observed over the tightening cycle until April 2024, when deposit growth was driven by term deposits and shifts tended to be away from overnight deposits towards better-remunerated accounts (**Chart 3.9**, panel c). The renewed growth in overnight deposits, alongside subdued growth in term deposits, reflects lower demand for savings accounts due to the narrowing gap between term and overnight deposit rates (**Chart 3.9**, panel a). Moreover, it signals a change in preferences for more liquid assets, as the dynamics reversed even when term deposit rates were still at high levels and this benefits banks by shifting the funding composition towards the cheapest source of funding. Over recent years, depositor preferences have also evolved through the digitalisation of financial services and the increasing presence of online banks (**Box 4**).

**Despite the recent market turmoil, there have not been any signs of funding stress.** While the contractual maturity of banks' deposit funding shortened with the changing composition, deposit data at weekly frequency have not shown any evidence of increased funding stress recently. In the same vein, wholesale funding from money markets has been stable as well. Although some euro area banks have strong international linkages through their activities as intermediators of US dollar liquidity via repo and FX swap markets[48], market functioning has been orderly. Neither have there been any signs of impaired access to foreign currency funding via repo and FX swap markets, despite the volatility seen in other market segments.

## Box 4

### Digital banking: how new bank business models are disrupting traditional banks

**Prepared by Thomas Garcia, Maciej Grodzicki and Petya Radulova**

**Digitalisation is transforming the delivery of banking services, leading to the emergence of new digital bank business models.** Digital banks do business solely in the online space, without developing bricks-and-mortar branch networks. As at year-end 2024, about 60 banks in the euro area were identified as being digital-only.[49] Seven of these banks are subsidiaries of traditional banks. The market share of digital banks increased from 3.1% of total assets in 2019 to 3.9% in 2024 thanks to the expansion of established players and the entry of new competitors. This box spotlights features of digital bank business models, contrasts them with those of traditional banks and presents the financial stability risks that may be associated with the rise of digital banks.

**The funding structure of digital banks is heavily skewed towards small retail deposits.** About 80% of total digital bank funding is sourced from retail depositors. The absence of physical branches reduces local anchoring, leading to an unusually large share of cross-border deposits (**Chart A**, panel a). Over 90% of these retail deposits are covered by deposit guarantee schemes. The average size of these deposits is smaller than at traditional banks, reflecting the low share of customers who use digital banks for their primary bank account. Corporate deposits and wholesale funding play a much less significant role for digital banks. While such a funding structure may be more stable than that of traditional banks, digital banks' lack of diversified funding and reliance solely on online distribution channels increase their vulnerability to bank runs.

**The asset composition of digital banks reveals two main types of business model (Chart A, panel b).** Many digital banks have adopted the business model of a lender, transforming retail deposits collected online into loans which are often also provided through digital channels. However, the lending franchises of these banks often specialise in consumer, mortgage or non-financial corporate loans, with only a few digital banks managing diversified loan portfolios. Digital subsidiaries place a sizeable part of their assets with credit institutions within their own banking group. The second common business model is similar to that of a money market fund. Digital banks of this type do not have material lending businesses; instead, they invest deposits in high-quality liquid assets, primarily

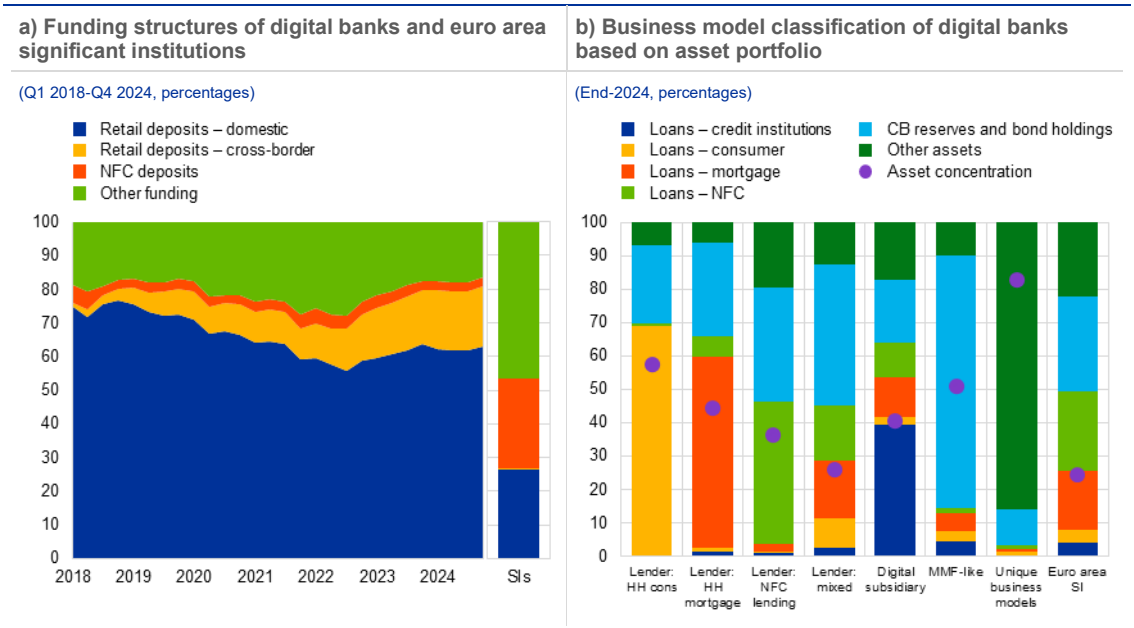
[48] See the box entitled "Euro area banks as intermediators of US dollar liquidity via repo and FX swap markets", *Financial Stability Review*, ECB, November 2024.

[49] The identification methodology integrates diverse data sources, including supervisory reporting, the ECB Register of Institutions and Affiliates Database (RIAD) and Orbis, to establish a ranking system that evaluates banks against a theoretical digital bank profile. Additional manual checks are then carried out to accurately identify digital-only banks. Although many euro area banks only collect deposits through online channels, not all of them meet the criteria identifying them as an online bank. For example, banks affiliated with the automobile industry are excluded from the sample because their primary focus is vehicle financing rather than a broad range of banking services.

central bank reserves. All digital banks operate with unusually high liquidity buffers, possibly reflecting their preparedness for online runs and their reliance on more price-sensitive digital depositors. However, this may also be because the limited lending franchises of digital banks prevent them from deploying funds more productively.

**Chart A**

Digital banks follow a narrow business model, characterised by a heavy reliance on retail deposit funding and high asset-side concentration




Source: ECB (supervisory data).
Notes: Panel a: based on a sample of 59 digital banks. The bar on the right-hand side is the euro area funding composition based on the consolidated reporting of significant institutions (SIs), as of end-2024. Panel b: based on a sample of 54 digital banks. The classification of digital bank business models is based on the predominant asset types in portfolios. The asset composition of banks following unique business models is distorted by an online broker which reports in accordance with German accounting standards; these classify custodial deposits as assets and liabilities of the broker. Asset concentration is based on the Herfindahl-Hirschman index (HHI) and refers to the asset holding diversification in a digital bank's portfolio: HHI > 25% indicates a concentrated portfolio. NFC stands for non-financial corporation; CB stands for central bank; HH stands for household; HH cons stands for household consumer; MMF stands for money market fund; SI stands for significant institution.

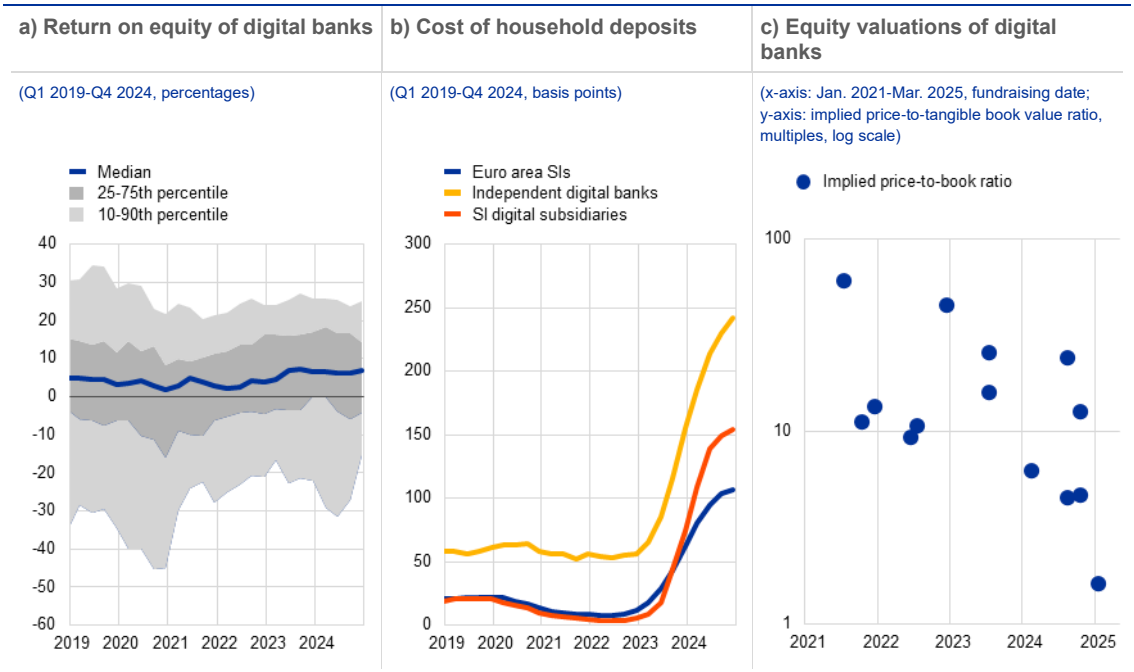
**Digital banks remain less profitable than traditional banks due to their higher cost of deposits and high fixed expenses.** Digital banks have proven to be less profitable than traditional banks and the dispersion of their profitability has been very wide (**Chart B**, panel a). Digital banks have faced a steep increase in their cost of deposits, reflecting higher interest rate pass-through (**Chart B**, panel b). This has been particularly pronounced for independent banks, given their drive to expand market share and a customer base that is generally more price-sensitive than that of traditional banks.[50] At the same time, their currently limited scale, relatively high fixed IT costs and substantial marketing expenses constrain their ability to achieve a similar level of profitability to that of traditional

[50] The price elasticity of household deposit volumes, estimated using linear panel models, is significantly higher for online banks than for their traditional peers.

banks.[51] Digital banks also operate with significantly higher capital ratios, which mechanically reduces returns on equity.

**Chart B**

While digital banks are less profitable and pay higher deposit rates to customers, they are highly valued by investors




Sources: Company announcements and ECB (supervisory data).
Notes: Panel a: in Q4 2024 the median return on equity of traditional banks stood at 9.9%, 2.9 percentage points higher than that of digital banks. Panel b: cost of household deposits calculated as median ratio of total interest expenses to total volumes of deposits, annualised. SI stands for significant institution. Panel c: most digital banks are privately held. Value of digital banks estimated based on announced terms of equity-raising transactions. Tangible book values calculated from company accounts and supervisory reporting. For better readability, price-to-tangible book value ratio is plotted on a logarithmic scale. The comparable ratio for a traditional bank in the euro area tends to be close to 1.

**The continued growth of digital banks could bring benefits for customers but, by displacing incumbents, may also threaten financial stability.** Digital banks have been successful at establishing a foothold in some banking services but remain relatively small players with limited product offerings. However, investors in digital banks seem to value their equity very highly (**Chart B**, panel c). Such valuations can only be justified if, in the future, digital banks achieved the kind of scale that would allow them to operate more efficiently. This would require them to acquire a substantial share of the euro area banking market. The further growth of digital banks might be good for consumers, who would benefit from more competition, and could push incumbents towards improving their service offer. It may, however, also become a threat to financial stability if the business models of traditional banks are disrupted and incumbents rapidly lose the deposit franchise that provides stable funding, which in turn backs their lending to the real economy. Furthermore, it could push traditional banks into taking on additional risks to compensate for higher funding costs. As many digital banks are based in small countries and have numerous non-exclusive customers who are more likely to

[51] In the fourth quarter of 2024, online banks had administrative expenses excluding staff expenses that were twice as high as for traditional banks (1% vs 0.5% of total assets). These administrative costs were driven by substantial operating expenses in building and maintaining IT infrastructure related to their online business (2.4% vs 1.3% of total assets for traditional banks), as well as advertising, marketing and communication expenses which were three times as high as for traditional banks (0.9% vs 0.3% of total assets). In addition, while online banks do not rely on a branch network, real estate expenses relative to total assets are comparable to traditional peers due to the smaller scale at which digital banks currently operate, thus limiting any comparative advantage for these expenses.

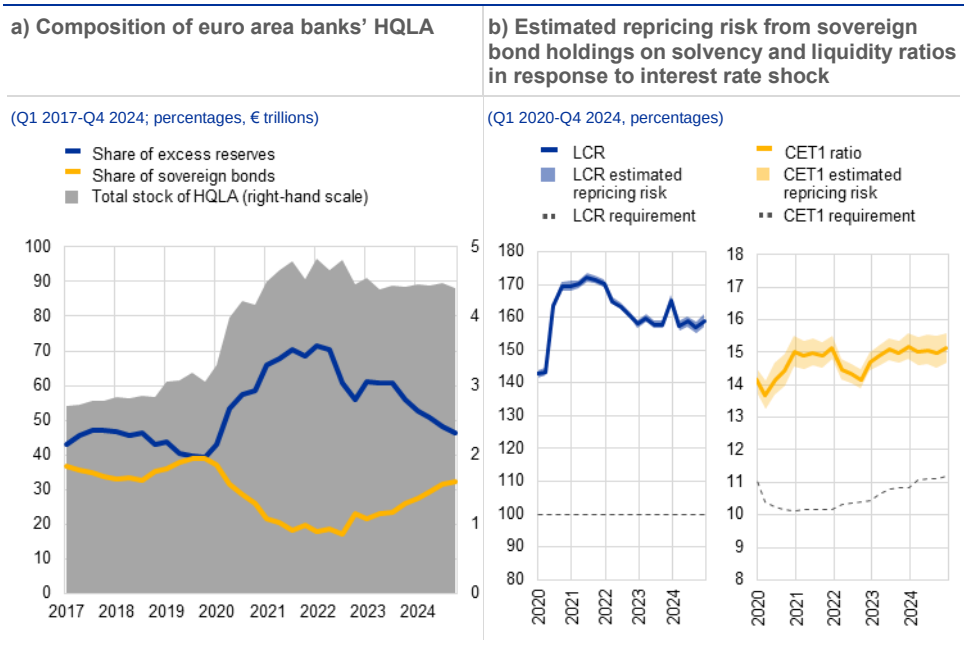
move their deposits in response to idiosyncratic shocks, their expansion may create a new channel for cross-border spillovers as long as deposit insurance remains at the national level. Should digital customers lose trust in a digital bank or in its home country, they could easily transfer their funds elsewhere, leading to financial fragmentation and potentially increased spillover risks from banks to sovereigns.

## 3.4 Banks maintain robust liquidity and capital buffers

**Liquidity buffers remain comfortable, while the composition of euro area banks' liquid assets has been moving away from cash and towards debt securities.** The total stock of banks' high-quality liquid assets (HQLA) has been fairly stable, with the aggregate liquidity coverage ratio (LCR) standing at 159%, substantially above the minimum requirements and pre-pandemic levels. However, the composition of HQLA has changed with the reduction of the ECB's balance sheet. Excess reserves have declined, as banks have used funds to meet TLTRO redemptions, and have been replaced by sovereign bond holdings. The share of sovereign bonds in HQLA has nearly doubled since the third quarter of 2022 as a result (**Chart 3.10**, panel a). Despite this shift, the HQLA composition is still skewed towards cash compared with pre-pandemic levels, although this is likely to change with the ongoing normalisation of the ECB's balance sheet and increased public financing needs (**Chapter 1**).

**Chart 3.10**

Liquidity buffers remain ample, but the composition has changed

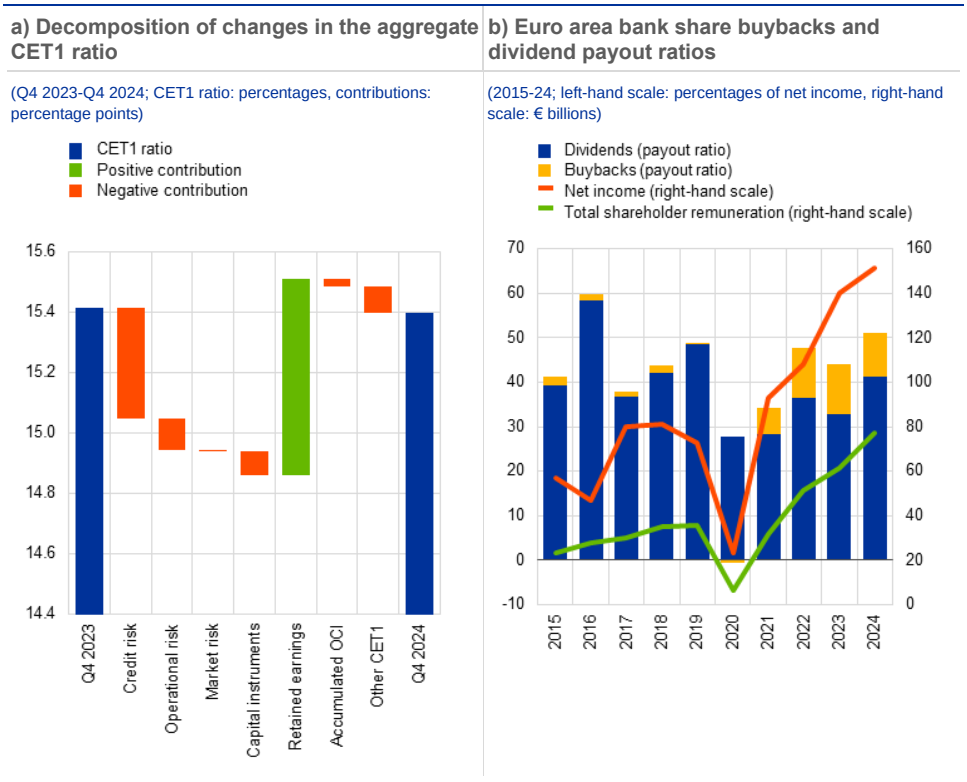



Sources: ECB (supervisory data, SHS) and ECB calculations.
Notes: Panel a: shows the respective shares of sovereign bonds and excess reserves in total HQLA for euro area significant institutions. Panel b: estimates the gross valuation effects on bond portfolios in response to a parallel shift in the yield curve of 100 basis points, assuming no changes in spreads and not considering hedges. For the LCR, only marked-to-market impact from holdings of Level 1 sovereign bonds is considered. Level 1 sovereign bond holdings account for 80% of euro area banks' sovereign bond holdings.

**Banks' sovereign bond portfolios have become larger, but more diversified.** While home bias persists, banks have diversified sovereign bond holdings by purchasing non-domestic bonds. This limits concerns about the sovereign-bank nexus. Nonetheless, larger sovereign bond portfolios leave banks more exposed to adverse market movements. Any resulting valuation losses can affect banks' LCRs, since eligible securities are generally marked-to-market for the purpose of LCR calculations. In a similar vein, adverse market movements can, for securities which are not accounted for at amortised cost, result in lower solvency (**Chart 3.10**, panel b).[52] In the context of liquidity and capital ratios well above regulatory requirements, this risk currently appears small and may be further mitigated by hedges on bond portfolios. But with the increasing net supply of euro area sovereign bonds (**Chart 1**), banks' liquid asset holdings may continue to evolve, and market risks could become more prominent over time.

**Chart 3.11**

Solvency ratios have been supported by strong earnings, allowing for generous shareholder remuneration




Sources: ECB (supervisory data) and ECB calculations.
Notes: Panel a: retained earnings capture the contribution of profits net of dividends. Share buybacks directly reduce equity through capital instruments, while dividends are subtracted from distributable earnings before appearing as retained earnings. OCI stands for other comprehensive income; CET1 stands for Common Equity Tier 1 capital. Panel b: total shareholder remuneration is defined as the sum of dividends and buybacks. Dividend payouts and buybacks that are carried out between Q1 and Q3 of a given year are counted towards remuneration from the previous year.

52 Banks have increasingly used amortised cost accounting in recent years, which shields equity from unrealised losses. HQLA are always marked-to-market for LCR calculations; see Articles 415-418 of Regulation (EU) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation (EU) No 648/2012 (OJ L 176, 27.6.2013, p. 1) and Articles 7-9 of Commission Delegated Regulation (EU) 2015/61 of 10 October 2014 to supplement Regulation (EU) No 575/2013 of the European Parliament and the Council with regard to liquidity coverage requirement for Credit Institutions (OJ L 11, 17.1.2015, p. 1).

**Strong profitability has helped banks maintain high capital ratios and increase shareholder remuneration.** The average CET1 ratio has been stable over the past year, at 15.4%, and remains well above regulatory requirements. High internal capital generation in the form of retained earnings has continued to have a strong positive effect on banks' capital ratios. Meanwhile, a marked increase in credit risk requirements has had a negative impact, owing to an increase in risk-weighted assets from corporate and unsecured retail exposures, rather than a deterioration in credit quality (**Chart 3.11**, panel a). Unless a default occurs, credit risk weights are rather insensitive to changes in asset quality, so credit risk exposures are instead mainly driven by volume effects and thus will increase further once lending growth revives. By contrast, a deterioration in asset quality would more likely be reflected in a higher cost of risk and lower retained earnings moving forward. At the same time, euro area banks distributed about half of their 2024 earnings to shareholders, and shareholder remuneration reached the highest levels observed since the Single Supervisory Mechanism was set up in 2015.[53] It may, however, decline moving forward, should earnings start to fall (**Chart 3.11**, panel b).

**The euro area banking sector remains resilient, underpinned by robust earnings and contained asset quality deterioration, together with high capital and liquidity buffers.** Despite the challenging macroeconomic environment, euro area banks continue to report profits that are strong enough to both support healthy capital ratios and remunerate shareholders. Deterioration in asset quality has been confined to specific portfolios so far and funding costs are decreasing. Looking ahead, banks could see their net interest income decline somewhat as interest rates fall, while the broader and longer-lasting macroeconomic implications of trade policy uncertainty could lead to deteriorating bank asset quality and rising provisions. At the same time, capital and liquidity buffers remain ample and should protect banks from potential headwinds in light of global uncertainty.

## 3.5 Preserving bank resilience is essential in an uncertain environment

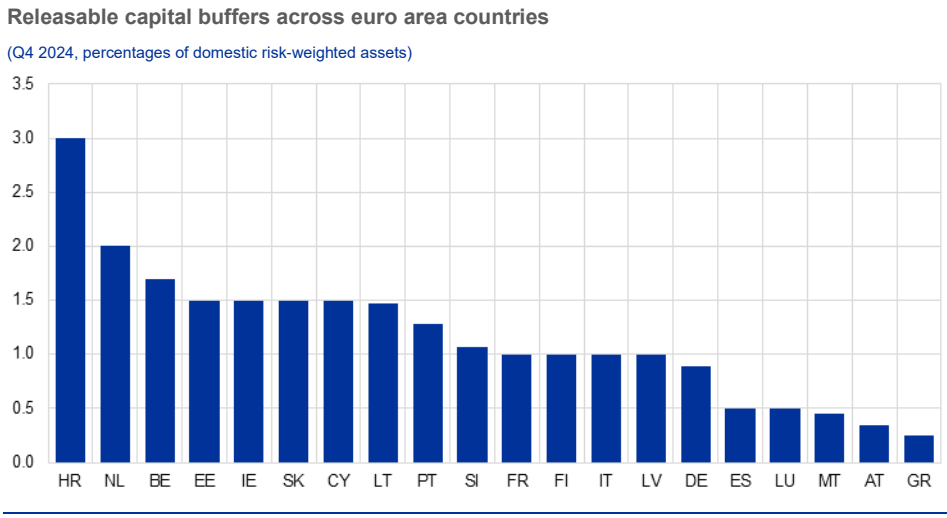
**Elevated financial stability vulnerabilities and heightened geopolitical uncertainty mean that preserving the resilience of the banking sector system remains a key priority for macroprudential policy.** Countries participating in European banking supervision have made significant progress in building up releasable capital buffer requirements, with all countries now having implemented some form of releasable capital buffer, thereby contributing to the resilience of the banking sector. Since the November 2024 edition of the Financial Stability Review was published, another jurisdiction has implemented a framework for the early activation of the countercyclical capital buffer (CCyB), bringing the total number of

[53] The ECB encouraged banks not to pay dividends in 2020 and only lifted its recommendation as of September 2021 (see "ECB asks banks not to pay dividends until at least October 2020", *press release*, ECB, 27 March 2020, and "ECB decides not to extend dividend recommendation beyond September 2021", *press release*, ECB, 23 July 2021).

countries with such a framework in place to ten.[54] In addition to ensuring countries have the wherewithal to address vulnerabilities stemming from the domestic environment, the availability of releasable capital buffers is particularly important in those that are more vulnerable to external shocks, especially given current trade tensions and high levels of global uncertainty.[55,56] Further targeted increases in buffer rates remain desirable in countries where their overall levels are still relatively low, as long as favourable banking sector conditions mitigate the risk of procyclicality and limit the potential costs of measures.[57] In this regard, some countries that have announced a positive neutral approach have yet to reach their target rate (**Chart 3.12**). Existing borrower-based measures should also be maintained to ensure that lending standards are sound and sustainable throughout all phases of the financial cycle. Lastly, notwithstanding the comfortable liquidity buffers built up by banks so far, liquidity developments should be closely monitored given potential challenges ahead (**Section 3.4**).

**Chart 3.12**

The level of releasable capital buffer requirements varies across countries




Sources: ECB and ECB calculations.
Notes: Sample based on 2,314 significant institutions and less significant institutions. The chart includes current rates and announced rates that will take effect before the end of January 2026. The systemic risk buffer (SyRB) for France is not included owing to insufficient data on the implementation perimeter. The height of the bars represents the releasable buffers as announced by national authorities, i.e. the domestic countercyclical buffer (CCyB) and (sectoral) SyRB. For the broad SyRB applied to all exposures (foreign and domestic), only the capital associated with domestic risk-weighted assets is considered in order to ensure cross-country comparability.

54 In December 2024 Portugal announced that it would introduce a positive neutral CCyB rate of 0.75% from 1 January 2026. Furthermore, in January 2025 Cyprus announced that, owing to the heightened cyclical systemic risk and increased probability of tail risk events due to geopolitical developments, it would raise the rate, from 1% to 1.5%, with effect from 14 January 2026.

55 See "Using the countercyclical capital buffer to build resilience early in the cycle", ECB/ESRB, January 2025.

56 For details on a conceptual framework illustrating the channels through which trade tensions may affect the real economy and the financial system, as well as an empirical assessment of their impact on the latter, see the special feature entitled "Risks to euro area financial stability from trade tensions" in this edition of the Financial Stability Review.

57 Releasable buffers constitute only a portion of the capital stack, which also includes non-releasable buffers, additional requirements and guidance, as well as banks' voluntary buffers. Notably, in several countries where releasable buffer levels are comparatively low, voluntary capital buffers remain at relatively comfortable levels.

**The ECB supports the revision of the EU macroprudential framework with a view to enhancing its effectiveness, streamlining processes and establishing consistency across jurisdictions.** Ensuring the usability and releasability of macroprudential buffers is crucial given the complex interactions between prudential and resolution frameworks. Improved usability of buffers would allow national authorities to act countercyclically in an effective manner and strengthen the banking system's ability to withstand losses on a going concern basis. In this context, the ECB encourages greater exchange of information between microprudential, macroprudential and resolution authorities, the harmonisation of methods for measuring buffer usability and releasability across jurisdictions, and the promotion of a more common framework for the implementation of the CCyB (including its use early in the cycle), with a view to fostering effective and consistent use of the instrument across countries, while remaining mindful of the country-specific risk environment. Furthermore, the ECB advocates greater harmonisation in the setting of buffers for systemically important institutions, updating its floor methodology in 2024 to improve the assessment of capital buffer decisions. The floor methodology aims to ensure consistent treatment of other systemically important institutions (O-SIIs) under European banking supervision.[58] The ECB also continues to advocate the creation of a common EU methodology for setting O-SII buffers, taking into account national specificities, institutional and structural developments, and insights gained since the introduction of the O-SII buffer.

**The ECB also supports the ongoing implementation of the outstanding elements of the Basel III reforms and of enhancements to the EU bank crisis management and deposit insurance framework.** The Group of Governors and Heads of Supervision, including the ECB, reaffirmed their commitment in February 2025 to the full, timely and consistent implementation of Basel III, as any delay could undermine the global level playing field. The ECB also remains committed to coordination with international fora more generally, including the Basel Committee on Banking Supervision, helping to avoid regulatory fragmentation. However, following the postponement of the date of application of the Fundamental Review of the Trading Book to 1 January 2026, the European Commission is considering options to further adjust the EU's implementation of the market risk rules to maintain a level playing field with other jurisdictions, such as the United States and the United Kingdom, in which implementation is either delayed or unclear.[59] In this context, the ECB stands ready to contribute to any ongoing consultations. Alongside this, the Commission has made a legislative proposal to enhance the bank crisis management and deposit insurance framework, with a view to better managing bank crises and including smaller and medium-sized banks, and the European Parliament and EU Council have adopted their negotiating positions. The ECB calls for continued progress in the trilogue between the Parliament, the Council and the Commission to reach a consensus, which is vital for advancing the banking union.

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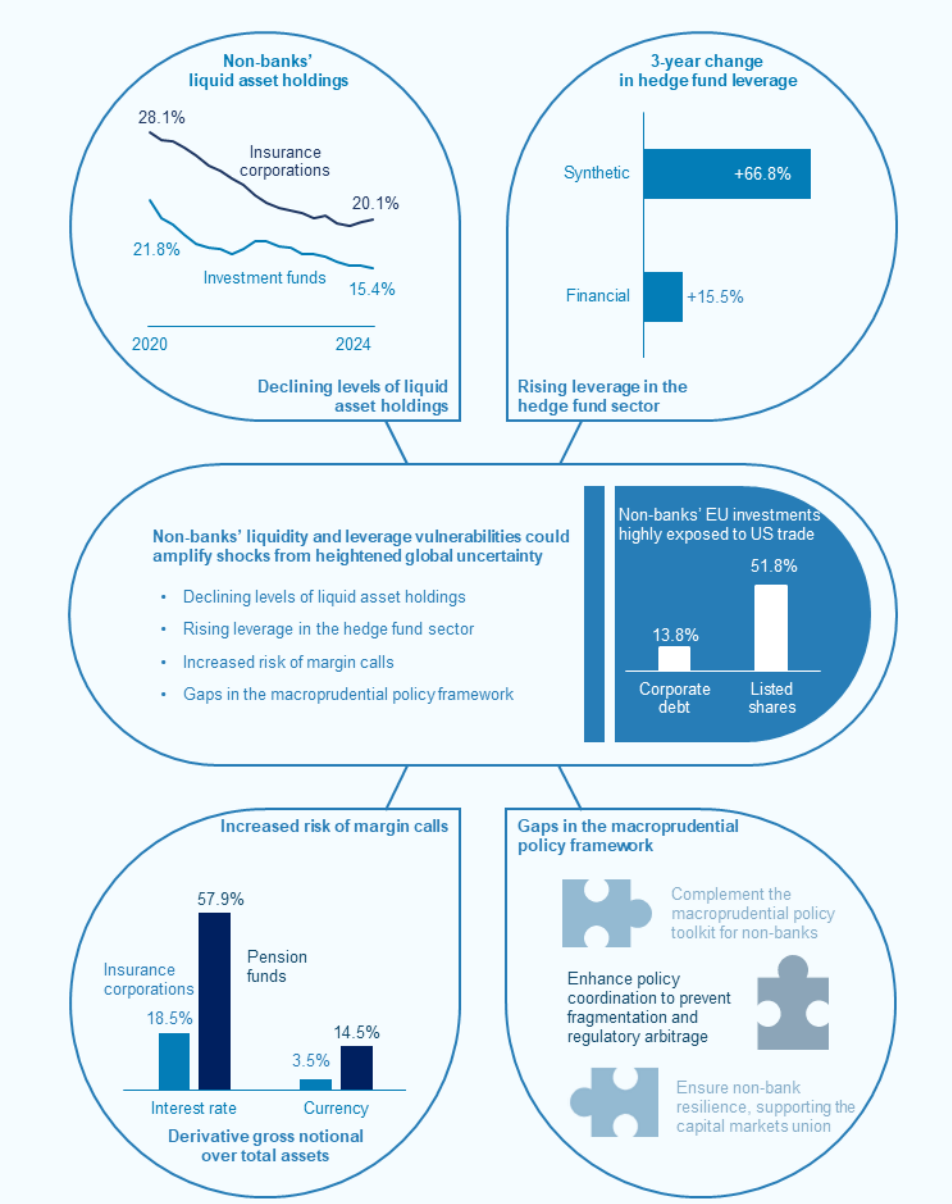
58 See "Governing Council statement on macroprudential policies – the ECB's framework for assessing capital buffers of other systemically important institutions", ECB, 20 December 2024.

59 Regulation (EU) 2024/1623 of the European Parliament and of the Council of 31 May 2024 amending Regulation (EU) No 575/2013 as regards requirements for credit risk, credit valuation adjustment risk, operational risk, market risk and the output floor (OJ L, 2024/1623, 19.6.2024).

**Looking ahead, the ECB remains committed to reducing unwarranted complexities in the regulatory and supervisory framework, while preserving its resilience and compliance with the Basel capital framework.** The COVID-19 pandemic and the banking turmoil in March 2023 were stark reminders that a resilient banking sector is the cornerstone of a healthy economy, contributing to financial stability and fostering economic growth. Today, the European banking sector is resilient thanks to banks' solid capital and liquidity positions (**Section 3.4**), together with the current regulatory and supervisory framework, which has thus far served its purpose well. Nevertheless, reducing unwarranted complexities would make it more efficient and effective. Besides the macroprudential aspects already mentioned above, there is room for further improvement in the areas of supervision, reporting and regulation, in which the ECB is already conducting significant work.[60] With regard to regulation, the ECB stands ready to provide expert input into the evaluation of the effects of the current regulatory framework and potential enhancements to its effectiveness, while preserving financial stability. Importantly, any potential adjustments should not come at the expense of resilience or undermine compliance with the Basel framework, and need to be based on a sound impact assessment and cost-benefit analysis.

[60] For example, the reform of the Supervisory Review and Evaluation Process aimed, among other things, at making the methodology more intuitive and at reducing procedural complexity (see The Supervision Blog posts on (i) reforming the SREP, and (ii) reviewing the Pillar 2 requirement methodology); and the development (jointly with other authorities) of the Integrated Reporting Framework (IReF), which will integrate the Eurosystem's statistical and prudential reporting requirements for banks, thereby reducing redundancies and overlaps, and minimising the reporting burden.

# 4 Non-bank financial sector



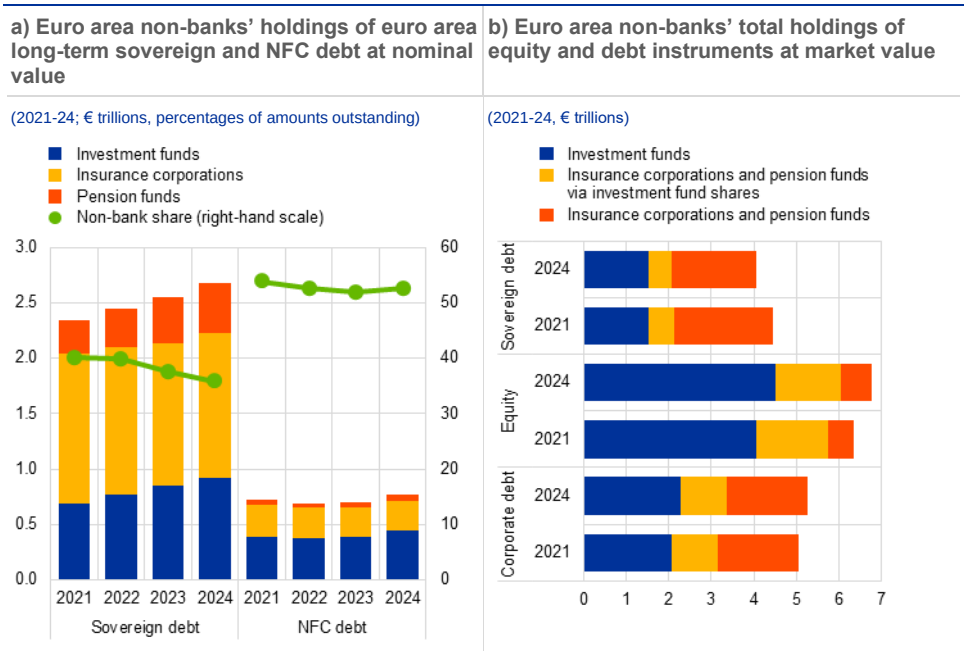

## 4.1 Trade disputes may test non-bank asset valuations

**Non-banks remain key investors in euro area sovereign debt markets, but valuation dynamics have shifted portfolios towards riskier asset types.** Along with overall sector growth, the euro area non-bank financial intermediation (NBFI) sector continued to expand its nominal holdings of euro area sovereign bonds in 2024. Higher volumes in sovereign debt issuances and increased purchases by households and non-euro area investors have, however, led to a slight reduction in the overall share of outstanding sovereign debt absorbed by non-banks (**Chart 4.1**, panel a).

Moreover, high stock market valuations and increasing investments in corporate bonds have tilted aggregate NBFI securities portfolios towards comparatively riskier asset types (**Chart 4.1**, panel b). Together with declining sovereign bond valuations, this may also reduce the relative amount of highly liquid assets available to non-banks when confronted with liquidity shocks (**Box 5**).

**Chart 4.1**

Non-banks' share in outstanding euro area sovereign debt has declined slightly, while valuation changes and transactions have shifted portfolios towards riskier asset types



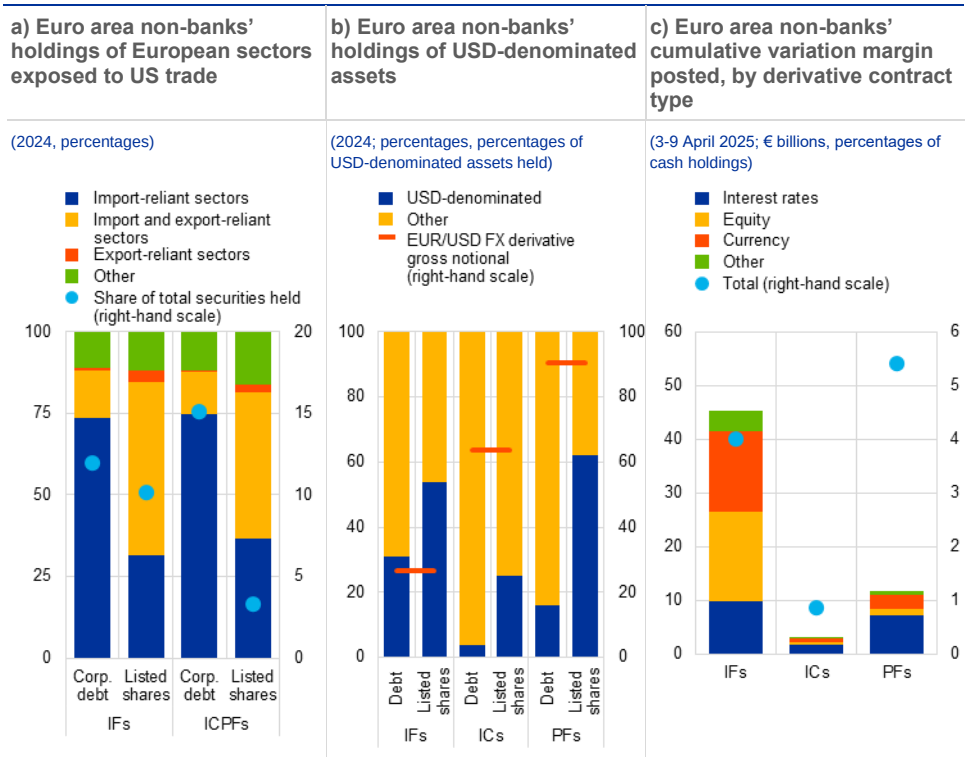

Sources: ECB (CSDB, SHS) and ECB calculations.
Notes: Panel a: amounts outstanding exclude Eurosystem holdings. NFC stands for non-financial corporation. Panel b: investment funds' holdings are calculated by subtracting the portion of holdings attributed to insurance corporations and pension funds via investment fund shares from their total holdings. Insurance corporation and pension fund holdings via investment fund shares are obtained following the look-through approach outlined by 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.

**Non-banks may face higher risks of valuation losses and margin calls as global trade tensions increase market volatility and weigh on corporate issuers.** Euro area non-banks' investments include sizeable exposures to trade-intensive economic sectors. Around half of all European stocks held by the NBFI sector come from issuers that rely to a significant extent on both imports from and exports to the United States (**Chart 4.2**, panel a). Rising protectionism and trade policy uncertainty are likely to weigh on the outlook of these issuers in the medium term, resulting in lower valuations. Although revised fiscal plans have the potential to boost euro area economic growth and improve market sentiment, debt and equity portfolios may continue to see more frequent episodes of price volatility going forward. Non-banks' assets are also characterised by a large share of international investments, exposing them to potential spillover shocks and higher market volatility globally, including in US markets (**Chapter 2**). This can also result in more frequent margin calls for non-banks hedging currency risks in their sizeable US dollar portfolios (**Chart 4.2**, panel b). Following the US tariff announcements at the beginning of April 2025, variation margin calls for NBFI entities exceeded €60 billion. On average, this equals 3.6% of cash

buffers for the NBFI sector and a notably higher 5.4% for pension funds (**Chart 4.2**, panel c). Although it seems these margin calls were manageable, they demonstrate the importance of adequate levels of liquid asset holdings across the different NBFI sectors to ensure resilience to further global market shocks.

**Chart 4.2**

Non-banks may increasingly face the risk of sudden portfolio valuation changes and margin calls in the context of global trade conflicts




Sources: ECB (CSDB, EMIR, SHS), OECD and ECB calculations.
Notes: IFs stands for investment funds; ICs stands for insurance corporations; PFs stands for pension funds; ICPFs stands for insurance corporations and pension funds. Panel a: European US-import and US-export-reliant sectors are defined as those scoring above the 75th percentile in the OECD's foreign input reliance and foreign market reliance indicators respectively. Total securities holdings include debt securities, listed shares and investment fund units. Panel b: the EUR/USD FX derivative gross notional share is calculated as the total FX derivative gross notional outstanding on EUR/USD divided by the total of USD-denominated debt securities and listed shares held. Panel c: the variation margin posted is computed by aggregating net flows of variation margins at the entity level.

## 4.2 Liquidity mismatches and increasing leverage in parts of the investment fund sector

**Flows into euro area corporate funds have reversed amid rising trade tensions, while demand for real estate and sustainable funds remains muted.** A wide range of euro area investment funds continued to see sizeable inflows after the last edition of the Financial Stability Review was published, contributing to further sector growth in the second half of 2024 and early 2025. Flows into bond funds continued to outpace flows into equity funds in relative terms, while environmental, social and governance (ESG) investors also shifted from equities to bonds. However, the US tariff announcements at the beginning of April triggered a sharp reversal in corporate bond fund flows as investors reduced their exposure to riskier assets, most notably

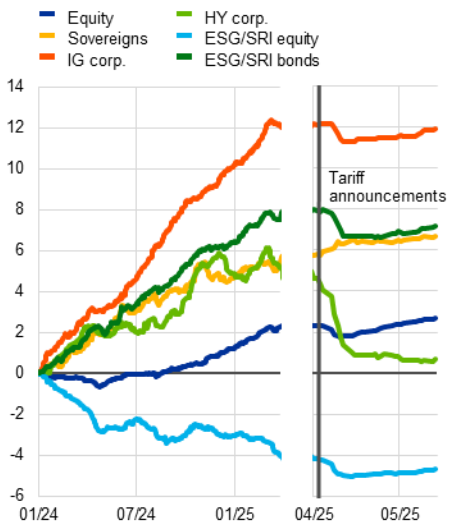
high-yield corporate bonds (**Chart 4.3**, panel a). Despite the recently improved outlook for real estate markets, demand for real estate investment funds (REIFs) is still muted. REIFs remain under pressure in multiple countries as procyclical outflows continue to materialise (**Chart 4.3**, panel b).

**Chart 4.3**

Tariff announcements in early April triggered a sharp reversal in corporate bond fund flows, while real estate funds remain under pressure

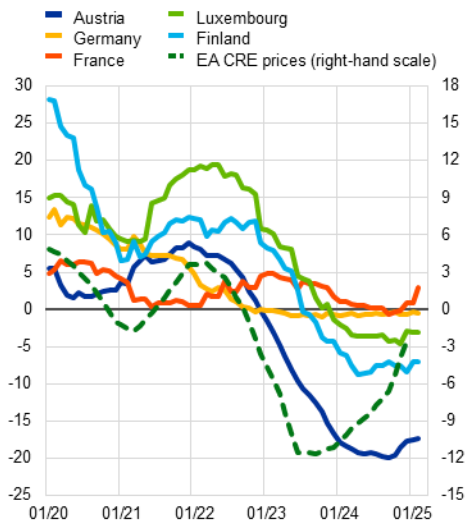
**a) Cumulative flows into euro area-domiciled investment funds, by fund type**

(2 Jan. 2024-13 May 2025; percentages of total net assets)




**b) Annualised net flows into euro area real estate funds and annual changes in commercial real estate prices**

(Jan. 2020-Feb. 2025; percentages of total net assets, percentage changes)



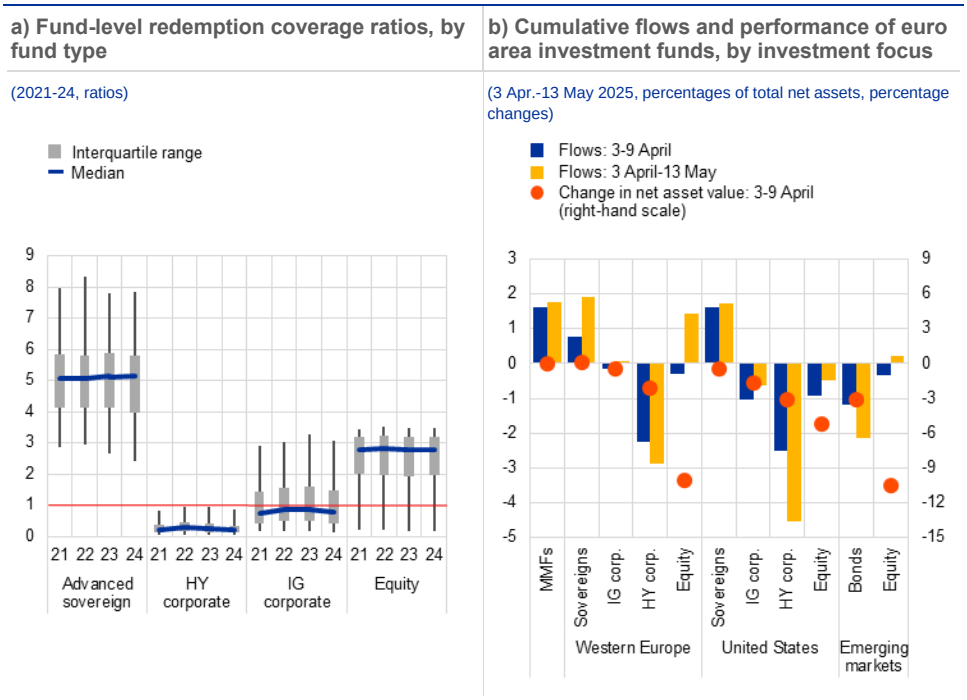

Sources: ECB (IVF, RESC), EPFR Global and ECB calculations.
Notes: Panel a: ESG stands for environmental, social and governance; SRI stands for socially responsible investing; IG stands for investment-grade; HY stands for high-yield. Panel b: net flows are annualised by aggregating all fund flows over a one-year period. EA CRE stands for euro area commercial real estate. Monthly values of EA CRE prices are derived by interpolating the quarterly series, with the latest available data point being Q4 2024.

**Liquidity mismatches in open-ended investment funds might amplify adverse market dynamics as global trade disputes increase the risk of sudden fund outflows.** Several open-ended investment fund types continue to show significant structural liquidity mismatches. As a result, liquid asset holdings are frequently insufficient to cover a severe yet plausible redemption shock. Liquidity mismatches persist in parts of the equity fund sector and are especially pronounced for corporate bond funds (**Chart 4.4**, panel a). Following the US tariff announcements in early April, sizeable outflows from funds investing in comparatively riskier asset types, such as high-yield corporate debt or emerging markets assets, have illustrated the potential for amplification dynamics as investors react procyclically to changes in fund returns (**Chart 4.4**, panel b). Given the significant liquidity mismatches, these funds may have to sell their less liquid assets at unfavourable terms to meet redemptions. This could lead to a further drop in fund performance, put market prices under additional downward pressure and encourage more investors to redeem their shares. High levels of trade policy uncertainty accompanied by bouts of market volatility could increase the risk of sudden share redemptions. In particular, large volatility in equity markets could expose equity funds to redemption shocks should trade tensions

intensify. Significant holdings in US assets may also be at risk of further spillovers from US market shocks and rising volatility in currency markets (**Chapter 2**; **Chart 4.2**, panel b). In the current environment of prolonged periods of high uncertainty, funds' resilience could gradually weaken over time as more frequent outflows limit their ability to restore liquidity to adequate levels.

**Chart 4.4**

Liquidity mismatches and procyclical fund flow dynamics can amplify market shocks




Sources: ECB (CSDB), EPFR Global, LSEG Lipper and ECB calculations.
Notes: IG stands for investment-grade; HY stands for high-yield. Panel a: the redemption coverage ratio (RCR) measures investment funds' resilience to redemption shocks, following the methodology set out in the November 2023 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. The box plots display the distribution per fund group of the resulting fund-level RCRs. The whiskers refer to the 5th and 95th percentiles. MMFs stands for money market funds.
*) 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.

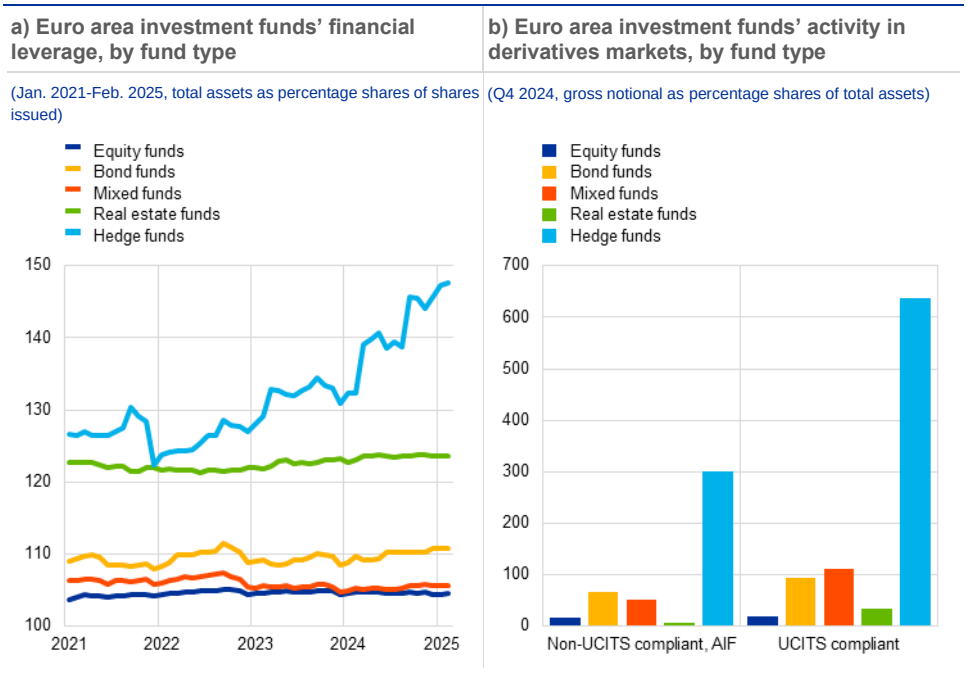
**Euro area hedge funds increased their leverage in 2024, with sizeable derivative exposures in both alternative and UCITS funds.** Although hedge funds remain a comparatively small subsector of euro area investment funds[61], it is a segment with a high concentration of potential leverage-related risks. Hedge funds increased their financial leverage further in 2024 and early 2025 (**Chart 4.5**, panel a) from levels which were already structurally higher than in other investment fund types. They make significant use of synthetic leverage in the form of derivative exposures, which may give rise to margin calls during spikes of market volatility and re-enforce liquidity vulnerabilities in the sector. Euro area hedge funds regulated under the Undertakings for Collective Investment in Transferable Securities (UCITS) Directive have become more prevalent and tend to take on significant amounts of derivative exposures (**Chart 4.5**, panel b). Internal value-at-risk models used to determine leverage limits under the UCITS Directive may underestimate the risks related to leverage.

61 Total assets of euro area funds classified as hedge funds according to the ECB's investment fund statistics amounted to €595 billion at the end of 2024.

Furthermore, in contrast to funds regulated under the Alternative Investment Fund Managers Directive (AIFMD), the authorities currently lack the power to impose stricter leverage limits where excessive levels are deemed to pose a potential risk for financial stability (**Section 4.4**).

**Chart 4.5**

Rising leverage in both UCITS and alternative hedge funds




Sources: ECB (EMIR, IVF) and ECB calculations.
Notes: UCITS stands for undertakings for collective investment in transferable securities; AIF stands for alternative investment fund.

## Box 5

### Examining the dynamics of liquid asset holdings in the non-bank financial sector

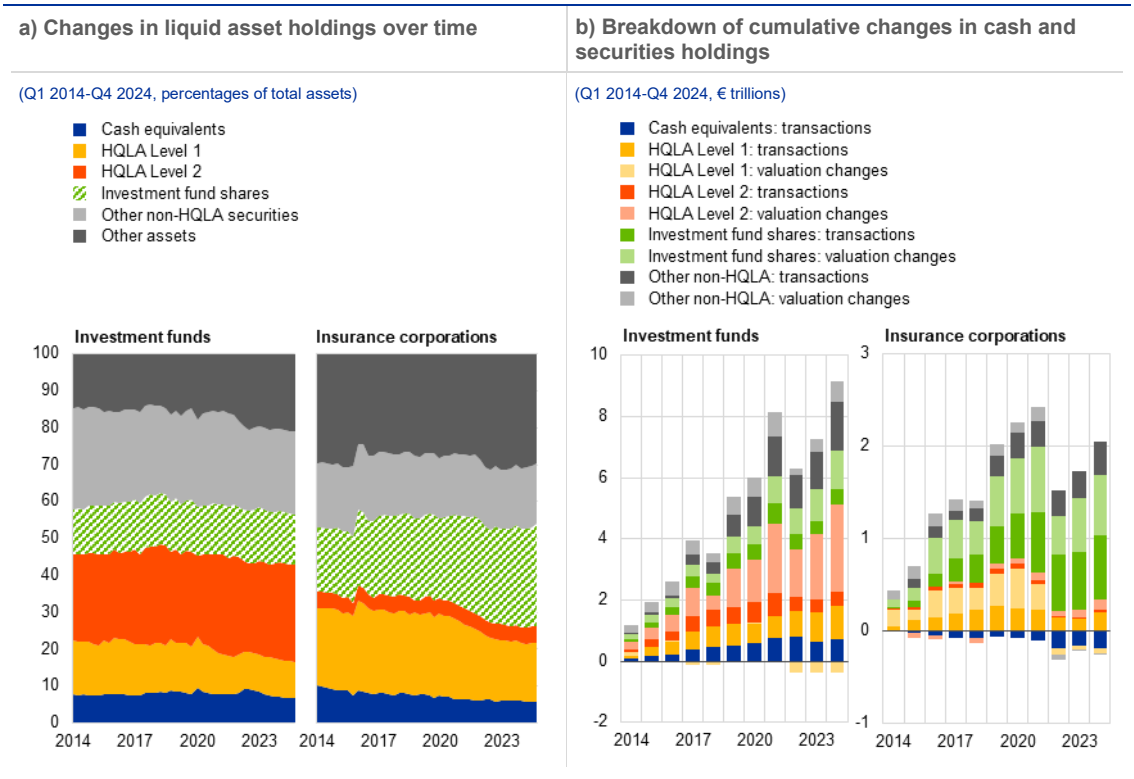
**Prepared by Paolo Alberto Baudino, Pierce Daly and Manuela Storz**

**Non-banks' liquid asset holdings have continued to decline in recent years, impacting their capacity to absorb shocks.** In particular, the share of cash equivalents and high-quality liquid asset (HQLA)[62] Level 1 holdings in both investment funds and insurance corporations have fallen substantially over the past four years (**Chart A**, panel a). These assets ensure that non-banks can meet their payment obligations in a timely manner, enabling them to absorb potential shocks and support euro area financial stability. This is especially important during stressed market conditions: if there are insufficient liquid asset holdings to meet sudden margin calls or redemptions, non-banks may have to sell illiquid assets at unfavourable terms. This could trigger financial contagion across different markets and amplify stress episodes.

[62] HQLA levels are defined according to Commission Delegated Regulation (EU) 2015/61. This regulation defines HQLA Level 1 as the most liquid assets, including bonds issued by EU Member States and related authorities/entities or high-rated covered bonds with large issuances. HQLA Level 2 is further divided into Levels 2A and 2B. Level 2A generally includes various types of liquid bond that meet explicit liquidity criteria, while Level 2B also includes shares from major stock indices that meet specific stress conditions.

**Chart A**

Investment shifts and valuation changes have made non-banks' aggregate portfolios less liquid



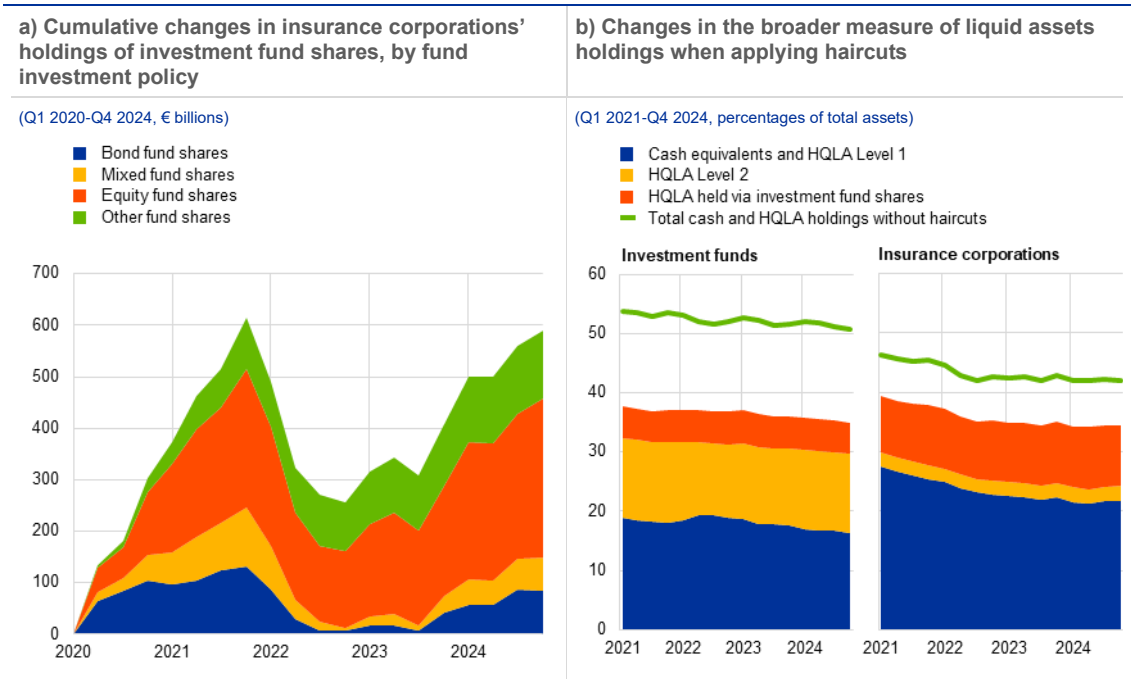

Sources: ECB (CSDB, ICB, IVF, SHS) and ECB calculations.
Notes: Cash equivalents include deposits, currency, loan claims and money market fund shares. The levels of high-quality liquid assets (HQLA) are defined according to Commission Delegated Regulation (EU) 2015/61. Panel b: the cumulative valuation changes of asset classes may be defined as the variation in holdings that is not attributable to transactions.

**The declining share of the most liquid assets in non-banks' aggregate portfolios has been driven by changes in asset valuations and portfolio rebalancing towards non-HQLA assets.** For investment funds, the drop in the share of cash and HQLA Level 1 holdings has been fuelled by relatively higher valuation gains on HQLA Level 2 equity holdings and growing investment in other non-HQLA assets. This has occurred alongside valuation losses on HQLA Level 1 bond holdings when interest rates started to rise in 2022 (**Chart A**, panel b). Insurance corporations have faced similar valuation effects, with valuation losses on Level 1 bonds playing a more significant role given their greater portfolio weight. Additionally, insurers have changed their long-term investment behaviour: a shift away from cash equivalents was accompanied by a higher allocation of investment fund shares, notably equity fund shares (**Chart B**, panel a), which also benefited significantly from valuation gains.

**Aggregate HQLA holdings may overestimate the ability of non-banks to raise cash when they need it most, since not all assets remain equally liquid under stress.** In particular, HQLA Level 2 holdings, which in the investment fund and insurance sector consist primarily of traded equities, can suffer sharp valuation losses during periods of market stress and it may only be possible to liquidate them at a significant discount. Haircuts inspired by HQLA regulation can be used to proxy liquidity availability in stressed periods. While the share of HQLA Level 2 holdings has increased directly for investment funds and indirectly for insurance corporations via equity fund shares, the share of readily available liquidity after applying these haircuts has continued to decline (**Chart B**, panel b).

**Chart B**

A larger share of equities may make it harder to liquidate assets during periods of market stress




Sources: ECB (BSI, CSDB, ICB, IVF, SHS) and ECB calculations.
Notes: Panel a: "Other fund shares" includes holdings in hedge funds, real estate funds and other fund shares. Panel b: haircuts are applied based on Commission Delegated Regulation (EU) 2015/61 to proxy the liquidity of various types of instrument in periods of stress. Assets held via investment fund shares are obtained following the look-through approach outlined by Carvalho and Schmitz*. Total HQLA holdings without haircuts contain cash equivalents, HQLA Level 1 securities and HQLA Level 2 securities held both directly and via investment fund shares. Cash equivalents include deposits, currency, loan claims and money market fund shares.
*) 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.

**Furthermore, access to liquidity held via investment fund shares may be uncertain in stress periods, which increases the risk of financial contagion between non-bank sectors.** Although a greater portfolio allocation to investment fund shares may diversify liquidity sources, access to this liquidity depends on a fund's ability to satisfy redemption requests. This liquidity risk transfer requires further monitoring as it can give rise to financial contagion, making it difficult to assess the risks in the financial sector from a systemic perspective.

## 4.3 Insurance and pension fund sectors remain resilient, but uncertainty poses risks

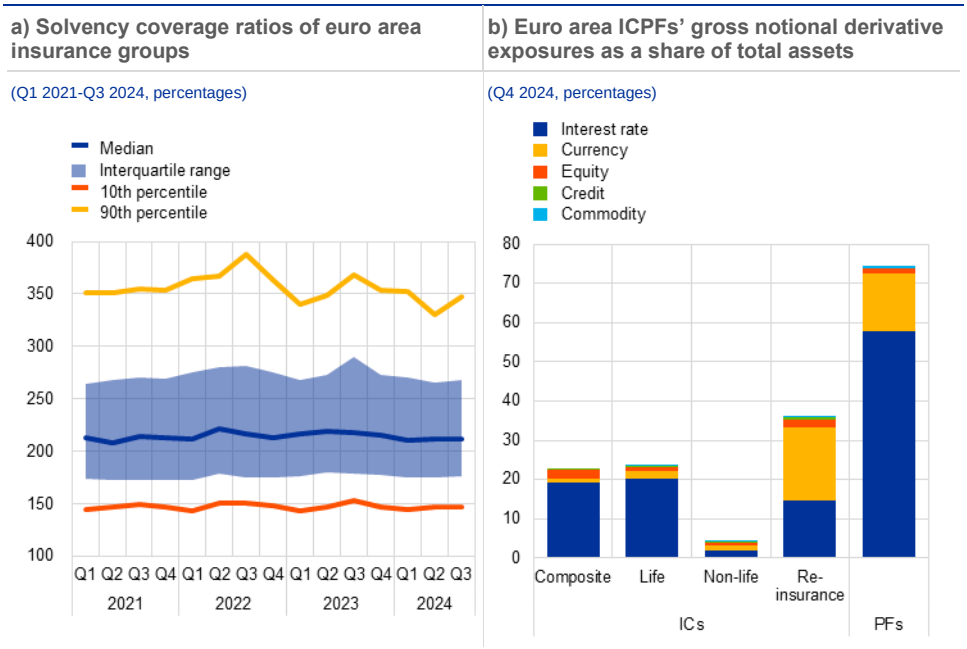
**The euro area insurance and pension fund sectors remain resilient on aggregate, but geopolitical and macroeconomic uncertainty poses risks.** The Solvency Capital Requirement (SCR) coverage ratios of euro area insurance groups have remained well above the regulatory minimum of 100% (**Chart 4.6**, panel a).[63] Despite this, uncertainty stemming from trade conflicts, geopolitical risks and potential

[63] Where insurers employ transitional measures, the reported SCR ratios are higher in crisis periods owing to the higher discount rates used to calculate the market values of liabilities. The SCR does not take into account potential unrealised losses in insurers' asset portfolios. For further discussion, see "Report on long-term guarantees measures and measures on equity risk 2020", EIOPA, December 2020.

financial market volatility could affect euro area insurance corporations and pension funds (ICPFs) through the portfolio valuation, liquidity and underwriting channels. This includes risks stemming from elevated financial market and exchange rate uncertainty, particularly for US exposures. Euro area ICPFs have large holdings of US dollar-denominated assets, although the share varies across countries (**Section 4.1**). The associated exchange rate risks are typically hedged by derivatives, but shocks in US financial markets could still have a negative impact on the valuations of these portfolios.

**Chart 4.6**

Insurers' solvency remains strong, while ICPFs have extensive derivative exposures




Sources: ECB (EMIR, ICB, PFBR), EIOPA and ECB calculations.
Note: Panel a: the minimum required solvency coverage ratio is 100%; panel b: ICs stands for insurance corporations; PFs stands for pension funds.

**More generally, ICPFs remain vulnerable to potential liquidity pressures that could arise from margin calls on their derivative exposures.** ICPFs make extensive use of interest rate derivatives for hedging purposes, with total gross notional exposures to derivatives being heterogeneous across countries and largest among reinsurers and pension funds (**Chart 4.6**, panel b).[64] ICPFs – especially pension funds – experienced a rise in margin calls on these derivative exposures following the announcement of US tariffs at the beginning of April, which they appear to have been able to meet (**Section 4.1**). However, further sharp or sudden changes in either financial market volatility or long-term interest rates could result in renewed, and possibly large, margin calls. This would leave ICPFs vulnerable to potentially rising liquidity pressures that could, in turn, require them to sell assets. A decline in high-quality liquid assets in insurers' portfolios (**Box 5**) suggests that the sector is not as well prepared to deal with liquidity shocks from margin calls as it was in the past.[65]

64 For more discussion on ICPF hedging, see "Financial Stability Report", EIOPA, December 2022.

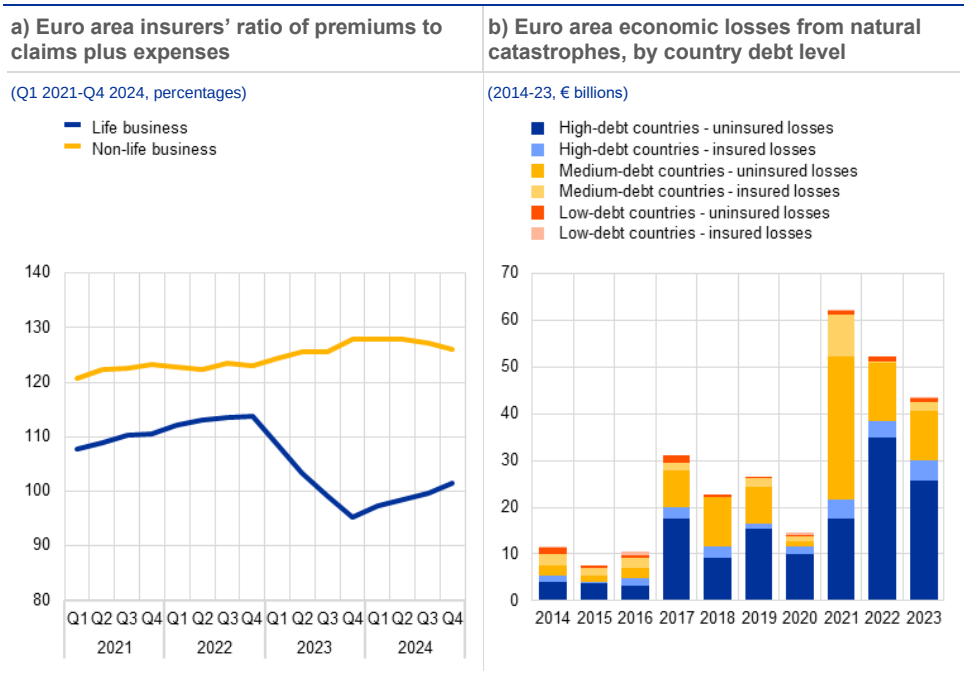
65 The decline in the share of liquid assets has been partly driven by the fall in the value of longer-dated (and typically highly liquid) bonds held by ICPFs since mid-2022 following the turn in the interest cycle.

Previous stress events, such as the March 2020 market turmoil, show that liquidity pressures faced by ICPFs can also propagate stress across the wider financial system. It is therefore important that ICPFs strengthen their liquidity preparedness to ensure they can meet margin calls.

**Additionally, the profitability outlook for the insurance sector remains uncertain, despite signs of improvement for life insurers.** Underwriting profitability – as measured by the ratio of premiums written to the sum of net claims incurred and expenses – remains strong for non-life insurers, while life insurers have seen improvements over the course of 2024 (**Chart 4.7**, panel a). However, the outlook for underwriting profitability remains uncertain for both sectors. The materialisation of downside risks to economic growth could negatively affect underwriting performance. Trade tensions could also have an impact on insurers that offer policies on trade-related risks (e.g. trade credit, transit and exchange rate insurance) or via investments in trade-intensive corporates (**Section 4.1**). Similarly, higher inflation uncertainty could have an impact on premium repricing and on the costs associated with insurance claims and expenses.

**Chart 4.7**

Profitability outlook for insurers uncertain amid rising natural catastrophe risks




Sources: ECB (LIG), European Environment Agency (Climate-ADAPT), Risklayer (CATDAT) and ECB calculations.
Note: Panel a: four-quarter rolling average ratio of net premiums written to the sum of net claims incurred plus total expenses for large euro area insurance groups' life business and non-life business (e.g. the ratio for Q3 2024 is an average for the period Q4 2023-Q3 2024). Panel b: climate-related natural catastrophes include climatological events relating to extreme temperatures, droughts and wildfires; meteorological events relate to storms; and hydrological events relate to floods and mass movements of soil. The share of insured losses is presented in terms of rolling ten-year averages (e.g. 2014 values reflect the average for the period 2005-14). Low-debt euro area countries are classified as those with debt-to-GDP ratios of less than 60%, medium-debt countries as those with ratios between 60% and 100%, and high-debt countries as those with ratios greater than 100%.

**Non-life insurers also face growing challenges from the physical risks associated with climate-related natural catastrophes.** The increasing frequency and severity of natural catastrophes due to climate change are causing growing economic losses through the destruction of physical property and infrastructure and a

reduction in economic activity. In Europe, preliminary evidence suggests that natural disasters resulted in €30 billion of economic losses in 2024, of which only €13 billion was insured.[66] A historical comparison, however, shows that a large proportion of economic losses in the euro area has typically always been uninsured, and the long-run average share of insured losses is continuing to fall across the euro area as a whole.[67] The proportion of economic losses not covered by insurance (the insurance protection gap) could widen even further going forward as non-life property insurers, who appear most exposed to rising insured losses, raise policy prices in response. Higher premiums could also result in such coverage becoming unaffordable, thereby eroding the underwriting business of these insurers.

**A widening insurance protection gap is also a source of systemic risk.** Physical damage has a negative impact on asset values, leading to the repricing of the loans and securities of financial institutions in higher-risk areas. It also increases the potential burden on the public sector, both in terms of the macroeconomic risks and in terms of the greater fiscal spending required to cover uninsured losses. This is particularly relevant given that the more highly indebted euro area countries are also those facing the largest economic costs from climate-related natural catastrophes, most of which are uninsured (**Chart 4.7**, panel b). This highlights the importance of taking policy action aimed at reducing the climate insurance protection gap.

## 4.4 Enhancing the NBFI policy framework from a macroprudential perspective and supporting resilient capital markets

**Non-banks play a crucial role in capital market development, yet they operate without a comprehensive macroprudential framework.** The euro area non-bank financial intermediation (NBFI) sector has grown significantly since the global financial crisis to become a vital source of funding for the real economy. This growth has helped to diversify sources of financing and support capital market development. Nevertheless, parts of the NBFI sector display notable vulnerabilities. Liquidity mismatch and leverage are pronounced in parts of the investment fund sector and have been rising over the past few years (**Section 4.2**). Moreover, the decline in high-quality liquid assets in insurers' portfolios suggests that the sector is not as well prepared to deal with liquidity shocks as it was in the past (**Box 5**). This is especially important during stressed market conditions, when non-banks may have to sell illiquid assets, thereby amplifying liquidity stress. Previous examples of this include the March 2020 market turmoil and the 2022 UK gilt market stress. Excessive leverage in hedge funds and other leveraged investment funds can amplify stress via the position liquidation and counterparty credit risk channels. It is therefore important that the NBFI policy framework is strengthened from a macroprudential perspective, as the current framework focuses primarily on investor protection and market integrity rather than on reducing systemic risk.

66 See "Natural disasters in 2024", MunichRe, January 2025.

67 See "Towards a European system for natural catastrophe risk management", EIOPA-ECB, December 2024.

**An effective macroprudential policy framework for non-banks requires EU-wide coordination to be enhanced.** Given the significant cross-border activities in the asset management sector, a nationally based framework might not be sufficient to ensure that EU-wide risks to financial stability are dealt with consistently. To guarantee a level playing field within the EU and reduce the potential for regulatory fragmentation or arbitrage, it is essential that cooperation between European and national authorities is strengthened.[68] The framework should ideally rest on a common set of rules and standards across the EU, accompanied by coordinated supervisory action at the EU level. Against this backdrop, two elements should be prioritised: (i) a mechanism for the reciprocation of macroprudential policy measures, and (ii) granting the European Securities and Markets Authority (ESMA) "top-up" powers to be used in collaboration with national authorities and after consulting the European Systemic Risk Board (ESRB). ESMA would be tasked with coordinating the reciprocation requests – in consultation with the ESRB – to ensure that macroprudential measures also apply to the exposures of non-domestic entities operating in, or exposed to, the market of another EU Member State. In addition, ESMA – in collaboration with national macroprudential authorities and competent authorities and after consulting the ESRB – should be given the power to request the implementation of new macroprudential measures or to top up existing national measures. The combination of reciprocation and top-up powers would help address EU-wide risks and overcome inaction bias against activating policy tools in the NBFI sector.

**The macroprudential policy toolkit should be expanded by adding a dedicated tool for addressing structural liquidity mismatch in open-ended funds.** Article 25 AIFMD, which allows authorities to limit excessive leverage in alternative investment funds, is currently the only macroprudential tool for investment funds.[69] To enhance this macroprudential toolkit, the Eurosystem suggests introducing a similarly dedicated macroprudential tool to address liquidity mismatch in open-ended funds.[70] The tool should be used to enhance resilience in advance, thereby safeguarding financial stability. For example, authorities could use the tool to impose longer notice periods or other measures to mitigate liquidity mismatch in open-ended funds. To ensure consistent implementation of such macroprudential tools, ESMA, in consultation with the ESRB, should play a greater role in policy coordination across the EU, as discussed above.

**It is essential to close the regulatory gaps under the UCITS Directive that relate to leverage in complex funds.** While most UCITS funds are subject to direct leverage limits, the current framework allows funds with hedge fund-like strategies to use value-at-risk (VaR) models to determine their leverage indirectly. This could potentially lead to higher leverage levels than are typically permitted under the more

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

69 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".

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

widely used commitment approach.[71] A comparison between UCITS using hedge fund-like strategies and hedge funds under the AIFMD shows that such UCITS generally display higher levels of gross leverage (**Section 4.2**). They also tend to be more complex and more interconnected and face higher liquidity risk.[72] While authorities have tools which can be used to contain excessive leverage in alternative funds, they do not have such tools for UCITS funds. Closing this gap is therefore crucial to address potential systemic risks arising from leverage in UCITS. The Eurosystem suggests introducing discretionary powers that would allow authorities to impose stricter leverage limits on these funds if they posed a risk to financial stability (in the same way that Article 25 AIFMD does). It also recommends that all UCITS funds should be required to report their leverage using the commitment approach.[73]

**Addressing leverage-related risks requires a global perspective and a multi-faceted approach, targeting specific entities or activities.** Given the cross-border dimension and the complexities involved in tackling risk arising from NBFI leverage, as well as its interlinkages with liquidity risk, a comprehensive, global approach is needed to close policy gaps.[74] This includes activity-based measures (such as haircuts and margins), entity-based measures (such as leverage limits), guidance on leverage providers and enhanced transparency to promote market discipline. Even if measures have differing primary objectives (e.g. reducing procyclical deleveraging or cutting counterparty losses), they can directly or indirectly limit leverage build-up. For instance, while entity-based measures like leverage limits directly target leverage, they might not apply to entities such as hedge funds or family offices. In the latter case, activity-based measures like margin requirements could partly compensate for a lack of entity-based measures. However, haircuts and margins may be less effective in targeting the build-up of concentrated positions and, if set too strictly, could impose excessive hedging costs on end users. The authorities thus need to carefully balance key trade-offs (effectiveness, feasibility and potential costs) when designing policy measures.

**Authorities with a macroprudential mandate must have access to granular data on non-banks if they are to monitor risks effectively.** While the European System of Central Banks (ESCB) collects a range of data from non-banks to carry out its tasks, the ESCB does not yet have access to NBFI entity level data collected for supervisory purposes (e.g. reported under the AIFMD, the UCITS Directive, Solvency II or MiFID/MiFIR). The relevant EU regulations should include provisions which ensure that the ESCB has timely and efficient access to such granular NBFI data to support its financial stability tasks. This could help mitigate inefficiencies in data collection and enhance usability, while also reducing the reporting burden on non-banks. Given the cross-border activities in capital markets, further work will be needed at the global

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71 See the box entitled "The use of synthetic leverage by undertakings for collective investment in transferable securities", EU Non-bank Financial Intermediation Risk Monitor 2024, ESRB, June 2024, pp.18-21.

72 See "Risks in UCITS using the absolute Value-at-Risk approach", *ESMA TRV Risk Analysis*, ESMA, 24 April 2025.

73 Under the commitment approach, derivative exposures are converted into cash-equivalent positions, resulting in "global exposure" after netting and reinvested cash collateral. For UCITS funds that do not use a VaR approach, global exposure must not exceed the fund's total net asset value.

74 The Financial Stability Board (FSB) is exploring policies aimed at addressing risks from NBFI leverage. See "Leverage in Non-bank Financial Intermediation", *Consultation report*, FSB, 18 December 2024.

level to improve international consistency in the definition and calculation of relevant risk metrics, improve data quality and coverage, and enhance information sharing across borders.

**Mobilising capital markets is key to deepening the EU's Single Market and providing sufficient and diverse sources of financing for innovative firms.** Current challenges include a reliance on bank lending, fragmented equity markets, underdeveloped venture capital markets and disparities in capital market development, leading to inefficient capital allocation and higher financing costs. To address these issues, the EU must deepen its equity markets and channel savings into productive sectors.[75] The European Commission's savings and investment union strategy includes a number of actions that can support this objective.[76]

- Introducing an EU standard for savings and investment products with coordinated tax incentives could boost retail participation in capital markets and enhance financial integration. Together with steps to encourage pension savings (e.g. via automatic enrolment into a retirement savings scheme), this is an important way of meeting the challenges of an ageing population (**Special Feature C**).
- Reducing the debt-equity bias in taxation and taking action to support investment in equity could further promote equity financing and diversify the sources of financing in the economy. In particular, it could attract institutional investors and improve the venture capital landscape (**Box 6**).
- Harmonising company and securities law would support market integration and make listing and trading in the EU more attractive.
- A coherent regulatory framework for a single capital market necessitates harmonisation in areas like insolvency regimes and accounting rules, which currently hinder cross-border market functioning.

**Advancing the capital markets union requires better integrated supervision and policies that ensure stability in the NBFI sector.** Integrated supervision of EU capital markets is vital for the development of a capital markets union. This will ensure that the European supervisory authorities, particularly ESMA and EIOPA, have the resources they need to perform their tasks and will guarantee the kind of governance that supports decision-making that works in the interests of the EU.[77]

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75 See "Statement by the ECB Governing Council on advancing the Capital Markets Union", ECB, 7 March 2024, in which the Governing Council outlined priorities; and Lagarde, C., "Follow the money: channelling savings into investment and innovation in Europe", ECB, 22 November 2024.

76 See "Commission unveils Savings and Investments Union strategy to enhance opportunities for European citizens and businesses", *press release*, European Commission, 19 March 2025.

77 This may involve directly supervising the most systemic cross-border capital market actors, in cooperation with their national supervisors. See "Statement by the ECB Governing Council on advancing the Capital Markets Union", op. cit.

## Box 6

### Private markets: risks and benefits from financial diversification in the euro area

**Prepared by Katharina Cera, Alessandro Ferrante and Oscar Schwartz Blicke**

**Private market financing can bring both benefits and risks for euro area financial stability.** While private equity (PE) and private credit (PC) markets in the euro area remain small in comparison with their longer established and more developed North American peers and with the size of domestic bank lending and public markets, they have seen remarkable growth over the last decade.[78] Euro area corporates may also receive cross-border financing from the bigger global private markets in addition to domestic private markets.[79] This box studies the impact of private markets on the productivity and risk metrics of euro area firms and discusses the ways in which risks may propagate to the traditional financial system.[80]

**Corporates financed via private markets tend to demonstrate higher levels of productivity, with investment increasing after private market involvement.** Companies with access to private market financing show significantly higher productivity levels than companies financed solely by banks.[81] This applies across the entire sample, irrespective of sectoral composition (**Chart A**, panel a). At the same time, private market entry does not in itself seem to have any effect on the median company's productivity levels in the short term (**Chart A**, panel b). This suggests that there is a positive screening effect by private market participants, who might have higher risk-bearing capacities and are better incentivised than banks to identify and finance innovative but riskier companies for several reasons. Private equity investors benefit more directly from productivity improvements as opposed to bank creditors whose upside is capped at the full repayment of the loan principal and whose relevant time horizon is often too short to capture long-term productivity gains. Furthermore, banks often rely on collateral, which more innovative and riskier firms might not be able to provide, and may prefer to finance companies with lower risk profiles in later stages of corporate lifecycles.[82] In addition, adding private market financing to a company's financing mix seems to be followed by increases in companies' intangible assets and long-term investments, showing the

78 According to PitchBook Data Inc., the total assets of PE and PC funds domiciled in the euro area stood at €628 billion and €106 billion respectively in the second quarter of 2024 while in North America they stood at €5 trillion and €1.2 trillion respectively. In the euro area, PE markets have grown at an annualised rate of 9% since 2010 and PC markets at 13% in the same period, although growth in PC funds has slowed down since 2021.

79 Out of 4,569 PE deals between 2015 and 2024 involving euro area domiciled firms, 25% of deals had a non-euro area sponsor. During the same period, out of 1,240 PC deals to euro area domiciled firms, 65% included a non-euro area sponsor. Data are based on S&P Global Market Intelligence and PitchBook Data Inc. releases.

80 For an introduction to private markets, see the special feature entitled "Private markets, public risk? Financial stability implications of alternative funding sources", *Financial Stability Review*, ECB, May 2024. For estimates of total factor productivity (TFP), this box relies on the methodology used in the special feature entitled "Low firm productivity: the role of finance and the implications for financial stability", *Financial Stability Review*, ECB, November 2024. It uses the approach adopted by Levinsohn, J. and Petrin, A., "Estimating Production Functions Using Inputs to Control for Unobservables", *Review of Economic Studies*, Vol. 70, Issue 2, 2003, pp. 317-341, using data from Orbis for Belgium, Germany, Spain, France, Italy and Portugal. Since the estimation method does not account for intangible assets, it might overestimate TFP for firms with high levels of such assets.

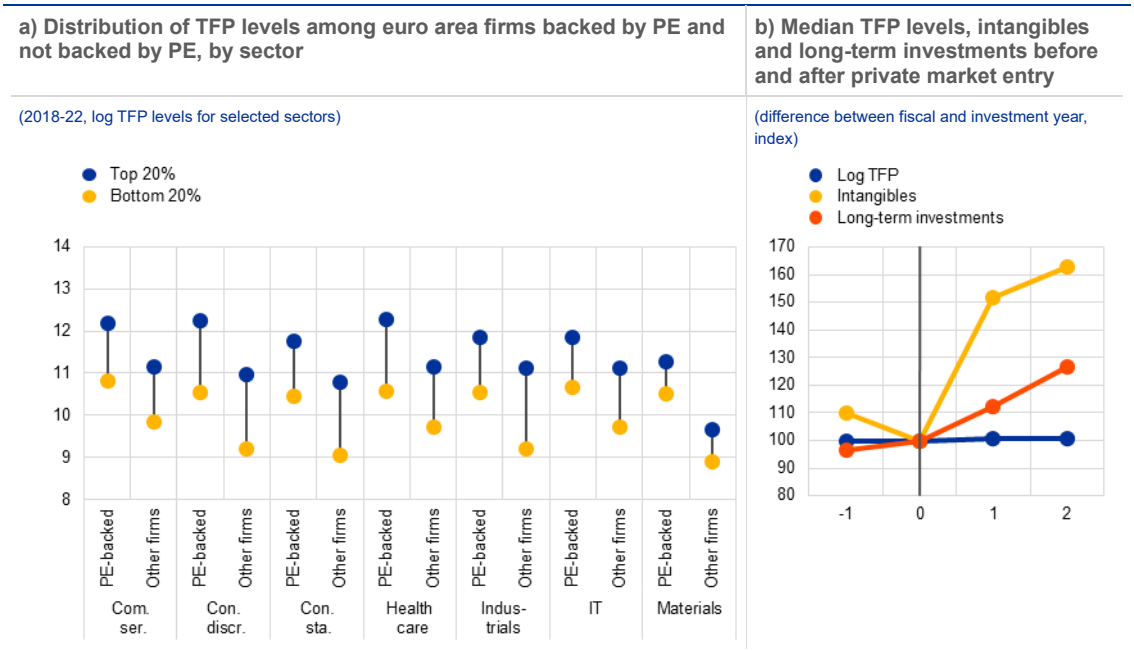
81 Throughout this box, private market financing refers to private equity and private credit without further distinction. Data availability is better for PE-backed corporates, but a significant share of PE deals are financed by private credit.

82 This is in line with evidence that PE investors spend significant resources on screening and evaluating potential investments. See Gompers, P., Kaplan, S.N. and Mukharlyamov, V., "What do private equity firms say they do?", *Journal of Financial Economics*, 2014. See also the special feature entitled "Low firm productivity: the role of finance and the implications for financial stability", *Financial Stability Review*, ECB, November 2024.

potential benefits private markets bring to financing innovations. These investments may continue to have a positive impact on productivity levels over the medium to long term.

**Chart A**

Private markets tend to finance more productive and innovative corporates




Sources: BvD Electronic Publishing GmbH – a Moody's Analytics company, S&P Global Market Intelligence, PitchBook Data Inc. and ECB calculations.
Notes: TFP stands for total factor productivity. Panel a: Com. ser. stands for communication services; Con. discr. stands for consumer discretionary; Con. sta. stands for consumer staples. Companies backed by private markets are identified as those which have received financing from PE firms since 2015. The control group includes private corporates that have not been part of a PE or PC deal since 2015 and have not been part of M&A transactions with PE involvement, so we assume they are being financed solely by banks. Sector classification is based on S&P Global Market Intelligence. The size of the samples varies across sectors between 41 and 335 corporates for PE-backed firms and between 322 and 19,282 corporates for the control group. The energy, financials, utilities and real estate sectors are excluded due to an insufficient number of observations. Panel b: The x-axis depicts the difference between the fiscal year and the investment year. Constant samples of 471 (Log TFP), 1,045 (Intangibles) and 942 (Long-term investments) corporates per indicator receiving private market financing in t=0. Data have been cleaned of outliers and indexed to 100 in t = 0 to improve readability. Intangibles, other than goodwill, and long-term investments are relative to total assets.

**While risk metrics worsen for companies following a private market investment, the potential for spillovers to euro area non-bank financial entities appears limited, but concerns remain around concentration of risks and complex bank lending exposures.** For the median company, the entry of private markets is associated with higher indebtedness and decreased capacity to pay interest (**Chart B**, panel a).[83] Euro area financial institutions are exposed to the risks associated with private markets, both directly and indirectly, but data gaps hinder a full assessment of these interlinkages.[84] Banks are exposed via strategic partnerships with and lending exposures to private market players and via common lending exposures to corporates which are also financed by private markets. Empirical evidence shows that private credit appears to partly substitute bank credit, while

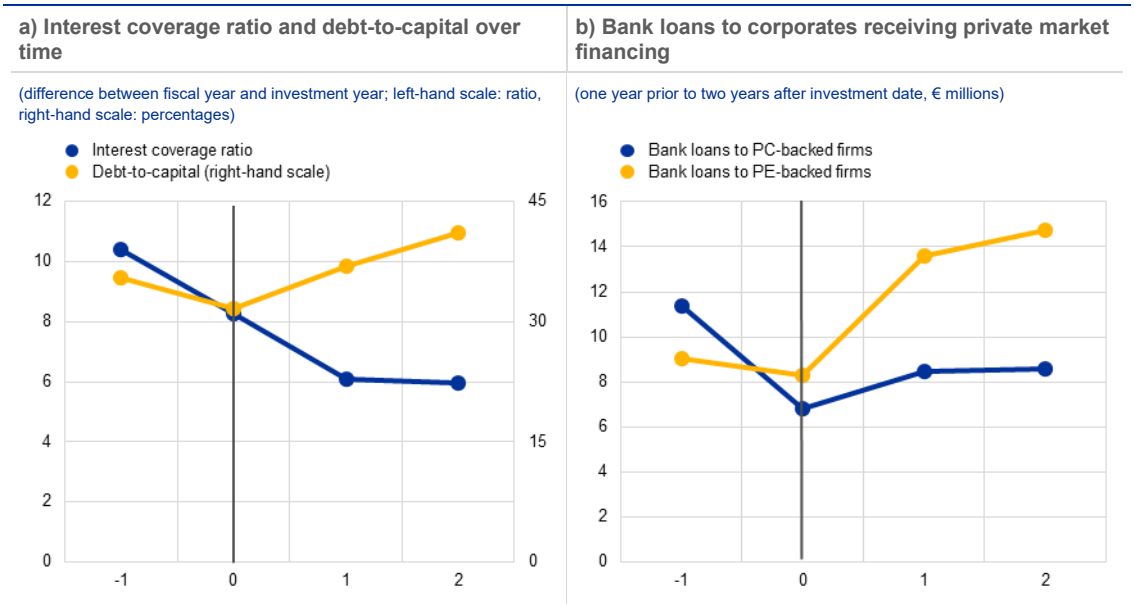
83 While neither PE nor PC strategies are broken down further in this box, the evidence suggests in particular that leveraged buyouts − the main strategy of PE players − cause companies to leverage up. See the box entitled "Financial stability implications of private equity", *Financial Stability Review*, ECB, May 2020. The relatively high level of liquidity coverage ratios might be due to biases in the firm sample where larger, less leveraged and public firms are overrepresented. Results may also be affected by changes in interest rates.

84 For a more detailed discussion of the links between euro area institutions and private markets and implications for banking supervision, see the special feature entitled "Private markets, public risk? Financial stability implications of alternative funding sources", *Financial Stability Review*, ECB, May 2024 and the article entitled "Complex exposures to private equity and credit funds require sophisticated risk management", *Supervision Newsletter*, ECB, November 2024. Lending exposures of banks to private market players, such as private market firms, investors and funds, can take the form of capital call financing, net asset value (NAV) lending and back-leveraging of loan portfolios.

leveraged buyouts (the predominant PE strategy) cause bank lending exposures to increase following a PE investment (**Chart B**, panel b).[85] Non-bank financial institutions' aggregate direct exposures to private markets, which are primarily the result of investments by insurance corporations and pension funds in private funds, are not alarming in the euro area. The emerging trend of PE firms acquiring (life) insurance companies could, however, lead to the concentration of exposures in single entities.[86]

**Chart B**

Risk metrics worsen after private markets are added to the median company's financing mix and firms' bank exposures change with the entry of private markets




Sources: BvD Electronic Publishing GmbH – a Moody's Analytics company, S&P Global Market Intelligence, PitchBook Data Inc., ECB (AnaCredit) and ECB calculations.
Notes: Panel a: The x-axis depicts the difference between the fiscal year and the investment year. Constant sample of 866 (Interest coverage ratio) and 1,084 (Debt-to-capital) corporates per indicator receiving private market financing in t=0. Data have been cleaned of outliers. Interest coverage ratio is defined as EBITDA divided by gross interest payments. Panel b: The x-axis depicts the difference between observing date and investment date. Constant sample of 224 PE- and 81 PC-backed firms receiving bank funding from euro area banks. Bank funding is the average debt from bank loans other than overdrafts, convenience credit, extended credit, credit card credit, revolving credit other than credit card credit, reverse repurchase agreements, trade receivables and financial leases.

**Private markets bring both benefits and risks for euro area financial stability, although data scarcity and opaqueness hinder a comprehensive risk assessment.** Private markets finance productive and innovative firms, which has a positive impact on euro area financial stability. This is because a more productive and resilient economy is associated with better asset quality, stronger economic growth and hence reduced risk for financial institutions and markets. However, corporates' risk metrics deteriorate after private market financing is added to their financing mix. Aggregate exposures to private markets in the euro area are not alarming, as the main investors in private markets are insurers and pension funds, which typically have high risk-bearing capacities and long-term investment horizons. But potential risks may be concealed in concentrated exposures,

85 Firms backed by private credit see an immediate decrease in bank credit, assumingly highlighting bank loan repayments. Firms backed by private equity see a steady bank debt increase, assumed to be due to leveraged buyout associated loans reported after investment dates.

86 See Cortes, F., Diaby, M. and Windsor, P., "Private equity and life insurers", *Global Financial Stability Notes*, International Monetary Fund, December 2023; "Section 8: In focus – Emerging vulnerabilities at the intersection of the private equity and the life insurance sectors", *Financial Stability Report*, Bank of England, November 2024; and Garavito, F., Lewrick, U., Stastny, T. and Todorov, K., "Shifting landscapes: life insurance and financial stability", *BIS Quarterly Review*, Bank for International Settlements, September 2024.

opaque interlinkages and bank lending exposure to private market players. Additionally, private-market-backed firms, and especially PE-backed firms, seem to continue to rely on banks after receiving private market funding, pointing to common exposures between banks and private markets. Data scarcity hinders a full risk assessment, and further monitoring is warranted.

# Special Features

## A Just another crypto boom? Mind the blind spots

**Prepared by Senne Aerts, Alexandra Born, Zakaria Gati, Urszula Kochanska, Claudia Lambert, Elisa Reinhold and Anton van der Kraaij**

*The market capitalisation of crypto-assets has surged recently, fuelled by positive and broadening investor interest, including from traditional finance. Several key financial stability risks associated with crypto-assets have been identified in past editions of this publication, and by the Financial Stability Board. They include, among others: interconnectedness with traditional finance; market volatility and lack of transparency; liquidity and maturity mismatches; and leverage and concentration. This special feature focuses on the first two. For these sources, risks for financial stability in the euro area appear limited, but there are signs that interconnectedness between the crypto-asset ecosystem and the traditional financial sector is strengthening. As it does, new channels of potential contagion are opening up, warranting closer monitoring. At the same time, euro area households' direct exposures are slowly rising from low levels. Data gaps, especially for the crypto exposures of non-banks and leverage, pose challenges both for monitoring and for assessing the scale of these sources of systemic risk. It is therefore essential that these data gaps be closed and that responsible authorities remain vigilant. Although the EU has established a stringent regulatory framework, global regulation is either fragmented or absent, raising the risk of regulatory arbitrage and contagion from abroad.*

### 1 Introduction

**Investor interest in crypto-assets has grown enormously, leading to significant valuation gains.** Crypto-asset valuations hit a new all-time high in 2024, with market capitalisation reaching USD 3.7 trillion (**Chart A.1**). The boom was driven by two developments in the United States. These were the US Securities and Exchange Commission's approval of spot Bitcoin exchange-traded products (ETPs) in January 2024 and expectations of increasingly favourable regulatory and enforcement regimes for crypto-assets under the new US Administration. In the first three months of 2025, however, crypto-asset market capitalisation fell significantly, dropping to USD 2.8 trillion by end-March. At the same time, venture capital investment in blockchain infrastructure and mining rose.[87] In the EU, the regulatory clarity provided by the Markets in Crypto-Assets Regulation (MiCAR) has reduced some of the risks associated with those crypto-assets covered by the regulation and listed in Europe. It

[87] According to "Crypto VC Trends – Q4 2024", PitchBook, February 2025, from 2021 to 2024 venture capital investments in crypto-related businesses totalled USD 77 billion, though the USD 10 billion invested in 2024 remained below the peak in 2022. At the same time, the value of venture capital deals grew by 40% between 2023 and 2024 for blockchain network companies and by 11% for infrastructure and developer tools companies.

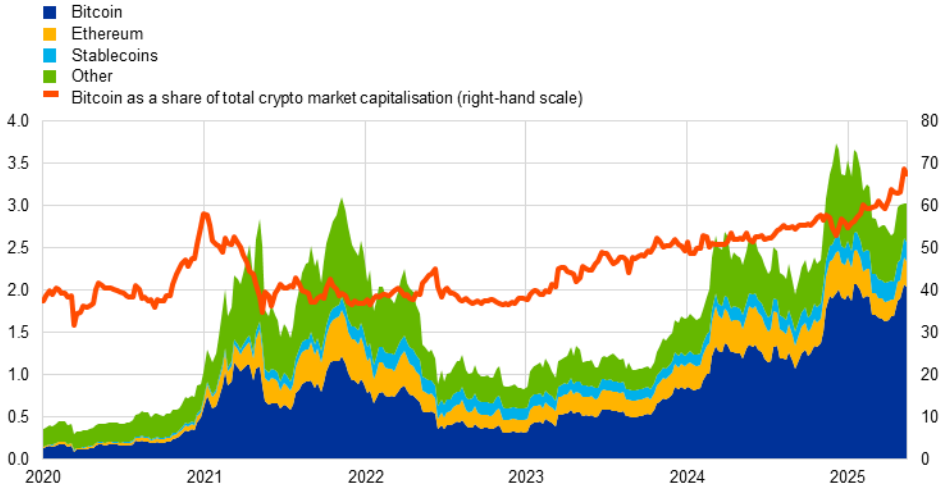
has also raised investor interest in crypto-assets, with an increase in the number of authorised crypto-asset service providers.[88]

**Chart A.1**

Crypto market valuations reached an all-time high in 2024

**Crypto-asset market capitalisation and Bitcoin's share of the total market**

(Jan. 2020-May 2025; left-hand scale: USD trillions, right-hand scale: percentages)




Sources: CoinDesk data, IntoTheBlock and ECB calculations.
Notes: "Stablecoins" covers the combined market capitalisation of 24 US dollar-denominated stablecoins. "Other" covers more than 10,000 crypto-assets tracked across more than 300 crypto-asset trading platforms.

**Crypto-assets can affect financial stability through a number of channels and vulnerabilities:** interconnectedness with traditional finance; market volatility and lack of transparency; liquidity and maturity mismatches; and leverage and concentration.[89] This special feature focuses on the first two channels. The following section assesses the risk of market volatility, especially negative wealth effects. There then follows an analysis of the implications for financial stability of interlinkages between crypto-assets and the euro area financial sector. On the basis of these vulnerabilities, data gaps are identified which could hinder robust risk analysis.

## 2 Wealth effects intensify amid rising crypto valuations and modest household exposures

**Rising crypto-asset valuations, coupled with increasing investor exposures, are raising the risks of adverse wealth effects.** As holdings rise, adverse crypto-asset price changes have a greater impact on retail and institutional investors,

88 According to ESMA's Interim MiCA Register (as updated on 12 May 2025), 26 providers have been officially authorised to date as crypto-asset service providers (CASPs) in the EU. Transitional periods apply to providers that offered crypto-asset services before 30 December 2024.

89 See "Assessment of Risks to Financial Stability from Crypto-assets", Financial Stability Board, February 2022.

especially given the high volatility displayed by most crypto-asset prices.[90] Should a crash occur, depending on how these exposures are financed and if there are liquidity mismatches, losses might be amplified, with potential knock-on effects on the financial system and the real economy.[91]

**Bitcoin has been attracting particularly strong attention from investors outside the crypto-asset ecosystem.** The latest crypto bull market was characterised by disproportionately strong interest in Bitcoin, with the share of this crypto-asset in total crypto-asset market capitalisation rising from around 40% in 2022 to over 60% in May 2025 (**Chart A.1**). The launch of spot Bitcoin exchange-traded products (ETPs) in the United States has been a key enabler of this expansion, with aggregate assets under management for these assets totalling over USD 125 billion as of May 2025.[92] The market for regulated Bitcoin derivatives has also grown strongly, with Bitcoin futures on the Chicago Mercantile Exchange (CME) reaching more than USD 19 billion in open interest.[93] The growth of Bitcoin-related products has led some major asset managers to consider Bitcoin as an investment which could potentially be used for improving portfolio diversification.[94]

**While Bitcoin has offered early investors high returns, it remains a highly volatile and speculative investment.** Bitcoin produced exceptionally high returns in 2024. Its market capitalisation increased by more than 120%, outperforming major technology stocks (**Chart A.2**, panel a) as well as most other crypto-assets. Nevertheless, Bitcoin prices remain highly volatile, as do the prices of other crypto-assets (with the exception of stablecoins). In 2024 Bitcoin prices were twice as volatile as gold prices and nearly three times as volatile as the S&P 500. What matters for portfolio diversification is the correlation of returns, and in this respect they appear to be closely correlated with the returns of risky assets. Indeed, Bitcoin prices have historically co-moved closely with the market values of (leveraged) investments in technology stocks. At the same time, Bitcoin returns have shown almost no historical correlation with those of gold (**Chart A.2**, panel a). This means Bitcoin has shown limited portfolio diversification benefits for equity portfolios. Apart from price, Bitcoin's security and integrity relies on having a sufficiently large number of miners with high

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90 In relation to high volatility, the only exception is stablecoins, which aim to maintain a stable value relative to one or several currencies or to other assets. However, stablecoins cannot guarantee their peg at all times, as has become apparent in a number of examples of such assets temporarily or permanently losing their peg. For instance, Tether and USD Coin, the two largest stablecoins, temporarily lost their pegs in 2022 and 2023 respectively.

91 Crypto-asset trading platforms offer high leverage to retail investors as highlighted in the Special Feature Decrypting financial stability risks in crypto-asset markets. *Financial Stability Review*, ECB, May 2022.

92 Bitcoin ETPs provide investors with a convenient, regulated way to invest in Bitcoin, often with better liquidity and lower trading costs than direct purchases on crypto exchanges. Figures quoted are as of 5 May 2025, based on Bitcoin Treasuries by BiTBO.

93 See the Commitments of Traders report from the Commodity Futures Trading Commission. On 21 January 2025, open interest on Bitcoin futures (each representing five Bitcoins) totalled 38,556 on the CME, which corresponded to USD 19.6 billion.

94 See, for example, "How bitcoin may impact your portfolio", Fidelity, November 2024, and Wager, B. and Gates, M., "Why bitcoin? A perspective from model portfolio builders", BlackRock, February 2025.

computational capacity to prevent any single mining entity from grabbing control.[95] New Bitcoins enter the limited Bitcoin supply as block rewards to miners, in exchange for the computational power they offer the Bitcoin network. Block rewards are halved about once every four years, reducing the rate of new Bitcoins being mined[96] and, as a consequence, miners' income.[97] At the same time, the computational power required for mining is rising exponentially (**Chart A.2**, panel b), leading to greater hardware investment and energy consumption. Rising costs in the absence of matching income could result in miners making an exit, increasing mining concentration, and could render the Bitcoin network more vulnerable to cyberattacks or incidents like the one seen in 2013.[98] This could raise financial stability concerns if households and financial institutions had significant exposures to Bitcoin. Loss of the Bitcoin network's security and integrity could have further implications for the crypto-asset market more generally, given the outsized role played by Bitcoin within the crypto-asset ecosystem.

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95 If a group of miners controls more than 50% of the network's computational capacity it effectively controls the authorisation of transactions (including transaction fees, which transactions to process and double-spending). As of February 2025 the four largest mining pools combined already accounted for more than half of the network's hashrate. In June 2014, the mining pool Ghash.io voluntarily committed to staying below 40% processing power, after they had reached 51%. See Hern, A., "Bitcoin currency could have been destroyed by '51%' attack", *The Guardian*, 16 June 2014. See also Belsham, T., "What is a Bitcoin worth?", *Bank Underground*, Bank of England, 14 December 2021.

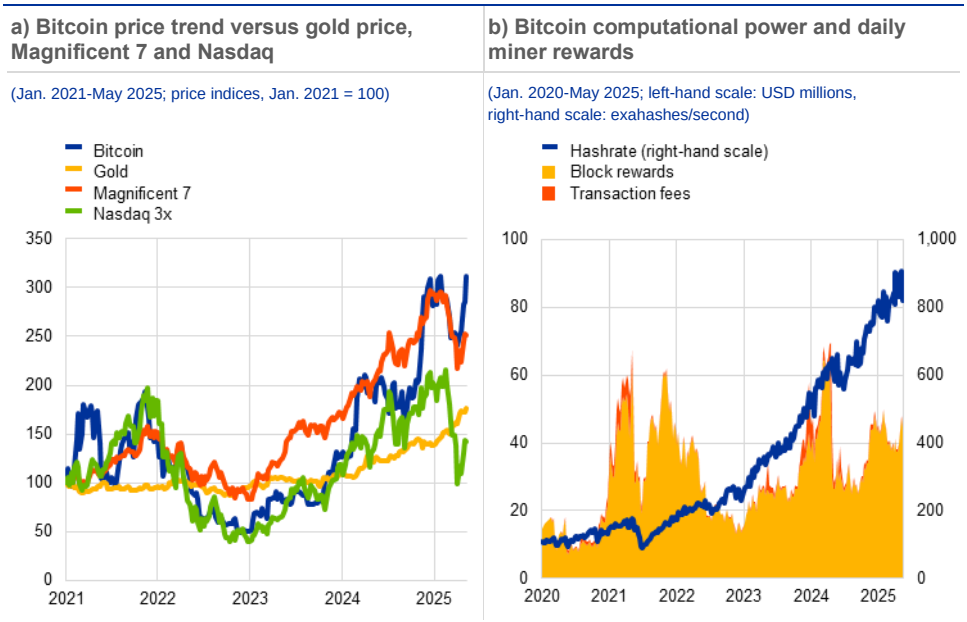
96 The halving mechanism steadily reduces the rate of new Bitcoin entering circulation and will eventually reach zero once the maximum supply of 21 million coins has been mined. This is forecasted to occur in around 2140. See also Belsham, T., op. cit.

97 Miners generate income through block rewards and transaction fees, with the former typically representing 95% of overall proceeds. The gradual decline in block rewards should be compensated for either by higher Bitcoin prices or by significantly higher transaction fees. Otherwise, mining profits will decline.

98 Bitcoin integrity was lost when developers accidentally introduced a change to the rules of the Bitcoin protocol. See Buterin, V., "Bitcoin Network Shaken by Blockchain Fork", *Bitcoin Magazine*,13 March 2013.

**Chart A.2**

Bitcoin remains a highly volatile and risky asset




Sources: IntoTheBlock, Bloomberg Finance L.P., S&P Global Market Intelligence and ECB calculations.
Notes: Panel a: "Magnificent 7" is represented by the Magnificent 7 Total Return Index, and comprises the stocks of Alphabet, Amazon, Apple, Meta, Microsoft, Nvidia and Tesla. Nasdaq 3x represents the three-times leveraged Nasdaq 100 total return index. Panel b: computational power is measured by the network's hashrate, which is the speed of generating hashes. Hashes are created when miners process transaction data using encryption algorithms. Having more mining capacity on the network increases computational power and leads to higher hashrates.

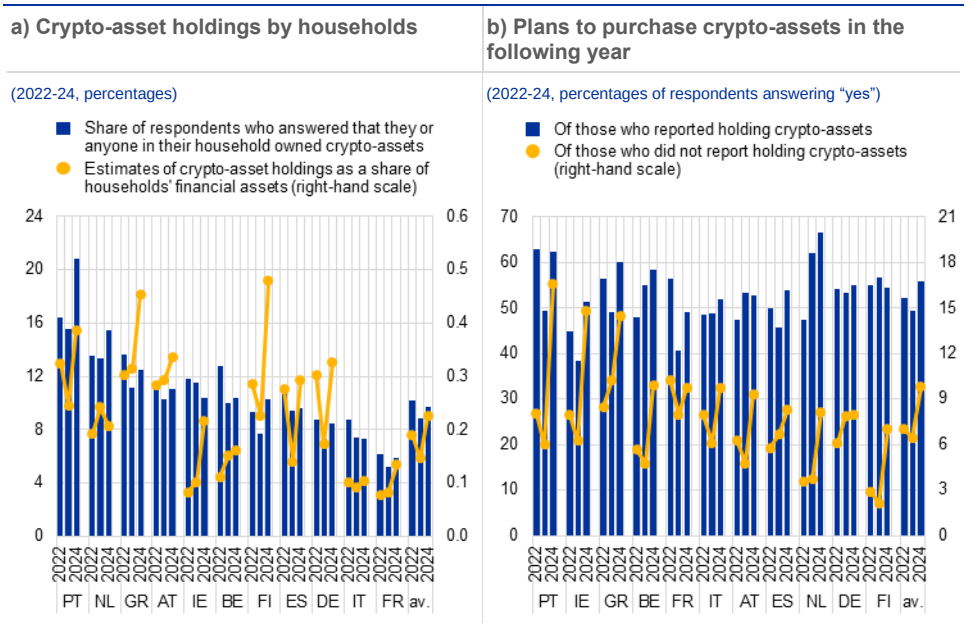
**Euro area households currently have limited exposure to crypto-assets, including Bitcoin.** The ECB's November 2024 Consumer Expectations Survey (CES)[99] covering selected euro area countries indicated that, on average, 9.7% of survey respondents (or someone in one of these households) owned crypto-assets, down slightly from the November 2022 figure. Most owners of crypto-assets have a relatively small exposure: 54% of respondents reported holdings of below €1,000 and 91% of respondents reported holdings of below €20,000. Translating this into actual holdings suggests that households hold at least €75 billion in crypto-assets. This estimate represents about 0.23% of household financial assets and 3% of total crypto-asset market capitalisation (**Chart A.3**, panel a).

**Households have been exhibiting increasing interest in owning crypto-assets, however, which could increase risks of adverse wealth effects going forward.** CES results show that over half of crypto-asset owners plan to buy more. Even among those households not holding crypto-assets in 2024, 10% said they planned to buy crypto-assets the following year. The share varies across countries and can be as high as 17% (**Chart A3**, panel b). While CES results confirm that crypto-assets are mainly used for the purposes of investment and speculation, further data and official statistics are needed to understand crypto-asset usage and to measure household exposure and potential wealth effects precisely.

[99] See the Consumer Expectations Survey in depth and related data and methodological information pages on the ECB's website.

**Chart A.3**

Growing interest in crypto-asset ownership




Sources: ECB (CES), Eurostat, ECB (QSA) and ECB calculations.
Notes: The CES sample aims to be representative by age, gender and region. The recruitment process effectively screens out respondents who do not use the internet. Other surveys exist that aim to gather information on retail holdings of crypto-assets. They may differ in terms of the scope of the questions asked or coverage, which may lead to higher or lower figures for crypto-asset ownership or crypto-asset related activities in the countries covered. The estimates are based on the lower bounds of 15 crypto-asset holding brackets and the respective respondent shares applied to the number of households by country. "av." stands for the aggregated average across the included countries.

## 3 Increasing interconnectedness with traditional finance

**Risks from the crypto-asset ecosystem can also be transmitted through an increasing number of interlinkages with the traditional financial system.** These interlinkages stem from direct exposures through banks and non-banks as well as from indirect exposures through holdings of crypto-asset-related investment products, banks providing services to the crypto-asset industry and stablecoins holding traditional financial assets.

**Although euro area banks' exposures to the crypto-asset ecosystem remain limited, they are growing.** By the end of 2024, the direct holdings of euro area significant institutions of crypto-assets were limited (around €1 million, up from around €66,000 in 2023).[100] Similarly, exposures to derivatives with crypto-assets as the underlying also grew between 2023 and 2024, from around €400 million to €600 million. At the same time, significant institutions are becoming increasingly exposed indirectly to crypto-assets through services such as custody (i.e. the safekeeping or control of assets on behalf of clients) and deposit-taking from crypto-related

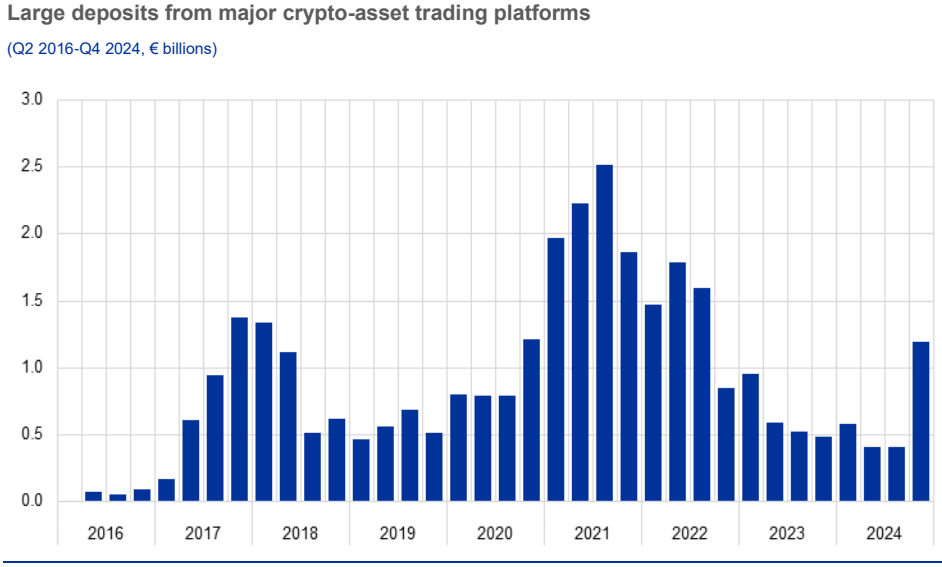
[100] These exposures do not include crypto-assets that would qualify as financial instruments.

businesses.[101] For example, euro area significant institutions provided €4.7 billion of custody services related to crypto-assets and crypto-related investment products in 2024, up from around €400 million in 2023. Moreover, banks increasingly offer crypto-related services such as brokerage and trading.

**Banks only hold limited amounts of deposits from companies which have crypto-related business models.** In principle, heavy reliance and concentration of funding sourced from companies with crypto-related business models could pose liquidity risks should crypto-asset market conditions become adverse. This was demonstrated in March 2023 by the failure of a small US bank that had been offering services to crypto-asset clients.[102] An analysis using data for the ten largest depositors per bank, focusing only on key crypto-asset trading platforms, shows that fewer than ten euro area banks obtain funding from such trading platforms, with the amounts being very small. Specifically, these deposits stood at just €1.2 billion in the fourth quarter of 2024, dropping from €2.5 billion in the third quarter of 2021 (**Chart A.4**). Given the requirements of MiCAR for stablecoin issuers to hold part of their reserves at EU banks, an increase in deposits sourced from stablecoin issuers in the future cannot be excluded.

**Chart A.4**

Euro area banks receive limited deposits from major crypto-asset trading platforms




Sources: ECB (supervisory data) and ECB calculations.

**For now, financial intermediaries appear to be holding very limited amounts of crypto-asset-related investment products.** In the fourth quarter of 2024 euro area investors held €17 billion in crypto-asset-related investment products, of which around

[101] Another indirect exposure could arise through lending to crypto-related businesses. The available data suggest that lending by euro area banks to crypto-related businesses was limited (€123 million) in 2024. In addition, the European Banking Authority (EBA) and the European Securities and Markets Authority (ESMA) have shown that in 2023 and 2024 EU consumers and financial institutions only engaged with crypto-lending, borrowing and staking services to a limited extent. See "Recent developments in crypto-assets (Article 142 of MiCAR)", *Joint Report*, EBA, ESMA, 2025.

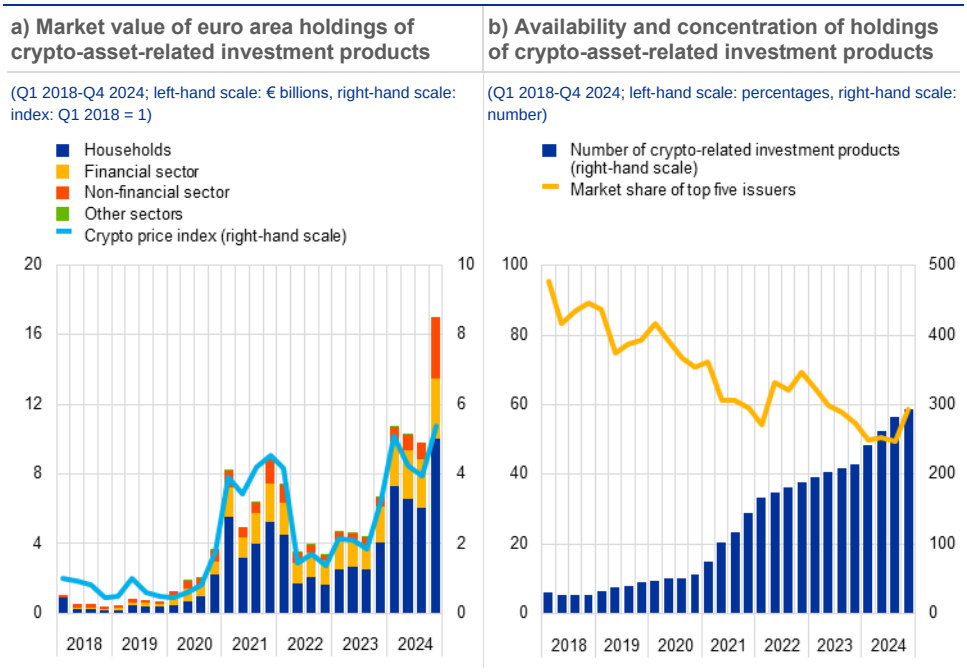
[102] See, for example, "FSB Global Regulatory Framework for Crypto-Asset Activities", Financial Stability Board, July 2023, and Yue, F., "Crypto-friendly Signature Bank shut down by regulators after collapses of SVB, Silvergate", MarketWatch, 12 March 2023.

€3.4 billion (20%) was held by the euro area financial sector (**Chart A.5**, panel a). Most investment products were held by households (€10 billion, or 59%), while the non-financial sector held another €3.5 billion (21%).

**The growing availability of regulated crypto-asset-related investment products may, however, encourage investment by traditional financial intermediaries.** The number of crypto-asset-related investment products that euro area holders invest in has grown steadily, increasing from 215 in the fourth quarter of 2023 to 294 in the fourth quarter of 2024.[103] Investments are concentrated in just a few products, but the top five have been losing market share since the fourth quarter of 2022 as more investment products become available (**Chart A.5**, panel b). With institutional investors exhibiting increasing interest in crypto-assets, the wider availability of regulated crypto-asset-related investment products could encourage additional investment in crypto-assets, possibly resulting in stronger interconnectedness between traditional financial intermediaries and the crypto-asset ecosystem in the future. This is further facilitated by traditional exchanges that are increasingly offering trading and clearing for these investment products.[104]

**Chart A.5**

Euro area investments in crypto-asset-related investment products are picking up




Sources: ECB (SHS), Bloomberg Finance L.P. and ECB calculations.
Notes: Panel a: fluctuations in market values are caused by transactions, exchange rate effects, price effects and various other factors. "Crypto price index" refers to the Bloomberg Galaxy Crypto Index, which is a benchmark crypto price index measuring the performance of the 12 largest crypto-assets by market capitalisation. The chart covers 294 crypto-asset-related investment products in Q4 2024. "Financial sector" includes banks, investment funds, insurance corporations, pension funds and other financial corporations. "Non-financial sector" includes non-financial corporations and governments.

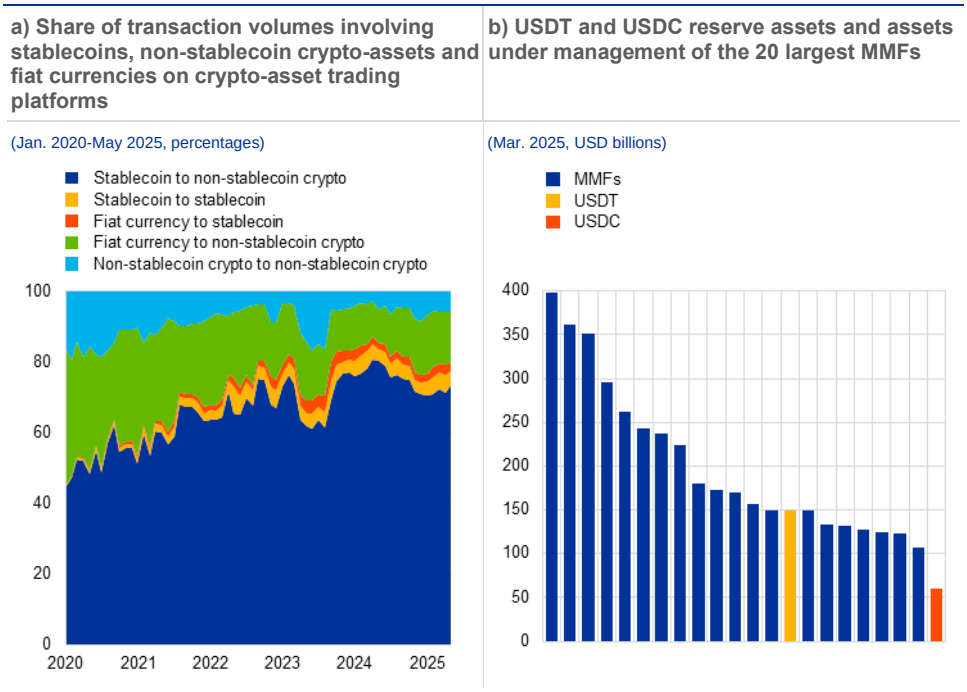
[103] It should be noted that while the nominal value of euro area investments in crypto-related investment products has increased only slowly over time, the market value of these holdings has fluctuated wildly, in line with crypto-asset prices.

[104] Crypto-related investment products are now traded on some of the largest exchanges, with crypto-asset ETPs offered on exchanges such as the NYSE, the Nasdaq, Cboe and Xetra.

**The market for stablecoins – a specific type of crypto-asset – is growing rapidly.** Stablecoins are an important part of the crypto-asset ecosystem, facilitating the trading and exchange of fiat currencies for non-stablecoin crypto-assets and vice versa. They are now used in around 80% of all trades executed on crypto-asset trading platforms, up from 45% five years ago (**Chart A.6**, panel a). Although the use of stablecoins outside the crypto-asset ecosystem is currently still limited, their rapid growth warrants continuous monitoring. With asset holdings and maturity transformation modalities that are similar to those of money market funds (MMFs), they have similar vulnerabilities.[105] The market capitalisation of the largest US dollar-denominated stablecoins had increased to around USD 231 billion as of May 2025 (**Chart A.1**). Two US dollar-denominated stablecoins predominate: Tether (USDT), with a market capitalisation of USD 149 billion and a market share of 65%, and Circle (USDC), with a market capitalisation of USD 62 billion and a market share of 27%. Euro-denominated stablecoins licensed under MiCAR had a market capitalisation of around USD 338 million as of end-April 2025.[106]

**Chart A.6**

Stablecoins have become an indispensable part of the crypto-asset ecosystem and hold significant traditional financial assets




Sources: CoinDesk Data, LSEG Lipper, Tether attestations, Circle attestations and ECB calculations.
Notes: Panel a) includes 37 centralised crypto-asset trading platforms with a rating of B and above according to CryptoCompare. Non-stablecoin crypto to non-stablecoin crypto trading includes trades where Bitcoin, Ether, Ripple, Binance Coin or Solana are used as a trading pair. Panel b: net assets for MMFs and reserve assets for USDT and USDC as at 31 March 2025. Reserve assets for USDT and USDC consist predominantly of US Treasuries, reverse repos, shares in MMFs, cash and bank deposits.

[105] For more details, see the article entitled "Stablecoins' role in crypto and beyond: functions, risks and policy", *Macroprudential Bulletin*, Issue 18, ECB, 2022.

[106] MiCAR has established a licence regime for stablecoins in the EU, where those crypto-assets that aim to stabilise their value by referencing only one official currency are defined as e-money tokens (EMTs). Currently, eleven institutions are licensed to issue a total of 18 EMTs. Of these 18 EMTs, eleven are denominated in euro. MiCAR also defines "asset-referenced tokens" (ARTs), which aim to stabilise their value by referencing another value or right, or a combination thereof, including one or several official currencies. There are currently no authorised ARTs.

**Stablecoins have several interlinkages with the traditional financial sector in the United States.** Based on their own reporting, USDT and USDC invest significant shares of their reserve assets in US Treasuries, especially in short-duration instruments such as Treasury bills. In fact, the size of their reserve assets is comparable to those of the largest MMFs in the world that invest in sovereign debt instruments (**Chart A.6**, panel b).

**The positive stance taken by some authorities towards crypto-assets may attract further interest from the financial sector, driving up prices.** Investor sentiment received a boost from news of some authorities' plans to create "strategic" Bitcoin reserves and that some central banks are giving consideration to including Bitcoins in their investment portfolios.[107] Following through on these plans may send a signal to the traditional financial sector that Bitcoin, as well as other crypto-assets, is a conventional investible asset class. It could also drive up Bitcoin prices still further if such strategic reserves came with additional purchases of Bitcoins.[108]

## 4 Data gaps mask the true size of the risks posed by crypto-assets

**Data gaps and reporting lags, especially for the non-bank financial intermediation (NBFI) sector, pose challenges for robust financial stability assessment.** Regulatory and ad hoc reporting for the euro area banking sector provide a relatively good picture of the contagion channels running from crypto-assets to the banking system, especially in combination with the EU regulatory treatment of banks' exposures to crypto-assets.[109] Some data are available for certain segments of the euro area NBFI sector and suggest very limited exposures.[110] However, reporting, prudential rules and supervision for the euro area NBFI sector are not as comprehensive as they are for the banking sector. As a consequence, responsible authorities have blind spots on possible contagion channels running between crypto-assets and non-banks. This is particularly the case for spot holdings of crypto-assets and the use of leverage. Besides data on exposures, assessing

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107 Strategic Bitcoin reserves are being discussed or proposed in multiple countries, including Brazil, Switzerland and the United States. See Ward, S., "Nations States Turn To Bitcoin As A Strategic Reserve Asset", Forbes, January 2025. While Česká národní bank is exploring the possibility of adding Bitcoin to its reserves, ECB President Christine Lagarde has stated that she is confident that "Bitcoin will not enter the reserves of any of the central banks of the General Council"; see Monetary Policy Statement of 30 January 2025.

108 At the limit, some have argued that the payoffs of Bitcoin investing are similar to those of a Ponzi scheme; see also van Oordt, M.R.C., "Bitcoin valuation: Transactional demand versus speculative bubble", *VoxEU Column*, December 2024.

109 Since 1 January 2025 credit institutions are obliged to comply with Article 501d, "Transitional provisions on the prudential treatment of crypto-assets", of the EU's Capital Requirements Regulation. This means that, with two exceptions, banks' exposures to crypto-assets must be assigned a risk weight of 1,250%. Exposures to tokenised traditional assets, including e-money tokens, should be treated as exposures to the traditional assets they represent, while exposures to asset-referenced tokens – whose issuers comply with MiCAR and reference traditional assets – would receive a risk weight of 250%. In addition, the value of a bank's total exposure to crypto-assets with a risk weight of 1,250% should not exceed 1% of that bank's Tier 1 capital.

110 For example, direct exposure to crypto-assets represented 0.02% of assets under management for the European insurance sector in September 2023; see "Financial Stability Report", EIPOA, June 2024. An April 2022 survey revealed that only a tiny fraction of European alternative investment funds were exposed to crypto-assets; see "Crypto-assets and their risks for financial stability", *TRV Risk Analysis*, ESMA, October 2022.

financial stability risks also requires reliable data on the crypto-asset ecosystem, including data on crypto-related fraud.

**Contagion effects on the NBFI sector may be larger than the available data are able to portray.** So far, all crypto busts witnessed have had only limited financial stability implications, as losses have mostly been contained within the crypto-asset ecosystem and have mainly affected retail holders.[111] Increasingly positive investor sentiment from traditional finance, coupled with limited visibility of the interlinkages between non-banks and the crypto-asset ecosystem, could raise hidden sources of financial stability risk, with possible knock-on effects for banks.

## 5 Conclusion

**If the current trends of rapid growth and increasing interconnectedness with traditional finance continue, crypto-assets will eventually pose risks to euro area financial stability.** For now, these risks still appear to be limited – crypto-assets have not yet become an integral part of traditional finance. However, the combination of rising crypto-asset prices and traditional financial institutions entering the crypto-asset market raises possibilities for substantial contagion channels from crypto-assets to traditional finance to open up.

**Moreover, data gaps pose challenges for monitoring and assessing the direct and indirect contagion channels from the crypto-asset ecosystem to the financial sector.** Blind spots exist, in particular for exposures to the less-regulated NBFI sector, and the use of leverage. Hence, it cannot be excluded that hidden pockets of vulnerability already exist in the NBFI sector, with possible knock-on effects for banks. Looking forward, it is crucial that these data gaps are closed and that supervisory authorities remain vigilant.

**The implementation of international crypto-asset standards remains fragmented at the global level.** The EU has implemented a stringent regulatory framework through MiCAR. At the global level, however, regulation remains fragmented, raising the risk that regulatory arbitrage and cross-border contagion could undermine effective risk mitigation efforts in the EU.[112] Given the global nature of crypto-assets, it is of paramount importance for the G20's crypto-asset roadmap to be implemented globally. This would include the FSB's recommendations on regulating crypto-asset markets and activities and the Basel standard for banks' exposures to crypto-assets.[113]

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111 Except for the March 2023 turmoil in which crypto-asset exposure appears to have played a non-negligible role to the collapse of Signature Bank and Silvergate Bank.

112 In the United States, federal stablecoin regulation is being discussed in Congress (see the GENIUS Act of 2025 and the STABLE Act of 2025).

113 In October 2024 the Financial Stability Board (FSB) and the International Monetary Fund (IMF) reported on progress made in implementing the policy and regulatory responses developed by the FSB, the IMF and standard-setting bodies. The report gives an overview of jurisdictional progress as well as activities undertaken by the FSB, IMF and standard-setting bodies to foster implementation. It stresses how challenges such as the inconsistent implementation of the FSB Framework may hinder its effectiveness and lead to regulatory arbitrage. See "G20 Crypto-asset Policy Implementation Roadmap: Status report", Financial Stability Board, October 2024.

# B Risks to euro area financial stability from trade tensions

**Prepared by Pauline Avril, Paul Bochmann, Stephan Fahr, Aoife Horan, Cosimo Pancaro and Riccardo Pizzeghello**

*Trade tensions can be a threat to financial stability, with both the implementation of trade restrictions and trade policy uncertainty resulting in adverse consequences. In this special feature, we show that trade policy uncertainty can adversely affect the real economy as well as banks' funding, asset quality, profitability and lending. Policy authorities need to identify risks stemming from trade tensions, monitor their transmission and evaluate their potential impact on financial stability. Sound capital and liquidity buffers are financial institutions' first line of defence to absorb shocks stemming from trade disruptions. However, banks should also conduct regular assessments to identify and evaluate these specific risks. In addition, they should diversify portfolios to minimise their exposure to such risks. A box within the special feature analyses the risks of euro area equities repricing across sectors in response to developments in the United States, with a particular focus on news relating to trade policy.*

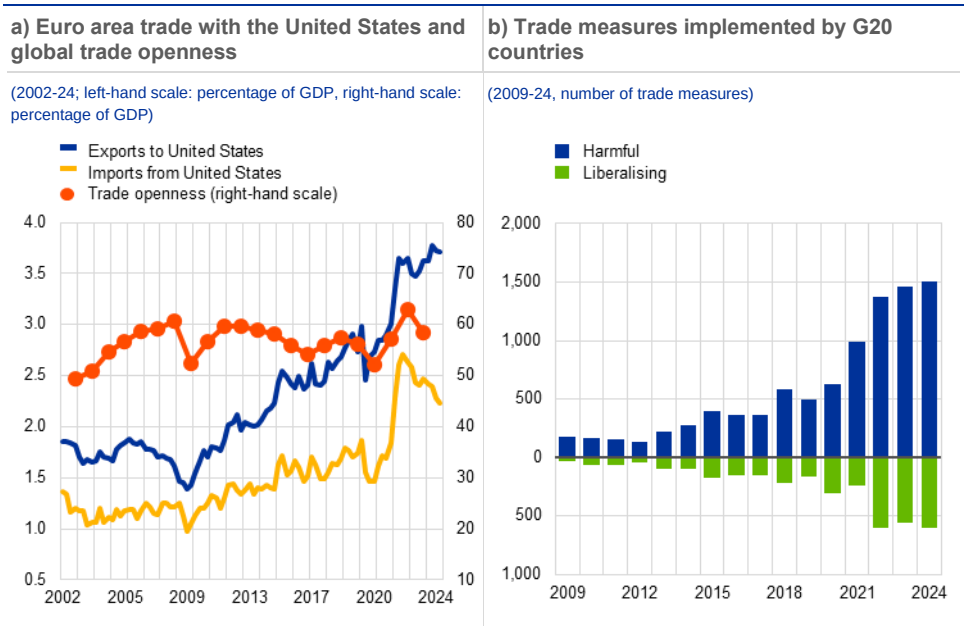
**Escalating global trade tensions have emerged as a significant concern for global growth and financial stability.** Following a decade of robust economic growth, trade openness, measured by the global trade-to-GDP ratio, has largely stagnated since 2008 (**Chart B.1**, panel a), reflecting, among other things, growing scepticism towards globalisation.[114] In addition, adverse geopolitical developments unrelated to trade policy itself may aggravate trade-related tensions, altering the volume of global trade as well as the relative shares of imports and exports between trading partners.

**Trade policy interventions have surged in recent years, and especially since 2021.** An increasing number of trade measures have been implemented by G20 countries, with restrictive policies prevailing significantly over those aimed at liberalising trade (**Chart B.1**, panel b). The recent escalation of trade frictions between major economies – especially between the United States and its trading partners – has fuelled trade policy uncertainty and emerged as a critical concern for businesses and policymakers alike. This increased uncertainty has the potential to redirect trade flows, reconfigure value chains, deter investment and dampen economic growth.

[114] For an in-depth analysis of the economic implications of trade fragmentation, see Attinasi, M.G., et al., "Navigating a fragmenting global trading system: insights for central banks", *Occasional Paper Series*, No 365, ECB, 2024.

**Chart B.1**

Global trade tensions have escalated in recent years




Sources: World Bank, Global Trade Alert and ECB calculations.
Notes: Panel a: trade openness is calculated as exports plus imports divided by GDP. Panel b: data have been adjusted for reporting lags. The cut-off date for each year is 31 December. Trade measures are classified as harmful if they are likely or almost certain to involve discrimination against foreign commercial interests. Harmful measures include tariffs, quotas and other barriers aimed at protecting domestic industries from foreign competition.

**This special feature analyses the implications of elevated trade policy uncertainty for euro area financial stability.** The euro area is an open economy that is deeply integrated into international supply chains. This means there is a potential for trade policy uncertainty and for the implementation of trade restrictions to have significant adverse effects. Moreover, the United States is the most important trading partner outside the euro area for most member countries and aggregate euro area trade with the United States has increased strongly since 2010, notwithstanding the global stagnation in trade openness (**Chart B.1**, panel a). Against this background, this special feature provides a conceptual overview of the channels through which trade tensions can affect euro area financial stability. It then presents empirical evidence of the effects of trade policy uncertainty on euro area economic growth, systemic stress and financial vulnerabilities. Finally, it zooms in on the implications for euro area banks by analysing their exposure to sectors that are reliant on US trade.

## 1 Trade tensions can heighten financial stability risks

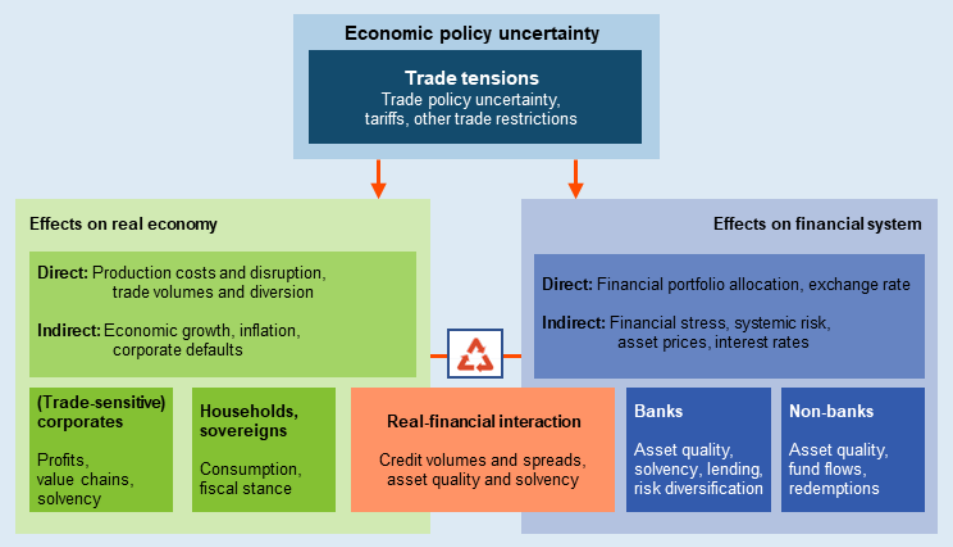
**The rise in trade policy uncertainty could have an adverse impact on both the financial system and the real economy.** Heightened uncertainty may lead to abrupt shifts in sentiment which would increase the volatility of asset and commodity prices and widen risk premia, tightening financial conditions. It may also increase exchange rate volatility, affecting portfolio investment decisions and capital flows. Reacting to both the direct impact and market risk losses, financial institutions may adjust their

portfolio holdings, potentially through fire sales, thereby amplifying financial stress.[115] With regard to the real economy, higher uncertainty over future trade policy can delay and/or reduce investment as firms encounter difficulties when assessing future demand for their products and services. Moreover, consumer confidence can worsen, causing a decline in spending by households (**Figure B.1**).

**In addition to trade policy uncertainty, the implementation of trade restrictions tends to reduce external demand, increase prices and raise production costs.** Trade restrictions hinder technological advancement, stifling innovation, productivity and economic growth.[116] In addition, firms affected by trade barriers abroad may reroute trade to the domestic market or to countries with fewer restrictions, which would increase competitive pressures faced by domestic firms at home. Overall, trade policy uncertainty and the implementation of tariffs can lead to weaker economic growth, a higher likelihood of corporate distress and, hence, losses for financial institutions, lowering their resilience. Restrictions on trade, capital flows and international investments also constrain the ability of financial institutions to diversify their portfolios, leading to heightened concentration risk in their balance sheets.

**Figure B.1**

Trade tensions and their transmission to financial stability




Source: ECB.

**The effects of trade tensions on financial stability, both via the real economy and via financial market channels, are mutually reinforcing.** Given the linkages between the real economy and the financial sectors, feedback processes may reinforce the direct effects in each sector. The various factors together can lead to systemic risks if the transmission of losses is not mitigated in a timely manner.

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

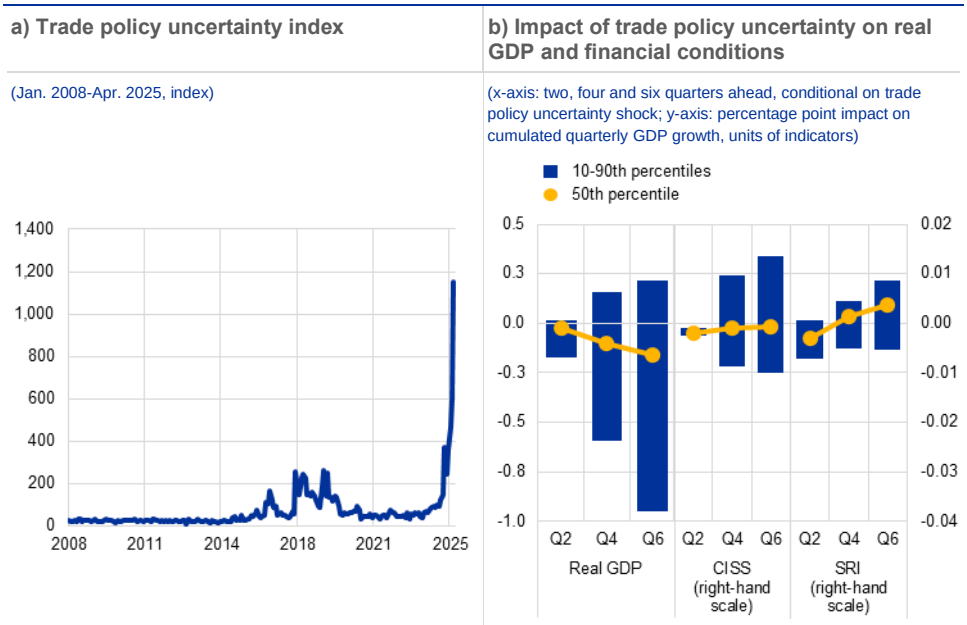
116 See Attinasi, M.G., et al., op. cit.

## 2 Trade policy uncertainty and macro-financial stability

**The methods used to measure trade tensions focus on trade policy uncertainty and trade restrictions to capture the different ways tensions are transmitted to financial stability risks.** This analysis employs the trade policy uncertainty index developed by Caldara et al., which relies on newspaper coverage to count the number of occurrences of terms related to trade policy and uncertainty.[117] The indicator can be driven by market sentiment or changes in expectations relating to restrictive trade policies rather than policies that have actually been implemented (**Chart B.2**, panel a). To estimate the extent to which uncertainty represents a risk to the financial system, this special feature uses a quantile vector autoregressive model leveraging data for the period between the first quarter of 1990 and the third quarter of 2024. This method assesses the impact of rising trade policy uncertainty on the distributions of euro area GDP growth, systemic stress (as measured by the ECB's composite indicator of systemic stress, CISS) and financial vulnerabilities (as measured by the ECB's systemic risk indicator, SRI).[118]

**Chart B.2**

Rising trade tensions heighten risks to economic growth and financial vulnerabilities




Sources: Caldara et al.*, Eurostat and ECB calculations.
Notes: Panel b: the real GDP response is cumulated, thus showing the change in output level over two to six quarters ahead. CISS stands for composite indicator of systemic stress; SRI stands for systemic risk indicator. The size of the trade policy uncertainty shock is set to 1 standard deviation (34 basis points over Q2 1990-Q3 2024), while recent changes have been larger (128 basis points in Q4 2024 and 240 basis points in Q1 2025). See footnote 119 for details of the modelling approach.
*) Caldara, D., Iacoviello, M., Molligo, P., Prestpino, A. and Raffo, A. "The economic effects of trade policy uncertainty", *Journal of Monetary Economics*, Vol. 109, 2020, pp. 38-59.

[117] Caldara et al. used newspaper coverage of trade-related economic uncertainty to capture shifts in policy expectations relating to trade. See 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.

[118] For the SRI, see Lang, J.H., Izzo, C., Fahr, S. and Ruzicka, J., "Anticipating the bust: a new cyclical systemic risk indicator to assess the likelihood and severity of financial crises", *Occasional Paper Series*, No 219, ECB, 2019. For the CISS, see Holló, D., Kremer, M. and Lo Duca, M., "CISS – A composite indicator of systemic stress in the financial system", *Working Paper Series*, No 1426, ECB, 2012, and related data.

**Trade policy uncertainty raises downside risks to economic growth over the medium term.** Econometric analysis indicates that an increase in trade policy uncertainty raises the probability of adverse economic developments.[119] This is reflected by the downward shift of the distribution of future growth (the difference between the 10th and the 90th percentiles, the top and bottom of the bars in **Chart B.2**, panel b) in an asymmetric manner around the median response. Specifically, an increase of 1 standard deviation in trade policy uncertainty lowers the median real GDP forecast by 0.15 percentage points after four quarters and the lower tail (the 10th percentile) by 0.75 percentage points, representing major downside risks. By contrast, the shift in the upper tail (the 90th percentile) is contained, indicating limited upside risks.[120]

**Rising trade policy uncertainty results in a limited increase in systemic risk.** Not only does trade policy uncertainty dampen future economic activity, it also heightens the financial vulnerabilities captured by the SRI, although to a much more limited extent. Over time, the uncertainty raises leverage through an increase in the debt-to-GDP ratio, the main component of the SRI, but it has only limited repercussions for financial stress.[121]

## Box A

### How spillovers from US developments differ across euro area equity sectors

**Prepared by Mar Domenech Palacios, Magdalena Grothe, Peter McQuade, Martino Ricci and Josep M. Vendrell Simón**

**This box analyses the risks of euro area equities repricing across sectors in response to developments in the United States, with a particular focus on news relating to trade policy.** The EU is heavily exposed to trade with the United States, having one of highest levels of value-added content in US imports of any economy.[122] Since the 2024 US presidential election, protectionist policies have re-emerged as a key policy instrument. In this context, potential trade policy shocks have become a source of concern for international financial markets, increasing policy uncertainty and acting as an important driver of euro area equities. Such shocks can affect euro area

119 The econometric model employed is a structural quantile vector autoregressive (QVAR) following the work done by Bochman, P., Dieckelmann, D., Fahr, S. and Ruzicka, J., "Financial stability considerations in the conduct of monetary policy", *Working Paper Series*, No 2870, ECB, 2024, and Chavleishvili, M., Kremer, M. and Lund-Thomsen, F., "Quantifying financial stability trade-offs for monetary policy: a quantile VAR approach", *Working Paper Series*, No 2833, ECB, 2024. The identification of shocks is based on recursive short-run restrictions akin to a Cholesky decomposition where variables are ordered as follows: trade policy uncertainty (TPU), GDP, SRI and CISS. The analysis uses the TPU as provided by the authors, i.e. without controlling for the implementation of tariffs or increased volatility. The impact of 1 standard deviation assumes that the TPU is exogenous with no feedback from the other variables in the QVAR. The model is estimated using quarterly data from the first quarter of 1990 to the third quarter of 2024. GDP enters as a quarterly (log) growth rate while the SRI, TPU and CISS enter in levels. The estimate based on the QVAR, a small-scale empirical model designed to analyse tail risks, may overestimate the effects, especially compared with larger-scale models where the trade policy uncertainty dimension can be more specifically identified.

120 The real economy risks surrounding trade policy uncertainty were also discussed in the ECB's March 2025 projections. See Box 2 of the ECB staff macroeconomic projections for the euro area, March 2025, published on the ECB's website on 6 March 2025.

121 Additional analysis using the economic policy uncertainty index developed by Baker, S, Bloom, N. and Davis, S, "Measuring Economic Policy Uncertainty", *The Quarterly Journal of Economics*, Vol. 131, No 4, November 2016, pp. 1593-1636, reveals stronger effects, especially for financial variables, as it raises financial stress (CISS) in the short run. It also has a dampening effect on financial variables such as credit, house prices and stock market prices and therefore a negative effect on the SRI.

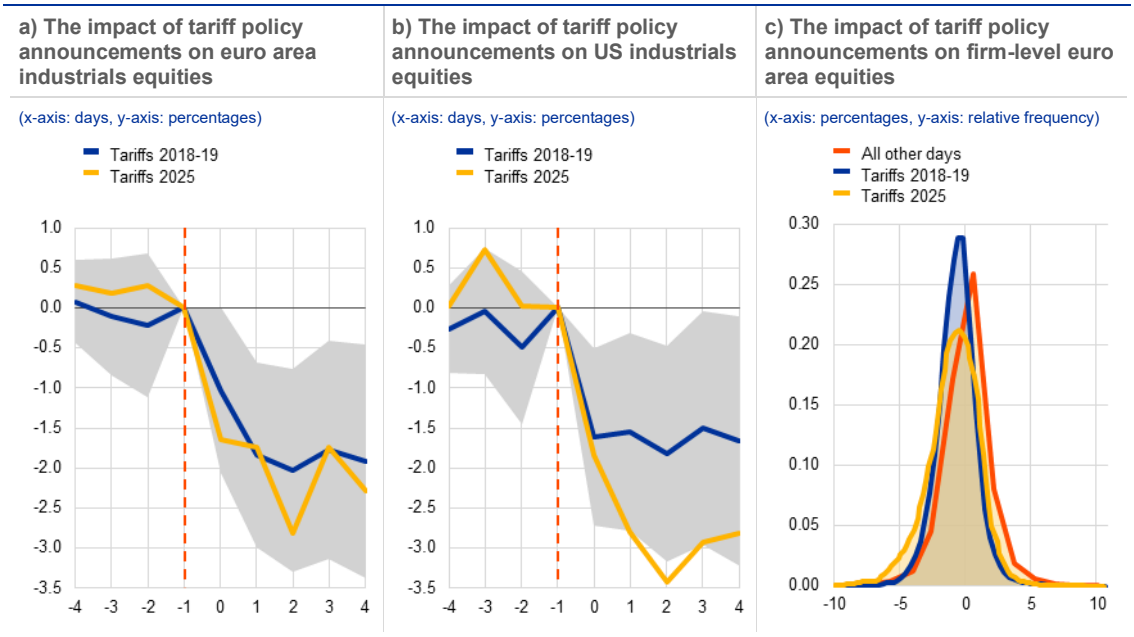
122 Almost 12% of intermediate components that are processed and assembled into finished goods, and subsequently imported into the United States, can be traced back to production in the EU.

equity prices unequally across sectors and translate into repricing risks of different magnitudes. This box highlights the sensitivity of euro area equity prices to US trade policy news across sectors.

**Euro area equity prices are sensitive to broader US macroeconomic developments.** Equity markets in the euro area, like many other markets, are influenced by both domestic and foreign factors. Among the foreign factors, spillovers from the United States are especially significant, given the size of the US economy and its pivotal role in the global economic and financial system. Euro area equity prices thus typically respond to US macroeconomic shocks, albeit with considerable variation across sectors. Moreover, linkages between euro area and US equity markets have expanded in recent years, with cross-border listings on US exchanges increasing and euro area non-banks becoming more exposed to US issuers.

**Chart A**

Repricing sensitivity of euro area and US equity markets to tariff-related news during the United States-China trade dispute of 2018-19 and in 2025




Sources: Bloomberg Finance L.P., ECB, Haver Analytics, LSEG, MSCI and ECB calculations.
Notes: Panels a and b: average cumulative stock market returns (percentages) for euro area (panel a) and US (panel b) industrials, measured from the day before each tariff announcement during the period 2018-19 (in blue, with 95% confidence intervals in grey). The returns are estimated using an event study approach based on 11 tariff announcements, as set out in Amiti et al.* (see Table 1 of the paper for the list of events). The model includes dummy variables for the three days preceding and four days following each announcement. Regressions are conducted using daily stock return data spanning the periods 2017-19 and 2022-25. The yellow line shows the average cumulative stock market response, as a percentage, following US tariff announcements in 2025 − 1 February: tariffs announced on Canada, Mexico and China; 10 February: 25% tariffs imposed on steel and aluminium; 4 March: additional 10% levy announced on imports from China, Canada retaliates against the United States; 11 March: additional 25% tariff announced on steel and aluminium, followed by EU and Canada retaliation on March 12 and global trade tariffs on 2 April. The event on 8 April is not included as it was followed by announcements of the 90-day pause in tariffs within the same market opening day. Panel c: distribution of firm-level returns from the STOXX Europe 600 on the events indicated above: 11 tariff announcements in 2018-19 and six tariff announcements in 2025. All other days are days with no tariff announcements between 2018 and 2025.
*) Amiti, M., Gomez, M., Kong, S.H. and Weinstein, D., "Trade Protection, Stock-Market Returns, and Welfare", *Working Papers*, No 28758, National Bureau of Economic Research, May 2021.

**Adverse tariff announcements tend to lead to significant equity market repricing.** Experience of the trade dispute between the United States and China in 2018 and 2019, during which a series of tariffs were introduced, shows that trade tensions tend to have a significant negative effect on equity valuations, both in the country that imposes tariffs and more broadly in other countries. In that period, equity prices declined by around 2% on average in both the United States and the euro area following the announcement of tariffs (**Chart A**, panels a and b, blue lines). The effect of the tariffs imposed between February and May 2025 was broadly similar for the euro area but much more pronounced for US markets (**Chart A**, panels a and b, yellow lines). The fall in equity indices in response to tariff

announcements is typically very broad-based across firms. This is indicated by the distribution of firm-level returns, which is positioned clearly to the left compared with days when no trade announcements were made, both in 2018-19 and in response to the tariff announcements in 2025 (**Chart A**, panel c).[123] The response of the most exposed euro area firms to recent tariff announcements appears more pronounced than during the first Trump presidency, as the left tail of the distribution is more negative.

**The resurgence of trade tensions and tariff-related news has put pressure on equity prices in some euro area industries.** Euro area equities have outperformed US stocks since the inauguration of President Trump. All the same, the potential implementation of new tariffs weighed on the equities of firms with greater trade exposure in both the euro area and the United States on the days when tariffs were announced (**Chart B**, panel a).[124] While there has been a broader sell-off in US stocks in recent months until April, firms identified as US tariff losers have significantly underperformed.[125] Also in the subsequent equity market rally following news on pausing some of the tariffs, US tariff losers have not recovered all earlier losses. Zooming in on the high-frequency response of euro area equity prices across sectors to recent broad-based US tariff events suggests that several sectors are particularly exposed, with the automotive, consumer products, IT, industrials, materials and financial sectors experiencing sizeable declines (**Chart B**, panel b).[126]

**Market repricing remains a prominent risk to euro area financial stability, and the potential for further US trade policy shocks to euro area markets remains high.** By taking a more granular approach and examining equity prices across sectors, this box sheds light on the variation in repricing risks in the euro area. The results suggest that all euro area equity sectors are sensitive to adverse US trade policy shocks, with the automotive, consumer products, IT, industrials, materials and financial sectors considered by markets to be the most exposed. The effects do not appear to help most US companies either, as US stocks also fell after the announcements.[127] These risks are particularly relevant given the current state of economic and policy uncertainty, as shocks from US developments have become more frequent and severe. The effect of US tariffs on euro area equities has already been pronounced. If they encompass broader production and supply mechanisms – especially those integral to complex value chains – they could trigger more significant financial stability risks. Tariffs could disrupt both direct trade and production dynamics across several countries if they are extensive, lasting and aimed at sectors crucial to global production networks. Moreover, the

123 The economic literature also suggests that announcements of the implementation of tariffs have greater and more lasting effects on US equity markets than threats about such policies. See, for example, Amiti, M., Gomez, M., Kong, S.H. and Weinstein, D., "Trade Protection, Stock-Market Returns, and Welfare", *Working Papers*, No 28758, National Bureau of Economic Research, 2021.

124 For an analysis of how increased trade tensions transmitted through social media communication affect financial markets, see Ferrari Minesso, M., Kurcz, F. and Sole Pagliari, M., "Do words hurt more than actions? The impact of trade tensions on financial markets", *Journal of Applied Econometrics*, Vol. 37, Issue 6, 2022.

125 The EU (US) Tariff Losers basket tracks the performance of EU (US) stocks negatively exposed to the imposition of import tariffs by the new US Administration. Stocks selected on the basis of input from UBS analysts. The EU Tariff Losers index consists of 33 stocks, primarily from the industrials (34%), consumer discretionary (31%) and consumer staples (15%) sectors. The US Tariff Losers index consists of 38 stocks, primarily from the consumer discretionary (71%) and industrials (16%) sectors.

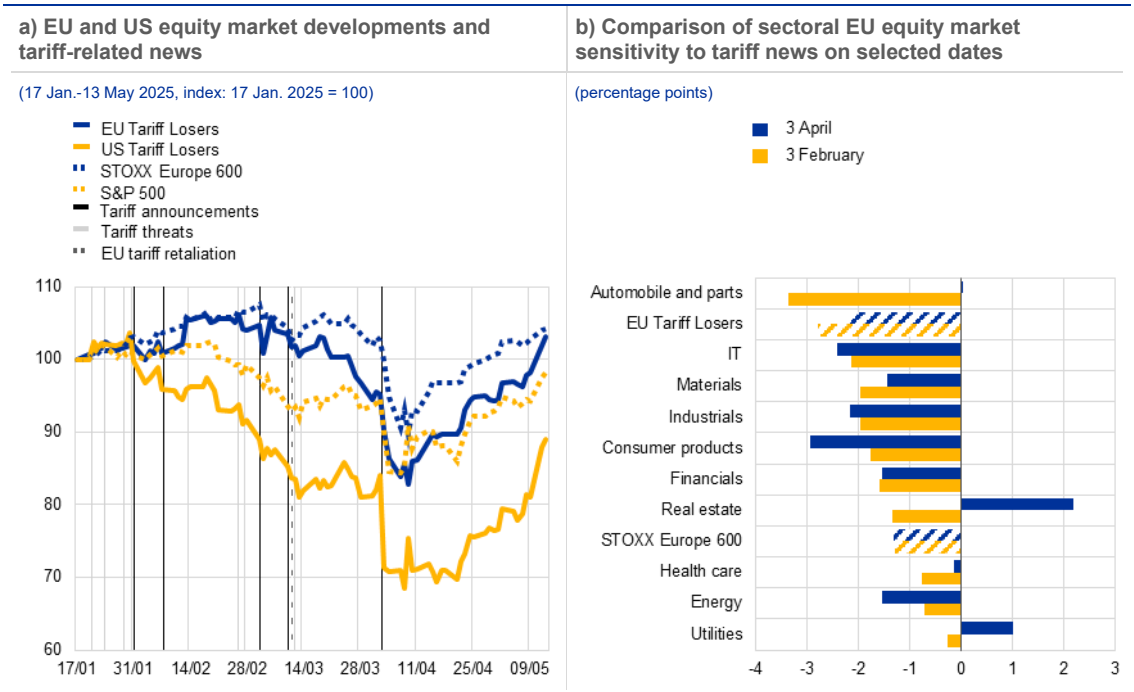
126 Chart B, panel b) focuses on the distribution of equity market responses to broad-based tariff announcements that affect a wide range of sectors. Targeted sectors have been particularly negatively affected when sector-specific tariffs have been announced. This was the case for the 10 February US announcement of tariffs on steel and aluminium imports and the 13 March threat to impose 200% tariffs on US alcoholic beverage imports from the EU. In the latter case, shares in specific European alcoholic beverage exporters fell in the 30 minutes after the threat, in some cases by around 3%, while the decline in the STOXX Europe 600 index was more muted, at around 0.3%.

127 Similarly, in the United States automotive and IT sector stocks fell the most in the 30 minutes after the US tariff announcements.

interconnected nature of global supply chains means that the repercussions could extend far beyond the immediate targets, affecting other regions and key industries. Thus, further substantial tariff shocks could pose pronounced risks to both euro area and global financial stability.

**Chart B**

Varied repricing sensitivity to news on international trade policies




Sources: Bloomberg Finance L.P. and ECB calculations.
Notes: The EU (US) Tariff Losers basket tracks the performance of EU (US) stocks negatively exposed to the imposition of import tariffs by the new US Administration. Stocks selected on the basis on input from UBS analysts. The EU Tariff Losers index consists of 33 stocks, primarily from the industrials (34%), consumer discretionary (31%) and consumer staples (15%) sectors. The US Tariff Losers index consists of 38 stocks, primarily from the consumer discretionary (71%) and industrials (16%) sectors. Panel a: the chart shows equity returns since one business day before the US presidential inauguration on 20 January 2025. Vertical lines for US trade threats denote the days when President Trump threatened to introduce tariffs, while vertical lines for US tariff announcements denote the days when concrete trade measures were announced. US tariff announcements refer to 1 February for tariffs against Mexico and Canada, 10 February for 25% tariffs on aluminium and steel, 4 March for an additional 10% levy on imports from China and 2 April for the announcement of global trade tariffs. The event on 8 April is not included as it was followed by announcements of the 90-day pause in tariffs within the same market opening day. US tariff threats refer to 22 January against China and the EU, 27 January against Colombia, 30 January against BRICS countries, 26 February against the EU and 13 March against EU wine and champagne. EU tariff retaliation refers to 12 March. Vertical lines show market close of business on the day before the event. Panel b: changes are calculated as the percentage difference between the price 30 minutes after the market opened on 3 April 2025 (3 February 2025 for the yellow bars) and the last closing price before President Trump's announcements on 2 April 2025 (tariff announcement against Mexico and China on 1 February 2025 for the yellow bars).
The latest observations are for 13 May 2025 for panel a) and 09:30 on 3 April 2025 for panel b).

## 3 Trade policy uncertainty and banking system stability

**Trade policy uncertainty can have adverse repercussions for euro area banks through financial markets and balance sheet effects.** Based on bank-level data for the period between the first quarter of 2015 and the third quarter of 2024 and using panel local projections, this section assesses the impact of an increase in trade policy uncertainty on a range of key banking yardsticks.[128] More specifically, the analysis examines the effects of a surge in trade policy uncertainty on bank stock prices, credit

[128] Jordà, Ò., "Estimation and Inference of Impulse Responses by Local Projections", *American Economic Review*, Vol. 95, No 1, 2005, pp. 161-182.

default swap (CDS) spreads, bond spreads, the cost of risk, the return on assets and lending.[129]

**An increase in trade policy uncertainty has significant adverse effects on banks' stock prices and on some market-based metrics of bank risk.** A 1 standard deviation increase in trade policy uncertainty leads to a decline in euro area bank stock prices of 1.9% on impact and 10.4% after six months.[130] It also has a statistically significant impact on bank CDS spreads, which increase by 12 basis points after six months (**Chart B.3**, panel a). Furthermore, bank bond spreads increase by 7 basis points after six months. These patterns are consistent with the notion that greater uncertainty fuels risk aversion on the part of investors, who demand more compensation for bearing the perceived higher risk associated with banks. The relative persistence of the market reactions suggests that investors price in the medium-term implications of trade policy uncertainty as growth weakens and, accordingly, bank asset quality and resilience deteriorate. These lasting effects of trade policy uncertainty on market valuations and banks' funding costs may have broader implications for the ability of banks to raise capital and extend credit.

**Trade policy uncertainty also leads to higher provisioning, lower profitability and a reduction in lending to the real economy.** A 1 standard deviation increase in trade policy uncertainty raises banks' cost of risk, measured as loan impairment divided by total loans, by 8 basis points after six months and 11 basis points after one year, while banks' return on assets declines by 10 basis points after six months and 8 basis points after one year. The contraction in total bank lending to the real economy amounts to 0.6% after six months and increases to 1.9% after one year (**Chart B.3**, panel b).

**The gradual build-up of these effects over time reflects the persistent impact of heightened uncertainty on the real economy.** Trade policy uncertainty slows economic growth, weakening the ability of borrowers to repay loans and thus leading to an increase in non-performing loans and higher provisioning. Banks may also respond to trade policy uncertainty by reducing lending. Both credit supply and credit demand may be dampened by adverse macroeconomic developments caused by heightened uncertainty. On the credit supply side, greater uncertainty may make banks less willing to lend to non-financial corporations (NFCs) and households. On the credit demand side, households and NFCs may be reluctant to take out loans or invest in times of elevated uncertainty. Curtailing lending may then exacerbate the economic slowdown, further reducing borrowers' ability to repay their loans. Higher funding costs, weaker lending and a deterioration in asset quality caused by trade tensions could undermine bank profitability. A higher cost of funding and lower loan volumes could squeeze banks' net interest margins. Loan losses and valuation losses on asset holdings could also weigh on profitability, representing risks to bank capital accumulation and solvency. These dynamics suggest that the impact of trade policy

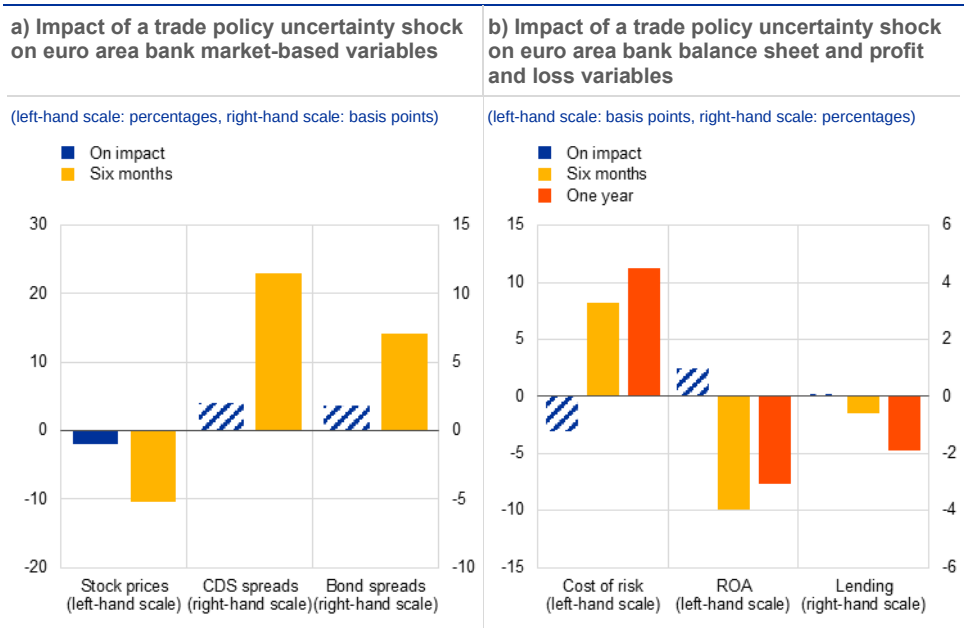
[129] The estimates based on a panel local projection model, a small-scale empirical model, may overestimate the effects of trade policy uncertainty, especially compared with larger-scale models where the trade policy uncertainty dimension can be more specifically identified. However, it should be noted that the results of this analysis hold qualitatively, both when excluding the COVID-19 period and when accounting for it by including a time dummy for the relevant quarters.

[130] The standard deviation of the trade policy uncertainty index over the sample period considered in the analysis in this section is 53.51 index points.

uncertainty on the banking sector extends beyond short-term fluctuations, with potential medium-term consequences for credit supply and economic growth.[131]

**Chart B.3**

An increase in trade policy uncertainty has adverse effects on banks




Sources: ECB (supervisory data), Eurostat, Bloomberg Finance L.P. and Caldara et al.*.
Notes: Impulse responses across different time horizons to a 1 standard deviation trade policy uncertainty shock (Caldara et al.*), based on panel local projections exploiting quarterly data from Q1 2015 to Q3 2024. The dependent variables are logarithm of stock prices, CDS spread, bond z-spread, cost of risk, return on assets and logarithm of loans. The estimations are based on a sample of 34 banks for stocks, 40 banks for CDS spreads, 42 banks for z-spreads, 78 banks for cost of risk and return on assets, and 69 banks for logarithm of loans. The models include four lags of the dependent variable, macro-financial controls (VIX, three-month EURIBOR and EURO STOXX), country-specific macroeconomic controls (GDP growth, inflation and one-year sovereign bond yields), bank-level controls (total assets, cash/assets ratio, cost of risk, return on assets, cost/income ratio and Tier 1 capital ratio) and bank fixed effects. All values are statistically significant at levels of at least 10%, except where shaded.
*) Caldara et al., op. cit.

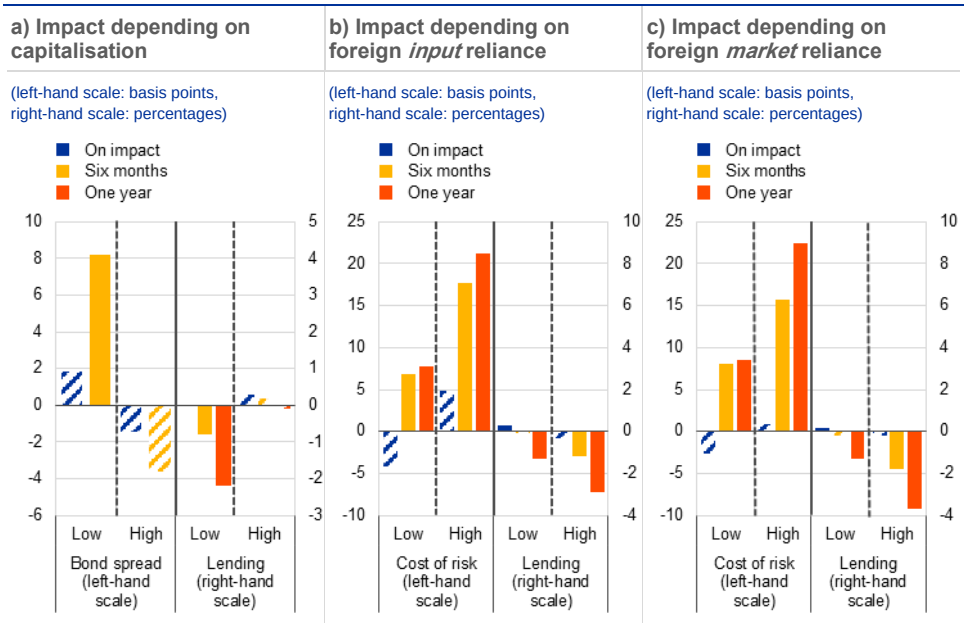
**Higher solvency ratios mitigate some of the negative effects stemming from trade policy uncertainty, while some of the adverse repercussions are more severe for banks lending to sectors that rely on extra-EU trade.** Banks with stronger capital positions are better able to absorb the adverse effects of increased trade policy uncertainty. Neither their bond spreads nor their lending is significantly affected by a trade policy uncertainty shock (**Chart B.4**, panel a). By contrast, banks with a larger share of lending to sectors that rely on extra-EU trade are more vulnerable to trade policy uncertainty, as they can be more materially affected by

131 Bank-level results appear more pronounced compared with the macro-financial results reported in Section 2. However, this is consistent with the fact that the composite financial stability indicators employed in Section 2 also contain several other indicators beyond those investigated in the bank-level analysis. These can act as confounding factors. For example, as regards the SRI, reduced bank lending and a decline in stock market prices would lower it (ceteris paribus), but there would also be an effect on GDP (in the denominator), so the impact is not clear ex-ante.

disruptions in trade flows.[132] Indeed, a higher exposure to these sectors amplifies the effect of a trade policy uncertainty shock, leading to a sharper increase in the cost of risk (i.e. to a materially greater deterioration in their asset quality) and a more pronounced decline in lending (**Chart B.4**, panels b and c).

**Chart B.4**

High levels of capitalisation cushion some negative effects of a trade policy uncertainty shock while exposure to more vulnerable sectors increases them




Sources: ECB (supervisory data), OECD, Eurostat, Bloomberg Finance L.P. and Caldara et al.*.
Notes: Impulse responses across different time horizons to a 1 standard deviation trade policy uncertainty shock (Caldara et al.*), based on panel local projections exploiting quarterly data from Q1 2015 to Q3 2024. With regard to controls, the model specifications follow those in Chart B.3. The key difference is the inclusion of an interaction term, based on the distribution of the interaction variable. A bank is classified as highly capitalised or highly exposed in terms of foreign input reliance (FIR) or foreign market reliance (FMR) if it falls within the top quartile of the distribution. The foreign reliance indicators can be interpreted as the share of total domestic output exposed to foreign disruptions in global value chains: upstream disruptions for FIR and downstream disruptions for FMR. To calculate extra-EU foreign reliance at the bank level, the FIR/FMR of all non-EU trade counterparties are first aggregated at the NACE-2 borrower country level. The bank exposure to extra-EU trade reliance is then calculated as the sum of $\Sigma(foreign\ market\ reliance\ score\_i,j * NFC\ exposure\ share\_i,j)$ where $i$ =NACE-2 level and $j$=country of the borrower. Coefficients are reported according to the value of the corresponding dummy variable. Shaded areas indicate non-significance at the 10% confidence level.
*) Caldara et al., op. cit.

## 4 Euro area banking system exposure to sectors reliant on US trade

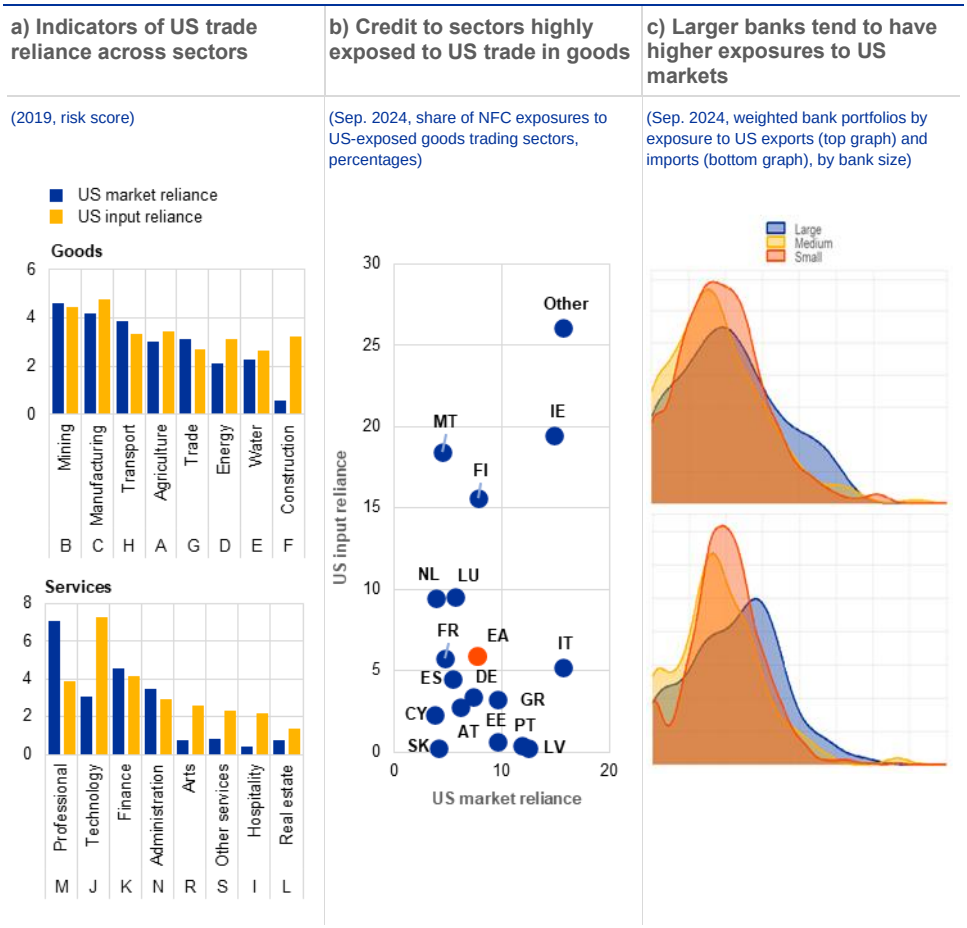
**Sectors which are heavily reliant on US trade, and therefore most exposed to tariffs imposed by the US Administration, could face profitability and debt servicing capacity challenges.** Using the foreign trade reliance indicators described

[132] Exposure to extra-EU trade is measured using the OECD's foreign input reliance (FIR) and foreign market reliance (FMR) indicators. These are based on the methodology developed by Baldwin, R. and Freeman, R., "Risks and Global Supply Chains: What We Know and What We Need to Know", *Annual Review of Economics*, Vol. 14, No 1, 2022, pp. 153-180. Data were accessed on the OECD's website on 20 February 2025. These indicators are provided at a country NACE-2 level and show reliance on foreign exports and imports respectively, via both direct and indirect exposure, in global value chains. Aggregate reliance on extra-EU trade at a sectoral level is calculated as the sum of reliance on all non-EU counterparties. The exposure of bank portfolios to extra-EU trade reliance via their lending activities is then calculated by weighting loan shares for each sector-country pair by the respective FMR and FIR scores.

above, dependence on US trade can be assessed at a sectoral level. Sectors that trade in goods associated with mining and manufacturing, as well as services such as the professional activities and technology sectors, are highly exposed to trade with the United States through both export and import dependence (**Chart B.5**, panel a). In particular, the profitability of sectors trading in goods subject to US tariffs could be affected by falling sales and margins as well as by rising input costs if tariffs are reciprocated. The broader economic dampening impact outlined above could exacerbate these profitability effects via lower investment and lower consumption. Additionally, affected sectors may face increased competition in domestic markets, should global trade flows be redirected in response to reduced margins on US sales.

**Chart B.5**

The profitability and debt servicing capacity of sectors that are more reliant on US markets and where tariffs have been applied could be negatively affected




Sources: OECD, Eurostat and ECB (AnaCredit, SHS).
Notes: Bank data as at September 2024. Panel a: US trade reliance at NACE-1 level aggregated from country and NACE-2-level scores, weighted by net turnover of the sector. Sector classification into goods or services is determined according to whether the value of extra-EU goods or services trade is higher. The FMR and FIR indicators are obtained from the OECD and are based on the methodology developed by Baldwin and Freeman*. They identify the sectors across EU countries which are potentially most exposed to rising trade tensions with the United States. Note this methodology does not account for trade elasticities and the substitutability of goods which could also affect sectoral revenue impacts from tariffs. Panel b: high-risk sectors are those sectors above the 75th percentile scores for each indicator. The share of NFC exposures to each sector takes both loans and debt securities into consideration. "Other" consists of euro area countries that cannot be shown individually for reasons of AnaCredit confidentiality. Panel c: the exposure of bank portfolios to US trade via their lending activities is calculated as $\sum(US\ foreign\ reliance\ score_{i,j} * share\ NFC\ exposures_{i,j})$ where $i$ =NACE-2 level and $j$ = country of the borrower and the foreign reliance score is either FMR (top) or FIR (bottom). Bank size is categorised by total assets size (large: >€20 billion; medium: €20 billion to €5 billion; small: <€5 billion).
*) Baldwin, R. and Freeman, R., "Risks and Global Supply Chains: What We Know and What We Need to Know", *Annual Review of Economics*, Vol. 14, No 1, 2022, pp. 153-180.

**Euro area banks' exposures to sectors that are reliant on the United States as a trading partner may face rising credit risk as trade restrictions are increased.** The euro area banking system's exposure to sectors which could be impacted by US tariffs can be calculated using granular data on banks' loans and debt security holdings.[133] Total exposures to EU sectors for which a significant share of output is reliant on either exports to or imports from US goods markets represent 9.6% of all NFC exposures (1.5% of total assets).[134] However, the share of lending at risk varies materially across euro area banking sectors and individual institutions (**Chart B.5**, panel b). For example, large banks allocate a greater portion of their portfolios to sectors which are reliant on trade with the United States (**Chart B.5**, panel c). This pattern does not hold across all countries, however, as exposures to sectors reliant on US trade in Germany and Spain tend to be larger for smaller banks. Overall, banks could face a rise in default rates and associated provisioning requirements, should the debt servicing capacity of these highly exposed sectors be negatively affected by tariff-induced profitability shocks.

**Credit risk may also rise in other areas of banks' portfolios, given the fact that there are various channels through which rising trade tensions may affect the real economy.** While the direct impact of higher US tariffs on credit risk in the euro area banking system will depend on the specific measures implemented and the sectors affected, the indirect effects of materially rising trade tensions are in any case likely to be significant. The lower economic growth, build-up of financial vulnerabilities and falling investment volumes caused by rising trade tensions could contribute to a broader decline in asset quality beyond the immediate targets of the tariffs. Greater risk aversion and declining bank profitability could cause a contraction in credit. Retail portfolios could also be affected by falling consumption and higher uncertainty, especially if unemployment increased in sectors such as manufacturing and trade.[135]

## 5 Conclusions

**The rise in trade tensions observed at the global level may not only adversely affect the real economy, it may also have an impact on financial stability.** There may be repercussions associated with rising downside risks to growth over the medium term and a build-up of financial vulnerabilities. The adverse consequences for banks would include less favourable funding conditions. These effects would be accompanied by a higher cost of risk and a reduction in profitability and lending.

**Policy authorities need to identify the risks stemming from trade tensions, monitor them and evaluate their potential impact on financial stability.** This will enable them to identify vulnerabilities more easily, gain deeper insight into how trade tensions can affect the financial system and proactively develop potential policy

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133 As the US Administration has focused primarily on tariffs on goods, only EU sectors which trade goods are considered (**Chart B.5**, panel a).

134 Other segments of banks' portfolios may also be exposed to increased credit risk from rising trade tensions with the United States. This includes lending to non-EU firms which trade heavily in US markets or lending to US sectors facing "reciprocal" tariffs.

135 Future analyses should aim to quantitatively measure the contribution of both the direct and the indirect channels in driving the impact on banks stemming from rising trade tensions.

responses. This proactive approach would ensure that policy reaction is rapid and coordinated, thereby bolstering the overall resilience of the financial system.

**Financial institutions should also take a number of proactive steps to cope with risks stemming from trade tensions.** While sound capital and liquidity buffers are the first line of defence to absorb shocks stemming from trade disruptions, financial institutions should conduct regular assessments to identify and evaluate the specific risks associated with trade tensions. They should diversify portfolios to minimise exposure to these risks and perform stress tests and scenario analyses to understand how trade tensions could impact their financial positions and operations. The results of these analyses could then be used to develop contingency plans which would make it possible to respond swiftly and effectively, should the risk materialise.

# C Navigating financial stability in an ageing world

**Prepared by Sándor Gardó, Benjamin Klaus, David Kurig and Manuela Storz**[136]

*The number of older people in the EU has increased markedly in recent decades and is projected to go on rising. This trend may pose challenges to financial stability given the adjustments needed in both the real economy and the financial sector to adapt to the demands of an ageing society. Building on the extensive body of literature examining the impact of population ageing on the real economy, this special feature investigates the channels through which population ageing could elevate financial stability concerns in the financial and non-financial sectors, bearing in mind possible interdependencies across sectors. Comprehensive policy actions appear warranted to meet the challenges posed by an ageing population to financial stability. These can range from boosting productivity growth and labour force participation rates to ensuring the sustainability of pension systems by increasing market-based retirement savings, also in the context of the developing capital markets union.*

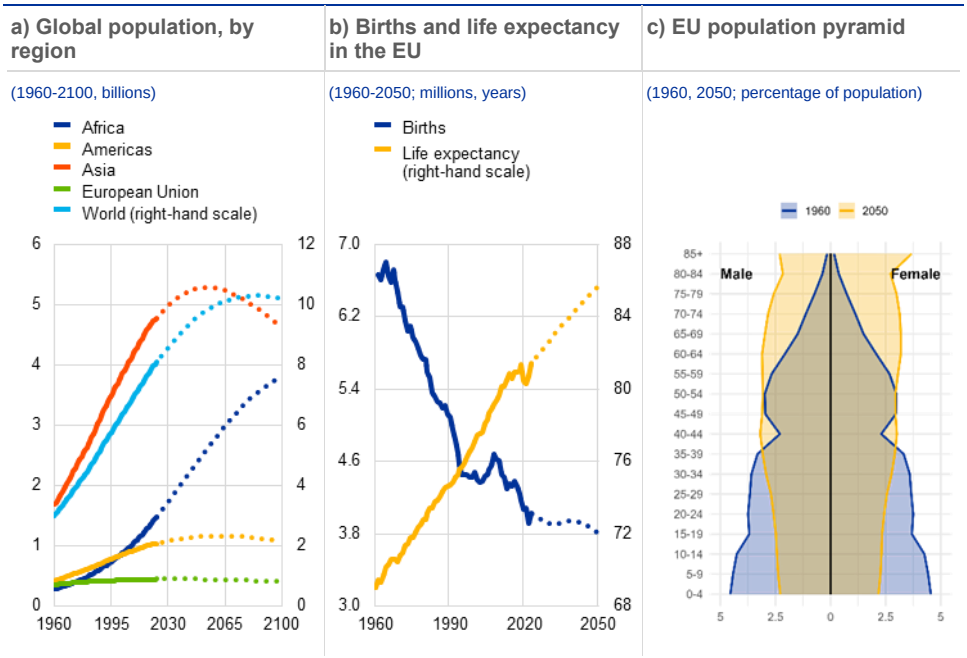
## 1 Introduction

**Lower birth rates and increasing longevity worldwide could have significant implications for financial stability.** Developments in medical science and improved living conditions have increased life expectancy, allowing people to stay healthy for longer. In addition, declining birth rates have led to decelerating population growth in the 21st century, with advanced economies experiencing the most pronounced effects. While Asia and America are projected to undergo a slowdown in population growth during the second half of this century, the EU is projected to face a population decline from the next decade (**Chart C.1**, panel a). A steady projected increase in life expectancy and significantly lower birth rates will continue to underpin this trend in the coming years (**Chart C.1**, panel b). As a result, the demographic structure of the population in the EU is changing rapidly towards an increasing share of older people. This contrasts with the predominantly younger population of the previous century (**Chart C.1**, panel c). The ongoing demographic shift could affect both the real economy and the financial sector, with implications for financial stability. This special feature starts by providing a brief review of the literature on the implications of population ageing for productivity, labour supply and capital accumulation, before delving into its ultimate impact on financial stability.

[136] Input from Paolo A. Baudino, Othman Bouabdallah, Kateryna Koroliuk and Nander de Vette, as well as comments from Katalin Bodnár and Carolin Nerlich are gratefully acknowledged.

**Chart C.1**

Population growth is expected to slow across the globe, with a combination of lower birth rates and increased life expectancies resulting in an ageing population




Sources: United Nations, Eurostat, World Bank, OECD and ECB calculations.
Notes: Panel a: dotted lines indicate projections. The projections start as of 2024. Panel b: the projections (indicated by dotted lines) start as of 2024 and reflect the average life expectancy for women and men.

## 2 Population ageing: a trend reshaping economic dynamics

**Existing research indicates that population ageing may cause labour productivity and labour supply to decline.** In particular, it has been shown that older people engage less in entrepreneurship and innovation, as reflected, for example, by fewer patent applications.[137] However, productivity losses appear to vary across sectors and seem more pronounced in occupations for which automation is less feasible.[138] That said, some research has also found that age-diverse teams tend to be more productive and people are recording significant professional achievements at older ages now than in the past.[139] There has also been research highlighting the factors that could mitigate productivity loss in an ageing society. Targeted policies such as promoting lifelong learning among an ageing workforce are an example.[140] A

[137] See, for example, Liang, J., Wang, H. and Lazear, E.P., "Demographics and Entrepreneurship", *Journal of Political Economy*, Vol. 126(S1), 2018, pp. 140-196, and Castrillo, P., Gumanova, K. and Theodoridis, K., "Population ageing and productivity: The innovation channel", *ESM Briefs*, European Stability Mechanism, January 2024.

[138] See, for example, André, C., Gal, P. and Scheif, M., "Enhancing productivity and growth in an ageing society", *OECD Economics Department Working Papers*, No 1807, OECD Publishing, 2024, and Daniele, F., Honiden, T. and Lembcke, A.C., "Ageing and productivity growth in OECD regions", *OECD Regional Development Working Papers*, No 2019/08, OECD Publishing, August 2019.

[139] See, for example, "Ageing and the Macroeconomy: Long-Term Implications of an Older Population", National Academies Press (US), December 2012, and Jones, B.F., "Age and Great Invention", *The Review of Economics and Statistics*, Vol. XCII, No 1, February 2010.

[140] See, for example, "Promoting an Age-Inclusive Workforce: Living, Learning and Earning Longer", OECD Publishing, 2020.

shrinking and ageing population will likely also lead to a further decline in labour supply.[141] Alongside a contracting workforce, older individuals also tend to work fewer hours.[142] This can be particularly challenging for firms, as labour shortages put upward pressures on wages and weigh on competitiveness. Targeted labour market policies that also incentivise the participation of older individuals in the workforce could play an important role in mitigating these effects.

**Lower labour productivity and a shrinking workforce can pose risks to potential growth.** Potential growth is influenced by capital, labour and total factor productivity. With declining labour productivity and a shrinking labour force, advancements in automation and robotics have become an important factor in sustaining overall productivity levels and potential growth.[143] Enhancing capital productivity, in particular by successfully integrating technologies, can compensate for a shrinking workforce and declining labour productivity.

**Population ageing will also change aggregate savings and investment demand, with an impact on real interest rates.** According to the lifecycle hypothesis, people tend to accumulate savings up until they retire, after which they draw down these savings gradually. Increasing longevity prompts them to save more to ensure financial security in their later years. As such, real interest rates are likely to decrease as the population ages, given the rising supply of savings in the economy.[144] Moreover, lower productivity and reduced labour supply exert further downward pressure on real interest rates. However, this trend may be counteracted once larger cohorts of the population begin to shift from saving to consumption during their retirement, adding to upward pressure on interest rates from structural factors such as technological progress and investment needs.[145] Given these counteracting forces, the overall impact on interest rates could vary over time, depending on which channel prevails.

**Against this backdrop, the next part of this special feature investigates how population ageing affects financial stability.** Demographic ageing influences financial stability in various ways, both directly and indirectly. Changes in economic growth, productivity and real interest rates will shape the overall macro-financial environment in which the financial sector operates, requiring changes to the business models and structures of financial intermediaries (**Figure C.1**). Ageing-related risks are evolving both over time and across sectors. Such risks have a clear time

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141 See, for example, Maestas, N., Mullen, K.J. and Powell, D., "The Effect of Population Aging on Economic Growth, the Labor Force, and Productivity", *American Economic Journal: Macroeconomics*, Vol. 15, No 2, April 2023, pp. 306-332, and Bodnár, K. and Nerlich, C., "The macroeconomic and fiscal impact of population ageing", *Occasional Paper Series*, No 296, ECB, June 2022.

142 See, for example, Aliaj, A., Flawinne, X., Jousten, A., Perelman, S. and Shi, L., "Old-age employment and hours of work trends: empirical analysis for four European countries", *IZA Journal of European Labor* Studies, 2016.

143 See, for example, Aiyar, S., Ebeke, C. and Shao, X., "The Impact of Workforce Aging on European Productivity", *IMF Working Papers*, No WP/16/238, International Monetary Fund, December 2016, and Acemoglu, D. and Restrepo, P., "Demographics and Automation", *The Review of Economic Studies*, 2021, pp. 1-44.

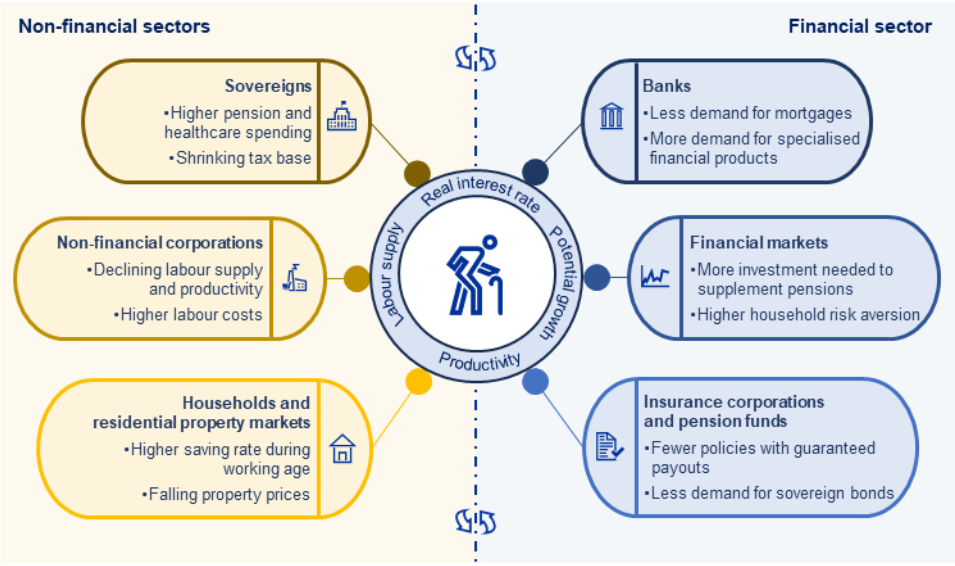
144 See, for example, Ando, A. and Modigliani, F., "The 'Life Cycle' Hypothesis of Saving: Aggregate Implications and Tests", *The American Economic Review*, Vol. 53, No 1, 1963, pp. 55-84, and "Macroeconomics of Aging and Policy Implications", International Monetary Fund, 2019.

145 See, for example, Carvalho, C., Ferrero, A. and Nechio, F., "Demographics and real interest rates: Inspecting the mechanism", *European Economic Review*, Vol. 88, September 2016, pp. 208-226; Bodnár, K. and Nerlich, C., op. cit.; and Blotevogel, R., Callegari, G. and Kolndrekaj, A., "Ageing and demand for safe assets in the euro area", *ESM Briefs*, European Stability Mechanism, January 2025.

dimension, as financial stability vulnerabilities will continue to build up in the absence of remedial policy action. In addition, demographic changes and increased longevity are intensifying the cross-sectional dimension of systemic risk, with growing interlinkages between the financial and non-financial sectors possibly cascading into broader societal challenges. Building on the sectoral approach taken in the ECB's risk identification framework,[146] this special feature seeks to offer an overview of the systemic financial stability risks that can arise in the context of population ageing.

**Figure C.1**

Population ageing affects the financial and non-financial sectors alike, with repercussions for financial stability




Source: Authors' compilation.

## 3 Non-financial sector impacts: squaring the circle of life?

### Sovereigns

**Population ageing poses significant fiscal challenges for euro area sovereigns via higher ageing-related costs and a shrinking tax base.** On the one hand, a growing number of retirees implies ageing-related spending rising from levels which are already high, including on pensions, health care and long-term care (**Chart C.2**, panel a). On the other hand, a shrinking working-age population may result in lower personal income tax revenues and lower social security contributions.[147] At the same time, elderly individuals consuming less may serve to reduce revenues from indirect taxes and may ultimately translate into a broader erosion of the tax base via lower

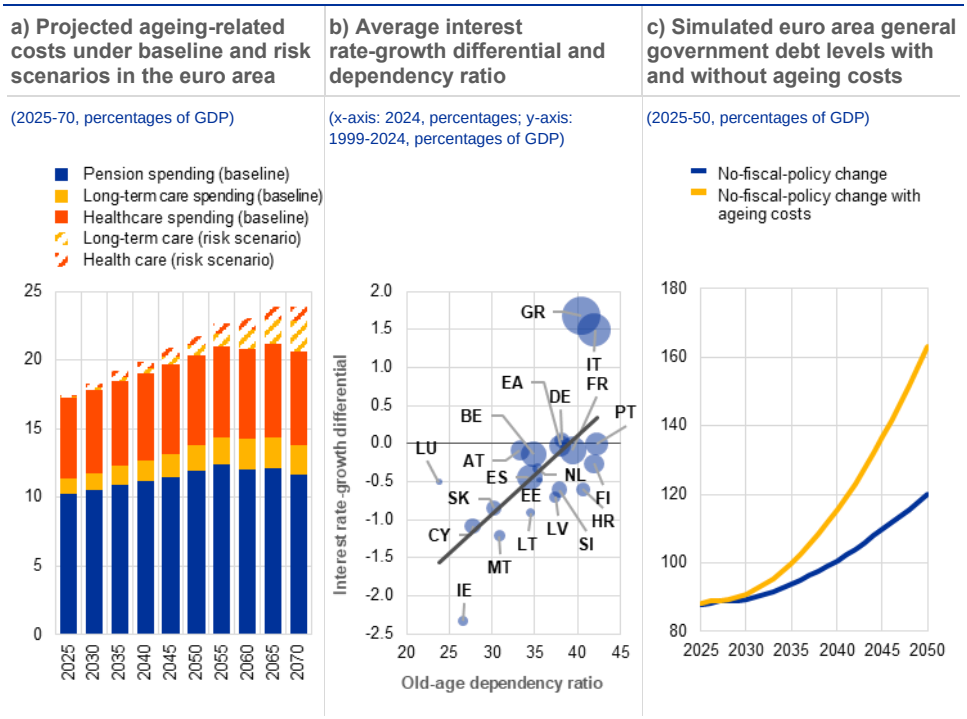
[146] See the special feature entitled "Communication for financial crisis prevention: a tale of two decades", *Financial Stability Review*, ECB, November 2024.

[147] See Bodnár, K. and Nerlich, C., op. cit.

GDP growth.[148] This combination of expenditure- and revenue-related pressures could lead to persistently high fiscal deficits. If unaddressed, these could threaten fiscal sustainability and diminish sovereigns' flexibility by reducing the fiscal space available to respond to other near-term structural challenges associated with climate change, defence spending and digital transformation.

**Chart C.2**

Ageing-related costs represent a major long-term concern for the sustainability of public finances




Sources: European Commission, ECB (GFS) and ECB calculations.
Notes: Panel a: the chart depicts projected developments in total ageing-related costs for euro area sovereigns and its components under the baseline scenario. In addition, the chart illustrates healthcare and long-term care spending under the risk scenario. For healthcare spending this includes additional spending because, among other aspects, efficiency gains are not achieved and older people spend a longer proportion of their life in less favourable health conditions. For long-term care this includes additional spending because, among other aspects, there is a faster increase in the share of dependent elderly and wage growth in the care sector is assumed to outpace productivity growth. Panel b: the size of the bubble represents the general government debt-to-GDP ratio as at year-end 2024. The old-age dependency ratio is shown as the ratio of people aged 65 or over to people aged 15-64. Panel c: the no-fiscal-policy-change (NFPC) scenario is based on the European Commission's 2024 Autumn Forecast (AF). Beyond the AF projection horizon – i.e. from 2027 onward – the structural primary balance remains unchanged throughout the projection period. The NFPC with ageing cost scenario follows the same assumptions, except that the structural primary balance is adjusted to account for projected ageing-related cost changes.

**Persistent fiscal pressures may jeopardise sovereign debt sustainability over the medium to long term.** In particular, higher dependency ratios are associated with higher interest rate-growth differentials (**Chart C.2**, panel b) – a key metric in sovereign debt sustainability analysis. This widening gap is likely due to two main factors: first, the anticipated rise in future debt levels, which elevates default risks and consequently drives up the interest rates that governments must pay on their debt;

[148] See Kim, J. and Dougherty, S. (eds.), "Ageing and Fiscal Challenges across Levels of Government", *OECD Fiscal Federalism Studies*, OECD Publishing, October 2020.

and second, the slowing economic growth observed in ageing populations.[149] Countries with already high public debt levels could therefore find it more difficult to service and reduce debt as ageing-related costs rise and revenues decline. Looking ahead, simulation results for the euro area as a whole indicate that ageing-related costs could prove detrimental to debt dynamics under a no-policy-change scenario (**Chart C.2**, panel c). Ageing-related costs are therefore expected to negatively affect long-term fiscal debt sustainability in most euro area countries, as they present a key obstacle to maintaining or reducing debt levels.[150] This could also prompt market participants to reassess risks to more vulnerable sovereigns and could lead to increases in borrowing costs.

**Euro area sovereigns need a comprehensive strategy to mitigate the budgetary impacts of ageing.** This strategy would include reforming pension systems to keep ageing-related costs in check, updating tax systems to counter a shrinking tax base, restructuring healthcare and long-term care services to manage rising demand, and adjusting labour and migration policies to ensure greater labour force participation.[151] In addition, fiscal policy could be adjusted to support economic activity through a more growth-friendly composition of public finances.

## Non-financial corporations

**As the population ages, non-financial corporations may encounter challenges associated with labour scarcity and skills shortages.** Alongside an increasing share of older workers in the total labour force, a higher number of retiring workers than new labour market entrants results in a reduction in the overall size of the labour force (**Chart C.3**, panel a). This can make it more difficult for firms to fill open positions, especially in sectors already facing labour shortages and in countries that do not benefit from immigration of younger workers.[152] At the same time, it may not be easy to replace the valuable skills and experience typically accumulated by older workers during their careers. A skills gap may thus emerge in the labour market, affecting firms' ability to grow and innovate.[153]

**In addition, higher labour costs and reduced productivity may impair firms' efficiency, although technological advances could partly mitigate this effect.** Labour costs typically rise as the workforce ages, given the prevalence of long-term contracts and the greater experience of that older cohort. Higher labour costs may also reflect increased competition for workers in the context of a shrinking labour

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149 Research indicates that, controlling for debt, a higher dependency ratio is linked to a lower interest rate-growth differential, whereas slower population growth tends to increase it. This may be because ageing leads to higher savings and lower interest rates, while slower population growth affects growth more quickly than interest rates. See Checherita-Westphal, C. and Domingues Semeano, J., "Interest rate-growth differentials on government debt: an empirical investigation for the euro area", *Working Paper Series,* No 2486, ECB, November 2020.

150 See "Debt Sustainability Monitor 2024", *Institutional Paper*, No 306, European Commission, March 2025.

151 See "2024 Ageing Report", *Institutional Paper*, No 279, European Commission, April 2024.

152 See Clark, R.L. and Ritter, B.M., "How Are Employers Responding to an Aging Workforce?", *Working Papers*, No 26633, National Bureau of Economic Research, January 2020.

153 See Burmeister, A. and Deller, J., "Knowledge Retention From Older and Retiring Workers: What Do We Know, and Where Do We Go From Here?", *Work, Aging and Retirement*, Vol. 2, Issue 2, 2016, pp. 87-104.

force. This may lead to tighter profit margins and may weigh on firms' competitiveness.[154] In addition to declining labour productivity, the tendency of older employees to work fewer hours could give rise to operational challenges for firms, especially in the services sector (**Chart C.3**, panel b). Moreover, older people tend to have lower cognitive functioning than their younger peers. That said, cognitive abilities at older ages have improved over time, although notable differences persist across countries, depending on socioeconomic conditions.[155] Productivity gains stemming from technological advances, notably including the more widespread use of artificial intelligence, could partially offset the associated declines in firms' operational efficiency.[156] However, the impacts would probably be uneven across different sectors, depending on their exposure to and adoption of artificial intelligence (**Chart C.3**, panel c). In sectors in which labour shortages and productivity losses are not effectively addressed, declining profitability may exert downward pressure on affected firms' stock prices, which may have broader financial stability implications.

**To address the challenges posed by an ageing workforce, it is essential to improve productivity and increase labour force participation.** Appropriate initiatives could be aimed at maintaining the productivity levels of older workers through mandatory retraining programmes and training on new technologies.[157] In addition, measures could be implemented to enable more women to participate in the labour force, enhance the integration of the unemployed into the workforce and promote flexible working arrangements. Furthermore, limiting incentives to opt out of the workforce by taking early retirement could bridge the gap between statutory and actual retirement ages. In addition, offering tax incentives that encourage individuals to continue working beyond the statutory retirement age could help to raise workforce participation. Finally, immigration can help to temporarily cushion the impact of an ageing society on labour markets.

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154 See Bianchi, N. and Paradisi, M., "Countries for Old Men: An Analysis of the Age Pay Gap", *Working Papers*, No 32340, National Bureau of Economic Research, April 2024, and Groiss, M. and Sondermann, D., "Help wanted: the drivers and implications of labour shortages", *Occasional Paper Series*, No 2863, ECB, 2023.

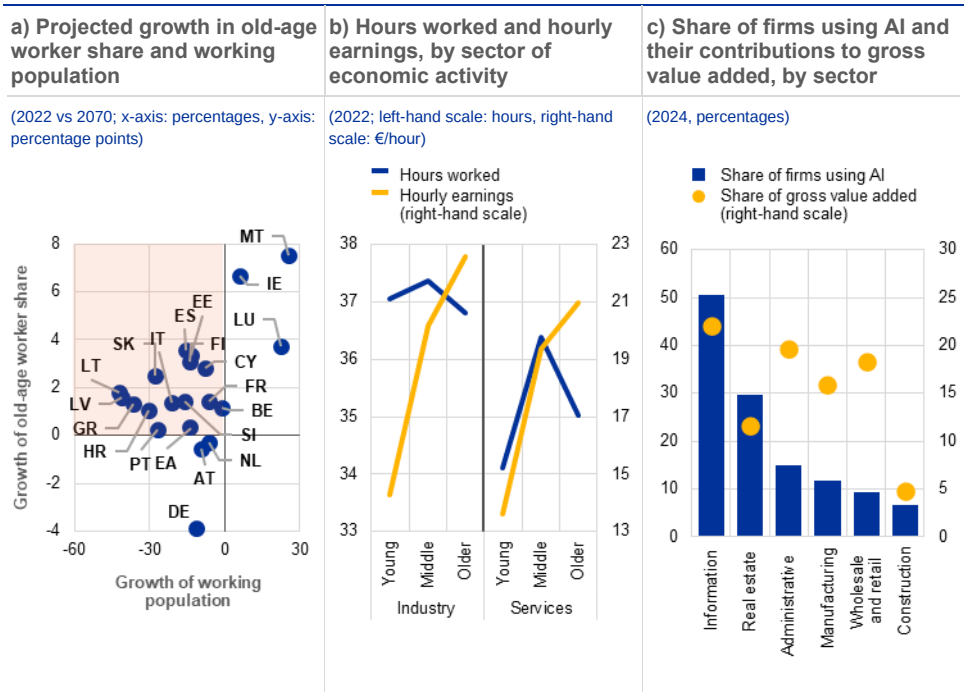
155 See "The Rise of the Silver Economy: Global Implications of Population Aging", *World Economic Outlook*, Chapter 2, International Monetary Fund, April 2025.

156 See Furman, J. and Seamans, R., "AI and the Economy", *Innovation Policy and the Economy*, Vol. 19(1), 2019.

157 See "Working Better with Age", *Ageing and Employment Policies*, OECD Publishing, August 2019.

**Chart C.3**

As the population ages, firms may face labour and skills shortages, higher labour costs and reduced productivity, which could be partly offset by technological advances



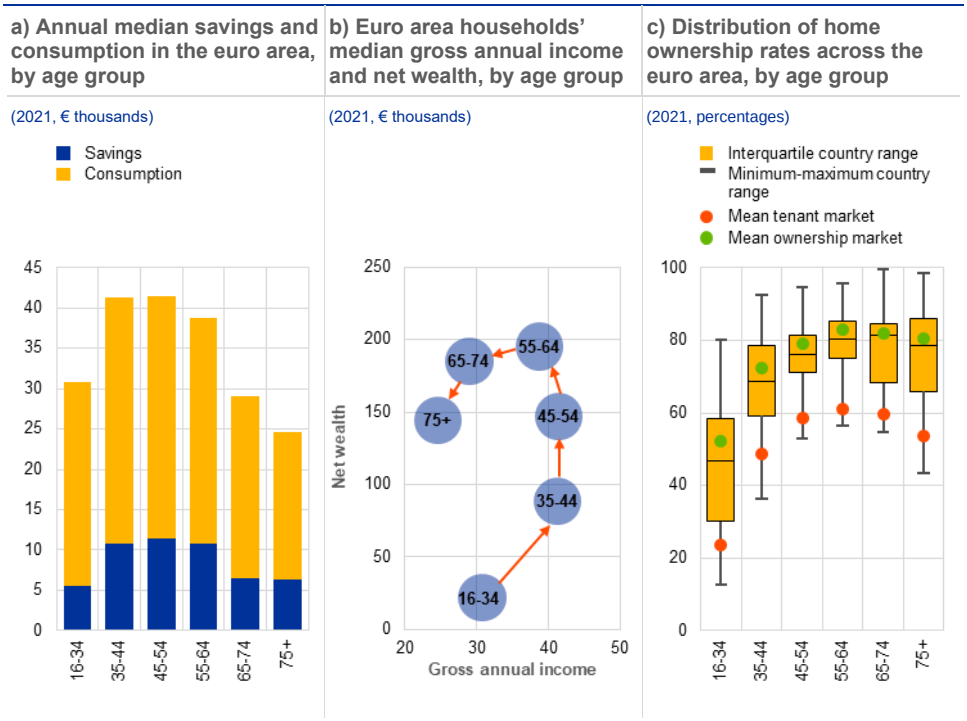

Sources: European Commission, Eurostat and ECB calculations.
Notes: Panel a: the chart depicts on the horizontal axis the growth rate of the total working population (20-64) for euro area countries, and on the vertical axis the projected percentage point growth in the old-age share (55-64) of the total working population (20-64). Panel b: "Hours worked" refers to weekly hours worked in the euro area and is shown for age cohort young (15-34), middle (35-49) and older (50+). Hourly earnings are shown for age cohorts young (until 30), middle (30-49) and older (50+) in the euro area. "Industry" is shown excluding construction and "Services" excludes public administration, defence, compulsory social security, activities of households as employers, and extra-territorial organisations and bodies. Panel c: "Information" captures information and communication industries; "Administrative" captures administrative and support service activities; "Wholesale and retail" captures wholesale and retail trade, repair of motor vehicles and motorcycles, accommodation and food services, and transport and storage.

## Households and residential property markets

**In line with declining incomes, households tend to consume less and to save less towards the end of the lifecycle.** This is not surprising, as pensions do not fully replace what people earn during their active working lives. A smaller income stream during retirement, in turn, translates into lower levels of saving and consumption (**Chart C.4**, panel a). To smooth consumption needs and maintain living standards, however, households tend to tap into the wealth they have accumulated over time (**Chart C.4**, panel b). There are also notable shifts in the pattern of household consumption over the lifecycle, with an increasing emphasis on services such as health care and leisure and a declining interest in durable goods. These compositional changes may, in turn, exert additional pressure on firms' profitability in those sectors that face structurally lower demand for their products and services due to population ageing, which can potentially lead to greater financial stability risks.

**Chart C.4**

Ageing households face reduced income, impacting their consumption and saving levels, yet hold higher net wealth, owning the bulk of real and financial assets




Sources: ECB (HFCS), Eurostat and ECB calculations.
Notes: The most recent data from the Household Finance and Consumption Survey (HFCS) is from 2021. Panel a: median savings are calculated by multiplying the median saving rate of 2020 by the median gross annual income of euro area households. The rest of median gross annual income is shown as consumption. Panel c: home ownership captures households' main residence. Horizontal lines inside the interquartile range represent median values. "Mean tenant market" captures countries with lower ownership rates than the euro area average − Germany, France, the Netherlands and Austria − while "Mean ownership market" includes all other euro area countries.

**In addition to a declining total population, reduced demand for houses from older individuals may exert downward pressure on house prices.** Throughout their lifetimes, individuals tend to accumulate real estate assets, resulting in an increased likelihood of homeownership, though this trend persists only up to a certain stage (**Chart C.4**, panel c).[158] With rising longevity, demand for property and, by extension, house prices are likely to decline, which could have an impact on households through wealth, income and collateral effects, as well as on banks through lower valuations of real estate holdings. Declines in collateral values could increase perceived lending risk, leading to higher household borrowing costs.[159] That said, real estate holdings tend to decrease among the very elderly as demand increases for old-age accommodation such as retirement or nursing homes.[160] Downward pressures on house prices are likely to be uneven across regions, being higher in rural areas than in large cities given the ongoing long-term trend of urbanisation. Regions that are particularly attractive to the elderly for relocation or are popular vacation destinations may experience an increase in property prices.

[158] See Angelini, V., Brugiavini, A., and Weber, G., "The dynamics of homeownership among the 50+ in Europe", *Journal of Population Economics*, Vol. 27, Issue 3, 2014, pp. 797-823.

[159] See Imam, P.A., "Demographic Shift and the Financial Sector Stability: The Case of Japan", *Journal of Population Ageing*, Vol. 6, Issue 4, December 2013, pp. 269-303.

[160] See Nguyen, H.T., Mitrou, F., and Zubrick, S.R., "Retirement, housing mobility, downsizing and neighbourhood quality – A causal investigation", *Journal of Housing Economics*, Vol. 63, March 2024.

## 4 Financial sector impacts: demographic dividend or tax?

### Banking sector

**Population ageing is expected to affect the banking sector by reducing loan demand and straining interest margins.** As individuals age, their financial behaviour shifts: younger people typically take on debt to build up real and financial assets. These assets grow until retirement, after which they are gradually consumed while debt declines (**Chart C.5**, panel a). With older people borrowing less and prioritising asset preservation, declining demand for mortgages may exert pressure on banks' net interest margins.[161] At the same time, ageing-driven excess liquidity depresses the natural interest rate and flattens the yield curve, posing challenges to maturity transformation more generally.[162]

**Opportunities could arise from a shift towards fee-based income driven by wealth management, M&A advisory and new lending products.** As the corporate workforce ages, demand for succession planning and M&A advisory services will rise, benefiting banks. Asset and wealth management will grow as individuals seek retirement planning and decumulation strategies.[163] Older customers require specialised financial products such as reverse mortgages[164] and annuities but often prefer in-person banking services.[165] This preference is evident in countries with older populations, where the less widespread use of online banking and the lower number of card transactions (**Chart C.5**, panel b) result in high fixed costs associated with maintaining branch networks.

**Opportunities come with new risks like sectoral exposure concentration, longevity risks and search-for-yield behaviour, which banks need to address.** Corporate loan portfolios might face much greater exposure to health care and services for the elderly.[166] Reverse mortgages introduce longevity risk, which exposes a bank to the risk that borrowers might live longer than expected and hence outlive their financial resources. Margin compression might increase risk taking to boost yields.[167] Despite these challenges, and potentially partly driven by the shorter operational horizons of banks, most euro area banks fail to mention population ageing in their annual reports, unlike sectors such as health care, real estate or insurance (**Chart C.5**, panel c).

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161 See Doerr, S., Kabaş, G. and Ongena, S., "Population aging and bank risk-taking", *BIS Working Papers*, No 1050, Bank for International Settlements, November 2022.

162 See Gelos, G. and Muñoz, S., "Aging Japan Puts a Strain on the Financial System", *IMF Blog*, International Monetary Fund, August 2017.

163 See Imam, P.A. and Schmieder, C., "Aging Gracefully: Steering the Banking Sector through Demographic Shifts", *BIS Working Papers*, No 1193, Bank for International Settlements, June 2024.

164 A reverse mortgage is a mortgage loan, usually secured by a residential property, that enables the borrower to access the unencumbered value of the property. Instead of the homeowner making payments to the lender, the lender makes payments to the homeowner.

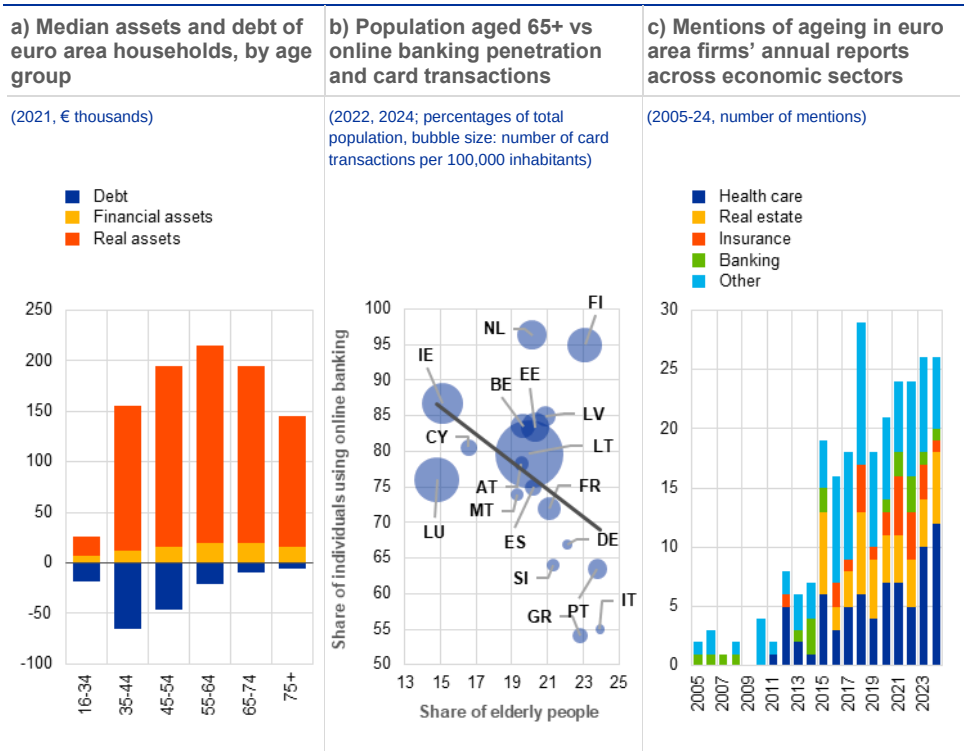
165 See Faibishenko, A. and Núñez-Gallego, J., "Banking Opportunities in the Silver Economy", Funcas, July 2020.

166 See Hanewald, K., Bateman, H., Fang, H. and Ho, T.L., "Long-Term Care Insurance Financing Using Home Equity Release: Evidence from an Online Experimental Survey", *Working Papers*, No 29689, National Bureau of Economic Research, January 2022.

167 See Doerr, S., Kabaş, G. and Ongena, S., op. cit., and Imam, P.A. and Schmieder, C., op cit.

**Chart C.5**

Population ageing may impact banks' business models, potentially requiring them to maintain costly branch networks, yet banks seem unprepared to meet this challenge




Sources: ECB (HFCS), European Commission, Bloomberg Finance L.P. and ECB calculations.
Notes: Panel a: the chart depicts median values conditional on households holding any real assets, financial assets and debt. Panel b: no data available for Croatia or Slovakia. Panel c: the chart shows how often the term "population ageing" was mentioned in euro area firms' annual reports over time across different sectors of economic activity.

## Financial markets

**Population ageing can change households' investment behaviour, affecting the demand for and prices of financial assets in markets over time.** Aggregate investment needs and preferences are directly linked to the relative share of younger people who wish to build up their savings and therefore invest. By contrast, elderly people wish to keep or spend their savings, possibly even divesting during retirement. As younger and older households want to buy or sell different asset types at the same time, the demand from these cohorts can have opposing effects on prices, making it difficult to predict the aggregate impact.[168]

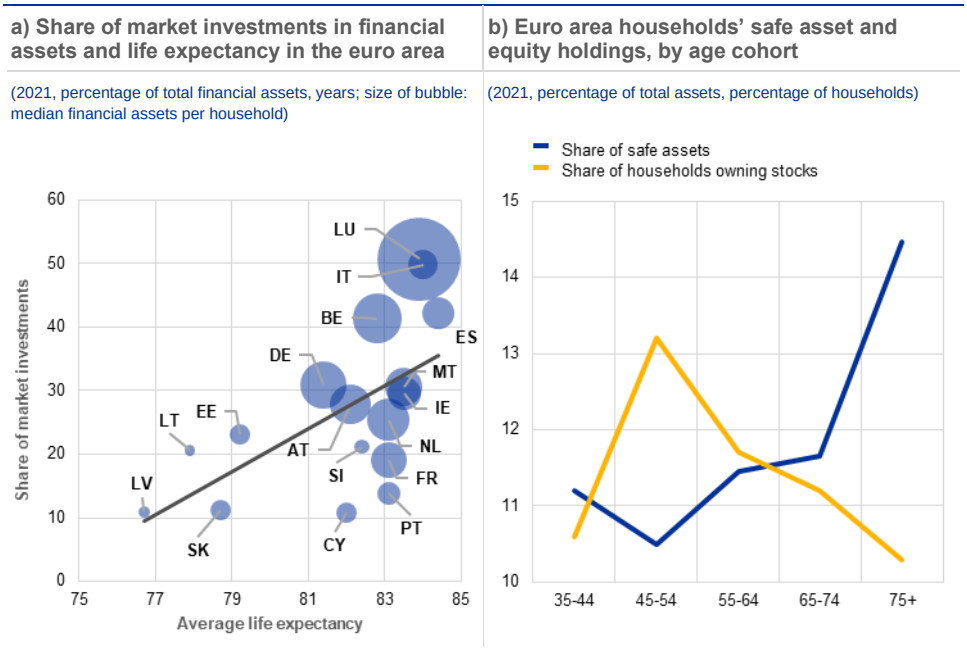
**Rising life expectancy can incentivise households to invest more in financial markets so they can grow their savings and supplement future retirement income.** Households in many euro area countries are increasingly investing their savings in financial markets. While these investments are exposed to market risk, well-diversified investment portfolios can allow households to grow their financial

[168] For an overview of the growing academic literature on the effects of demographic change on financial markets, see Buchmann, M., Budlinger, H., Dahinden, M., Francioni, R., Groth, H., Lenz, C. and Zimmermann, H., "Financial Demography: How Population Aging Affects Financial Markets", *Handbook of Aging, Health and Public Policy*, February 2023, pp. 1-22.

assets and earn higher returns than they would from traditional bank savings. Increased life expectancy, which is also associated with higher incomes and better living conditions, allows households to accumulate more financial assets, of which they tend to allocate more to bonds and equities (**Chart C.6**, panel a). Aided by the digitalisation of services, financial investments have become more popular among younger cohorts, as they can provide them with additional income after retirement and reduce their dependency on government pensions.

**Chart C.6**

Financial investments tend to increase with higher life expectancy, but older investors prefer safer assets




Sources: ECB (HFCS), Eurostat, ESM and ECB calculations.
Notes: Panel a: market investments are defined as financial assets not held in deposits, money owed to other households, pensions or life insurance products. No data available for Croatia, Finland or Greece. Panel b: safe assets are defined as deposits, bonds, and voluntary pensions and life insurance products.

**An ageing population will likely increase the demand for bonds, as older investors tend to be more risk-averse.** Investors adjust their portfolio compositions as they grow older. Younger cohorts try to grow their savings by investing more in comparatively riskier equities that offer higher average returns. By contrast, older households allocate their investments to less risky investments that provide a more stable return (**Chart C.6**, panel b). Where the risk-averse preferences of older cohorts of investors dominate, structurally higher demand for safer assets can lower equity valuations and make it more challenging for corporates to obtain market-based funding. As an ageing population becomes more risk-averse, investment in riskier financial assets such as equities or high-yield corporate debt may decline structurally. This could exert downward pressure on the prices of such assets. Comparatively riskier borrowers, such as smaller corporates, will have to offer higher returns to attract investors, making their market-based funding more expensive.

**The retirement of the baby boomer generation could lead to higher divestment over the coming years, although the impact on financial markets is likely to be**

**limited.** Households that have currently accumulated a significant amount of savings are expected to divest parts of their wealth to fund their retirement. While this divestment can lead to a decline in asset prices in markets, the risk of a potentially disruptive, wider asset sell-off appears limited. Among the boomer generation, financial investment tends to be concentrated in wealthier households that have less need to sell their assets and are instead expected to transfer these assets to their heirs at some point.

**Improving European capital market integration is important to help future generations build up retirement savings and support investment.** Reducing capital market fragmentation and advancing the capital markets union could improve access to financial markets for households and firms in the euro area and facilitate risk sharing across countries. It would also mitigate several potentially adverse financial stability impacts associated with an ageing population. First, it would provide households with better opportunities to invest, diversify and grow their savings for retirement, which also reduces their need for financial support from governments. Second, improved capital markets can more efficiently channel the ample household savings in the euro area to corporates, providing them with better access to market-based funding to meet their investment needs.

## Insurance corporations and pension funds

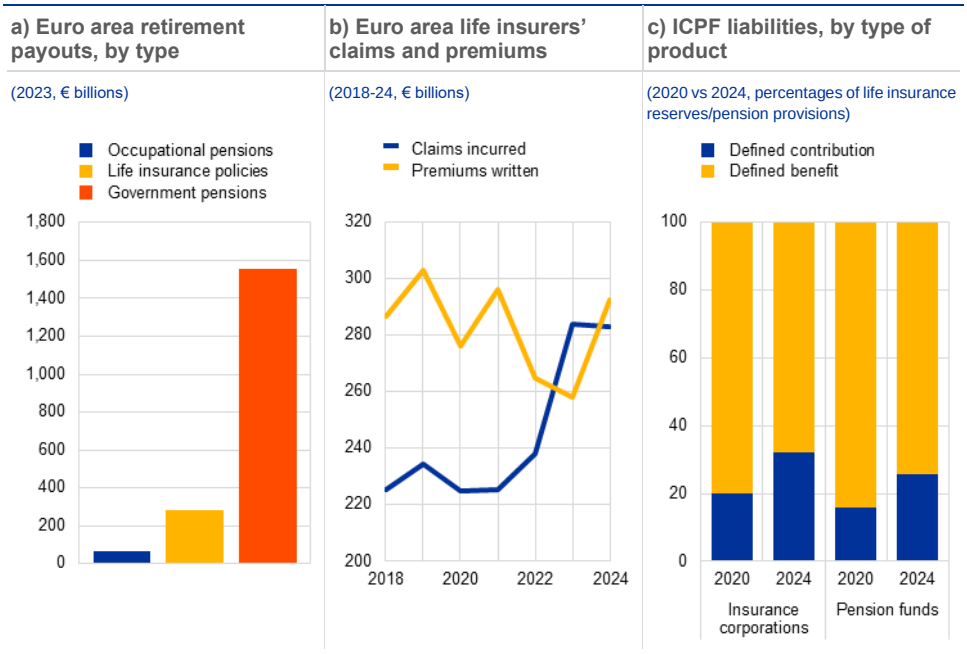
**Resilient insurance corporations and pension funds (ICPFs) are important for retirement funding in an ageing population.** Although small compared with government-sponsored pay-as-you-go plans, payouts from pension funds and life insurers are an important form of retirement funding for many households in the euro area (**Chart C.7**, panel a).[169] For younger generations, these forms of funded pension plans – also as an indirect, additional form of financial market investment – will likely become more relevant as higher old-age dependency ratios make unfunded government pensions less certain. In their role as financial intermediaries, ICPFs are also large investors in euro area financial markets, so their resilience plays a pivotal role in preserving stability in the wider euro area financial system.

**Traditional pension and insurance products that offer a guaranteed return have become less profitable as life expectancy has increased and bond yields have declined.** Offering a guaranteed payout for life exposes ICPFs to both interest rate risk and longevity risk. To manage these risks, ICPFs that offer such payouts invest in long-dated bonds to reduce their duration gap and adjust payout levels to match rising life expectancy. With bond yields declining since the 1980s and retirement periods becoming longer, guaranteed returns have fallen and are thus less attractive for both ICPFs and policyholders. Although rising interest rates have improved the funding positions of ICPFs in recent years, claims on life insurance policies have increased and may start to outpace collected premiums (**Chart C.7**, panel b).

[169] The prevalence of different forms of retirement funding varies across euro area countries.

**Chart C.7**

Life insurers and pension funds provide additional means of retirement funding, while adjusting their business models to an ageing population




Sources: Eurostat, EIOPA, ECB and ECB calculations.
Notes: Panel c: "Defined contribution" includes defined contribution pension schemes and unit- or index-linked life insurance. "Defined benefit" includes defined benefit pension schemes and non-unit/non-index-linked life insurance. Unit- and index-linked products are life insurance policies where the policyholder's benefits are directly linked to the performance of investment funds or indices. In unit-linked products, premiums are invested in specific investment funds chosen by the policyholder and the benefits depend on the value of these units. Similarly, index-linked products have benefits tied to the performance of a particular financial index.

**ICPFs have started to shift towards defined contribution products, transferring their risk to policyholders.** Over the past few years, ICPFs have increased their share of products with lower or no guaranteed returns, as in the case of defined contribution (DC) pension schemes and unit-linked insurance products (**Chart C.7**, panel c). Under DC and unit-linked schemes, the building-up of retirement savings depends more directly on financial market performance and the investment risk is shifted to the policyholders.[170]

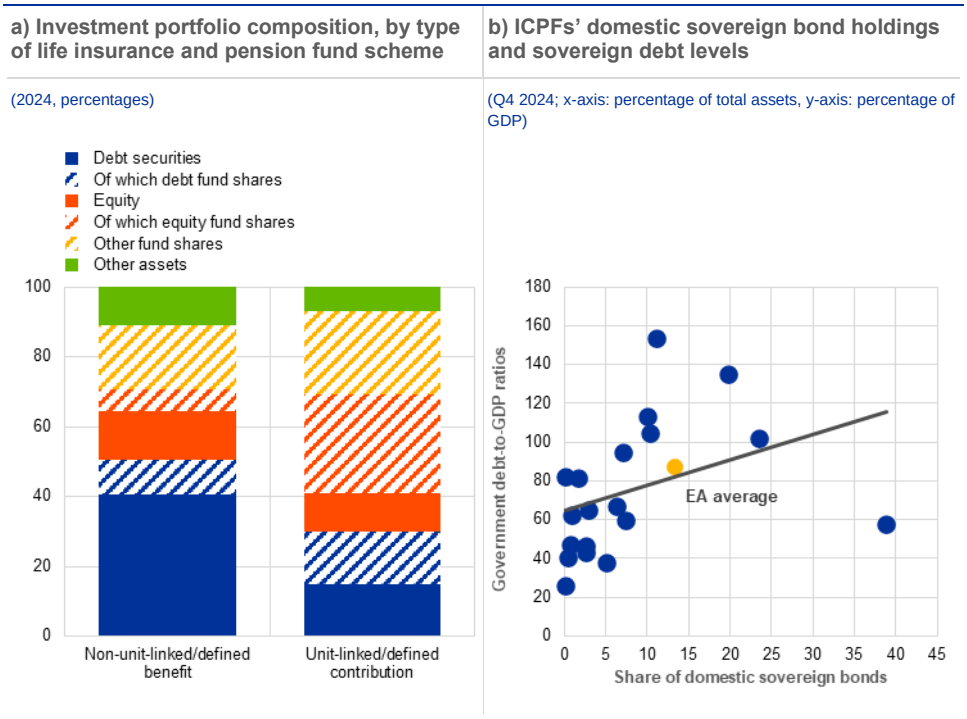
**ICPFs' investments are changing as they offer fewer guaranteed payout products, which could lead to structurally lower demand for long-maturity bonds.** As investment risk is transferred to policyholders, ICPFs are allocating a larger share of portfolios to equities and investment fund shares (**Chart C.8**, panel a). They thereby reflect the fact that younger households need to build up savings for retirement through diversified and comparatively riskier investments. This could boost equity financing, support growth in the investment fund sector and potentially provide a counterweight in markets to older retail investors becoming more risk-averse. But it may also imply less demand for long-maturity bonds (mostly sovereign bonds). ICPFs in several euro area countries have traditionally allocated sizeable shares of their portfolios to domestic sovereign debt (**Chart C.8**, panel b). A decline in these holdings

[170] The largest occupational pension fund system in the euro area – the Dutch pension fund system – is currently transitioning to a DC scheme. As a result, the share of DC pension fund schemes in the euro area is expected to increase significantly by 2027. See also the article entitled "The structural impact of the shift from defined benefits to defined contributions", *Economic Bulletin*, Issue 5, ECB, 2021.

could put further pressure on sovereign financing costs, notably in countries with higher debt levels where this home bias tends to be more pronounced.

**Chart C.8**

ICPFs are shifting away from products offering guaranteed payouts, reducing their exposure to declining returns and longevity risk but also their sovereign bond holdings




Sources: EIOPA, ECB and ECB calculations.
Note: Panel b: EA stands for euro area.

## 5 Conclusion

**This special feature takes stock of the broader financial stability implications of population ageing in the euro area.** As population growth slows and longevity increases, the proportion of elderly individuals in Europe is rising. Examining the systemic risks associated with these demographic changes, this special feature explores the sectoral channels of transmission as well as the interplay between the real economy and the financial sector.

**An ageing population could pose several risks to financial stability.** Population ageing is expected to result in lower levels of labour supply and labour productivity, which could weigh on firms' profitability and subdue economic growth. Governments are facing higher levels of ageing-related expenditure on items such as pensions and health care, while a lower number of working-age individuals and less economic growth could reduce tax revenues. Deteriorating corporate fundamentals and, in turn, rising concerns over sovereign debt sustainability could undermine financial stability. Financial markets and institutions are at the same time also directly affected by population ageing. Shifts in household demand for financial services may pose risks to the traditional business models of banks, life insurers and pension funds. Additionally,

older individuals may show more risk-averse behaviour in financial investments. If their reduced demand for riskier assets is not offset by additional investment from younger generations – either in the form of direct investments or through increased demand via ICPFs – this could result in lower equity valuations and less favourable market-based financing conditions for corporations. Such financial sector impacts could in turn feed back into the real economy, limiting the funding available for investments needed in response to demographic change.

**Comprehensive policy responses are essential to address the challenges posed by population ageing and to take advantage of the opportunities presented.** Reforms in pension systems and labour markets are needed to manage rising ageing-related costs and maintain a stable tax base. Encouraging technological advancements and fostering a culture of lifelong learning within the workforce could help mitigate productivity losses and support economic growth. Immigration can also temper the impact and help address some of the challenges posed by population ageing. Policymakers also need to ensure that healthcare and long-term care services become more innovative so they can meet growing demand from an ageing population. By implementing targeted policies, governments could alleviate fiscal pressures and uphold financial stability in the face of demographic change. Encouraging euro area households to participate in financial markets could help to advance the integration of European capital markets and facilitate the building-up of retirement savings for future generations. It could in turn ease the pressure on increasingly unsustainable pay-as-you-go government pension systems and foster growth by channelling savings towards real economy investments.

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

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