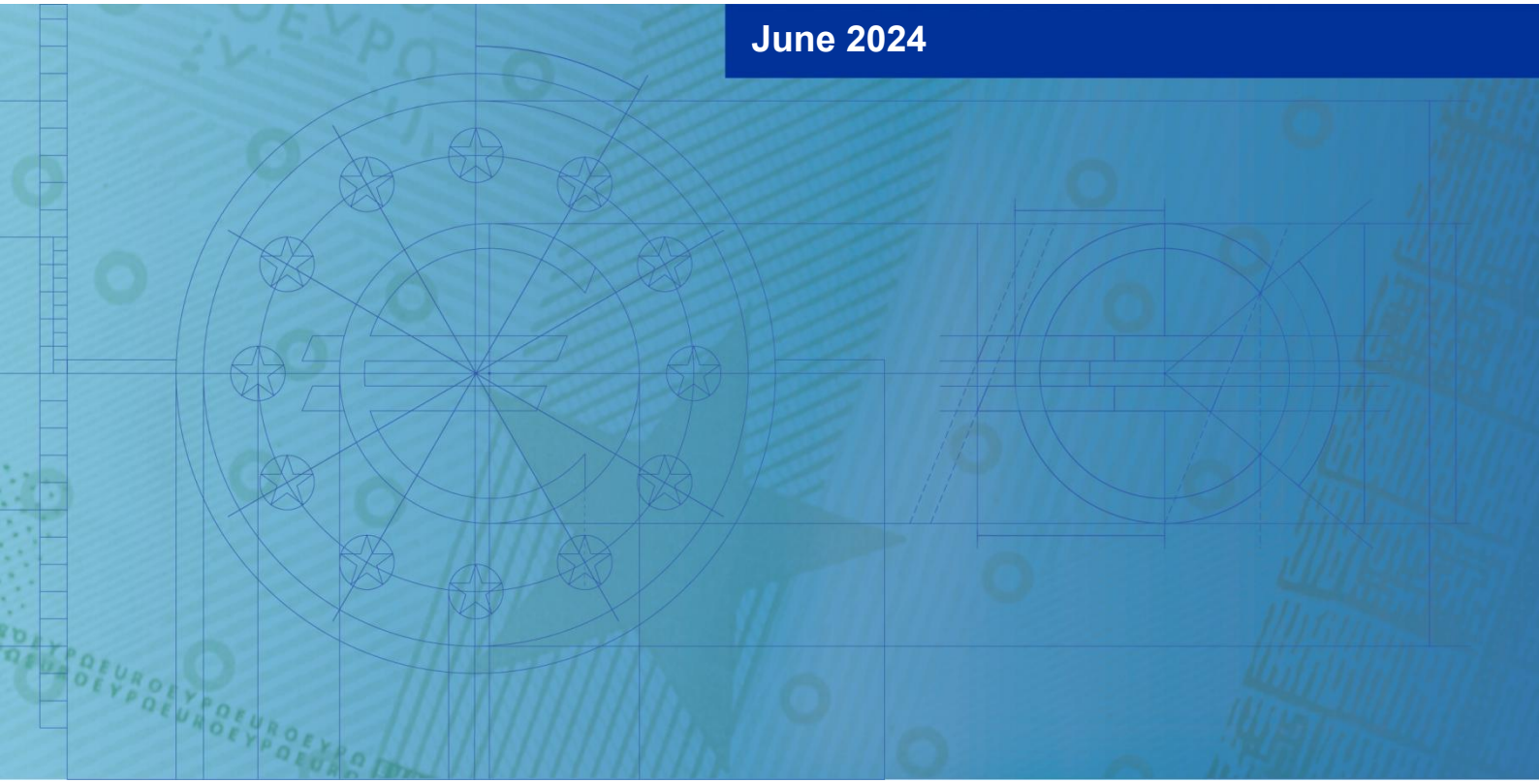
EUROPEAN CENTRAL BANK

EUROSYSTEM

Financial Integration and Structure in the Euro Area

ECB Committee on Financial Integration



June 2024

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1 Preface

This is the third edition of the European Central Bank's biennial report on financial integration and structure in the euro area (FISEA). As explained in greater detail when the first edition was released in March 2020,[1] it is designed to focus on structural developments in the financial system of the euro area and, in some cases, of the European Union (EU), as well as on related policy issues. In so doing, it covers developments in financial integration across member countries, changes in financial structure (the mixture of financial markets and intermediaries) and financial development or modernisation (for example through innovations in the financial system). Definitions of these three concepts and how they link to Eurosystem tasks and functions were provided in more detail in the 2020 preface.

The findings of this report concern issues relevant for the policy discussion related to the European banking union, the European capital markets union and thus the financial aspects of deepening Economic and Monetary Union.

The report has two main sections.

The first section reviews changes to the environment and the context in which the euro area economy financial landscape is evolving. It also identifies policy priorities in the light of ongoing policy debates.

The second section provides analytical material, with a focus on the main trends in financial integration, structure and development, based on a review of the standard set of ECB indicators of financial integration and structure. The indicators and their descriptions are included in an online Statistical Annex (SA).[2]

The report also includes boxes that examine the following eight topics in greater depth.

- Massive investment is needed to meet EU green and digital transition targets
- The derivatives clearing landscape in the euro area three years after Brexit
- Reassessing euro area financial integration: the role of financial centres
- Home bias and repo rates
- Intra-euro area cross-border bank lending: a boost to banking market integration?
- Do EU SURE and Next Generation EU (NGEU) bonds contribute to financial integration?

1 "Financial integration and structure in the euro area", ECB, Frankfurt am Main, March 2020.

2 The updated financial integration and financial structure indicators and methodologies according to which the indicators are calculated are available on the Indicators of financial integration and structure in the euro area page of the ECB's website.

- Examining the causes and consequences of the recent listing gap between the United States and Europe
- Rapid growth and strategic location: Analysing the rise of FinTechs in the EU

The cut-off date for data used in this edition of the report was **17 May 2024**.

2 Executive summary

Over the last two years, the euro area has been confronted with significant global geopolitical and economic shocks that have profoundly affected the landscape in which investment and financial decisions are made.

Against this background, advancing the integration of the financial markets of the European Union (EU) and implementing the open strategic autonomy agenda at the EU level are vital steps for strengthening and securing economic and financial resilience.

The asset size of the euro area financial sector has contracted in absolute nominal terms since 2022, despite a rise in GDP over the period. This is mainly the result of valuation effects and monetary policy tightening. In relative terms, the respective weights of banks and non-banks in the overall euro area financial sector have remained roughly unchanged, while the Eurosystem balance sheet has declined.

Meanwhile, the contribution of non-bank financial intermediaries to financing activities has broadly stabilised recently, after a decade of marked increases. In the course of 2022, rising interest rates triggered a decline in the valuations of equity and debt securities portfolio holdings. The subsequent rebound was broadly based across investment funds, insurance companies and pension funds.

Since 2022, financing flows have more generally reflected changing economic and financial conditions. With debt financing experiencing a decline, the euro area economy’s financing mix has shifted towards equity. This can be attributed to weakened borrowing from banks due to higher lending rates, tighter credit standards and an uncertain growth outlook. Attractive valuations are also likely to have boosted equity investment.

Despite the resilience demonstrated during crises, progress on financial integration in the euro area has been disappointing overall. Both price-based and quantity-based financial integration indicators have declined substantially over the past two years, with no sizeable increase since the inception of Economic and Monetary Union. Despite significant legislative efforts over the last decade, cross-border financial market activities and risk sharing have not grown, and it appears that a piecemeal approach has been taken towards many of the reform efforts.

In particular, there has been only limited progress on banking market integration since the inception of banking union. Clearer regulatory frameworks are required for group-wide risk management to facilitate and support the free flow of liquidity and capital across borders.

The integration of the euro area internal market for financial services remains crucial, and even more so in the face of the growing financing challenges posed by the green, digital and defence transitions.

Policy actions should now focus on developing a strategy and creating an environment for mobilising savings and funding. Incentives for making additional funding capacities available could be provided through the following three lines of action that have the potential to be mutually reinforcing:

- "unfreezing" a share of the unproductive deposits held by euro area households;
- developing bond and equity markets to make them more attractive for issuers and investors;
- enhancing the attractiveness of euro area financial markets for foreign investors.

Meanwhile, progress in the following six policy domains is crucial for bolstering the integration of Europe's financial markets and fully realising their potential:

- removing barriers to cross-border crisis management and facilitating cross-border banking;
- harmonising the definition of key concepts in EU regulatory frameworks;
- integrating the EU capital market regulatory and supervisory architecture;
- reviving securitisation for the capital markets union;
- increasing standardisation and transparency in the field of structured products;
- promoting vibrant EU risk capital and equity markets.

Capital markets integration is crucial for facilitating the investments needed for the green, digital and defence transitions, as well as for bolstering the EU's productivity and competitiveness in the face of challenging geopolitical dynamics. To help achieve this aim, the EU should develop a clear strategy to build a more vibrant, dynamic, competitive and environmentally sustainable economic environment.

3 Policy priorities in a new environment

3.1 Key objectives within a new environment

Since 2022, the euro area economy has faced global geopolitical and economic developments significantly affecting its investment needs. Investment activities in the euro area economy have been influenced by the economic recovery from the COVID-19 pandemic, government stimulus measures and global economic trends shaped by geopolitical developments. An unprecedented series of negative supply shocks caused by pandemic-induced supply chain disruptions, Russia's unjustifiable invasion of Ukraine and the ensuing energy crisis have significantly increased input costs for all sectors of the economy.

Advancing the integration of EU financial markets and implementing an open strategic autonomy agenda at the European Union (EU) level will contribute to economic and investment resilience in the face of these new and evolving global geopolitical and economic challenges.

3.1.1 Financing needs in an evolving geopolitical environment

A new era in geopolitical affairs is emerging, possibly leading to global fragmentation and a multipolar reorganisation of international relations with significant implications for trade, financial structures and integration worldwide. Following several decades of financial openness, multilateralism and globalisation, the global economy is increasingly challenged by geopolitical tensions and rivalry between some major countries. This has led to a rise in subsidies and/or restrictions to trade, especially in critical inputs, a reorientation of global value chains, measures to ensure energy security, and strategic autonomy policies aimed, for example, at restricting foreign direct investment (FDI) in strategic assets. Most recently, the EU and others have imposed trade, financial and technology transfer sanctions in response to Russia's war of aggression against Ukraine. These policies often entail trade-offs between economic security on the one hand and the availability and efficient allocation of resources, including capital, on the other. As a result, the risks of fragmentation in global trade and finance have increased.[3]

[3] See Box 1 entitled "Global production and supply chain risks: insights from a survey of leading companies", *Economic Bulletin*, Issue 7, ECB, 2023. For a broad analysis from a central bank perspective, see Ioannou, D. and Pérez, J.J. (co-leads), "The EU's Open Strategic Autonomy from a central banking perspective. Challenges to the monetary policy landscape from a changing geopolitical environment", *Occasional Paper Series*, No 311, International Relations Committee (IRC) Workstream on Open Strategic Autonomy, ECB, Frankfurt am Main, March 2023. On financial sanctions specifically, see Section 3.2.2 of the IRC report. On potential financial fragmentation and its costs, see *Financial Stability Review,* ECB, Frankfurt am Main, May 2024. On the impact on the international monetary system, see *The international role of the euro*, ECB, Frankfurt am Main, June 2024.

The EU and its Member States are faced at this point with very high additional financing needs. The green and digital transitions, compounded by energy and external security concerns, will require major investment expenditures (see **Box 1**).

The green transition may benefit from supplementary measures to enhance access to and the adoption of sustainable finance. Such measures include financing and non-financial support, accompanied by regulatory measures and collaborative efforts. Financing support encompasses direct financing, leveraging private sector involvement and facilitating participation in green capital markets. Regulatory measures should be aimed at simplifying voluntary reporting standards and promoting interoperability among reporting standards. Non-financial support – in the form of technical assistance and the provision of data and information, for instance – together with collaborative efforts focused on knowledge sharing and policy dialogue would further help to assist companies' transition to sustainable finance practices.

Finally, defence expenditures are also expected to rise because of the evolving geopolitical environment. According to European Central Bank (ECB) simulations, were EU Member States to increase their defence spending to 2% of GDP annually (as per the NATO commitment), this would imply an estimated additional total of more than €400 billion in constant prices for the euro area member countries compared with the level observed before the start of Russia's war in Ukraine.[4]

Box 1
Massive investment needs to meet EU green and digital targets

Prepared by Malin Andersson, Carolin Nerlich, Carlo Pasqua and Desislava Rusinova.

Substantial green and digital investments will be needed in the coming years to reach the targets set for 2030 and beyond under the Green Deal and the Digital Compass.[5] Reaching these targets would help the EU to reduce its greenhouse gas (GHG) emissions, boost potential growth, improve competitiveness, address strategic vulnerabilities and promote economic security and resilience at the EU level. However, the EU faces a large gap in funding for these investment needs which must be seen in the context of limited fiscal space, raising the question of how private capital can be best mobilised to bridge the gap. This box presents an overview of estimates of green and digital investment needs and discusses some of the challenges to be met, in particular in terms of funding needs.

The Green Deal is aimed at transition to climate neutrality by 2050 and a cut in the EU's net GHG emissions of at least 55% by 2030 as compared with 1990 levels. To deliver on these targets, the EU has adopted a set of policy measures, the so-called Fit for 55 package, to foster the requisite transformations of the EU's economy.[6] One of the key elements of the package is the reform of the emission trading scheme (ETS), notably by broadening its coverage and strengthening the price signals for decarbonisation efforts. An additional ETS will be set up for the

4 See Box 16 entitled "EU public goods and military spending" in Ioannou and Pérez, op. cit.

5 See Green Deal and Europe's Digital Decade for more details. The investment needs to support the green and digital transition are based on a broad definition of investment, which includes gross fixed capital formation as well as consumption of durable goods.

6 See Delivering for the European Green Deal.

transport and building sectors and is scheduled to become fully operational in 2027. Moreover, the package establishes more ambitious emissions reduction targets for the sectors not covered by the current ETS and strengthens standards to boost sustainable mobility, increase the share of renewables in the energy mix and improve energy efficiency.

The EU needs to invest sizeable amounts until 2030 and beyond to support the green transition. Over the past decade, the EU has invested an average of €764 billion per year (equivalent to 4.8% of EU GDP in 2022) to reduce GHG emissions (Chart A, panel a).[7] More green investment is needed, however, to bring GHG emissions in line with the 55% reduction target. The European Commission estimates the annual green investment gap for the 2030 target to be reached – that is to say, the investment needs in addition to historical spending – at €477 billion (3% of EU GDP in 2022), bringing the total annual investment needed to €1,241 billion (7.8% of EU GDP in 2022).[8] Most of the additional investment will be required in greening the transport sector and in boosting the energy efficiency of residential real estate.[9]

Quantifying green investment needs is fraught with uncertainty. It is therefore useful to also consider the wide range of estimates drawn up by other institutions. Compared with the European Commission estimate for total green investments, other institutions suggest a lower overall envelope. For example, Bloomberg New Energy Finance (BloombergNEF) estimates total investment needs at €1039 billion, while the Institute for Climate Economics (I4CE) expects investment needs of €813 billion by 2030 (Chart A, panel b).

Estimates of the green investment gap differ across sources. While the gaps estimated by the International Energy Agency (IEA) and the I4CE are broadly comparable with the European Commission estimate, BloombergNEF points to much higher additional needs until 2030 (Chart A, panel b).

The reasons for the discrepancies across estimates are manifold. The different historical spending levels used as a baseline may be one of the reasons, with the European Commission showing by far the highest level. Other factors include differences in the sectors covered, how the categories are defined and how the investment needs are calculated. For example, BloombergNEF and the IEA explicitly include investments in hydrogen, nuclear and carbon capture and storage technologies in the category “energy supply”. Moreover, differences arise from the assumptions underlying the mitigation policies adopted, in particular the carbon pricing path, the scenarios and the methodological approaches.

Although green investment will have to be financed largely by the private sector, the public sector is expected to play an important role as a catalyst. The EU is committed to spending 30% of its multiannual budget on green projects, amounting to around €363 billion in the period 2021-2027, and to allocating at least 37% of expenditure under the RRF to green projects,

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7 The annual average for the period 2011-2020. By way of comparison, total investment (gross fixed capital formation) in the EU was around 22% of EU GDP in 2020.

8 See Annex 1 of the European Commission document Investment needs assessment and funding availabilities to strengthen EU's Net-Zero technology manufacturing capacity. The investments required to cater for the RePowerEU plan, the Net Zero Industry Act and the environmental targets would add further to this figure, increasing it to an annual total of €620 billion, as set out in the European Commission's 2023 Strategic Foresight Report. Moreover, with the physical impact of climate change increasing, further funding pressures will emerge related to disaster relief, in particular if adaptation investment does not keep pace.

9 Over the next decade and until 2040, the European Commission expects total green investment needs to increase to €1,507 billion per year (9.2% of EU GDP in 2022) in order to reduce net GHG emissions by 90%. See the impact assessment by the European Commission of the 2040 target.

corresponding to a total of €240 billion in cumulative terms for the period 2021-2026.[10] While national budgets will also have to contribute to the green transition, fiscal space is limited. Estimates point to around 20-25% of total green investment needs being covered by the public sector, while for the remainder private capital will need to be mobilised.[11]

Unlocking sufficient capital for green investment may be challenging. Green investment projects differ from "traditional" investments in a number of ways and tend to entail higher risks for financial investors. In particular, green transition requires new technologies that may not yet be fully mature or are still under development; renewable energy supply is relatively capital-intensive, with high upfront capital needs and a higher depreciation rate reflecting a shorter lifecycle. Funding green investment projects may entail higher financial risks in comparison with "traditional" investment projects, in particular if start-up companies are involved. Banks may be less willing to take on higher risk or be constrained in so doing by regulatory requirements. Other sources of financing, such as venture capital, are less freely available in the EU compared with other jurisdictions, and notably the USA. Although green bond issuances have increased sharply in recent years, their overall share of total issuances is still very small.

Turning to digital investment, the Digital Compass Communication and the Digital Decade Policy Programme set targets and objectives for Europe's digital transformation by 2030.[12] Targets have been formulated in four areas, namely digital skills, digital infrastructures, digitalisation of business and digitalisation of public services. There are quantitative sub-targets in each of these areas. For example, by 2030 all households in the EU should be served by a Gigabit broadband network, and all populated areas should be covered by next generation high-speed wireless networks offering a performance at least equivalent to that of 5G. The Digital Decade Policy Programme 2030 sets up an annual cooperation cycle to achieve these common objectives and targets whereby the European Commission and the EU Member States will report on the progress achieved in terms of national roadmaps and on the implementation of multi-country projects. So far, progress in achieving the targets has been slow.[13]

Substantial investment will be needed to meet the digital targets. A European Commission study on international benchmarking of digital investments found that private-sector investments by the EU ICT sector in telecommunication equipment between 2014 and 2020 amounted to €277 billion (on average €46 billion per year).[14] On top of the existing digital investment, the European Commission estimated the additional needs to be around €125 billion per year (Chart A, panel a).[15] A separate study by the European Commission estimates that investment of around €114 billion will be needed in digital connectivity to achieve the "one gigabyte target" and a further €33 billion to provide a "full 5G service" (including new base stations and small cells to provide additional

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10 See the European Commission's communication entitled "EU budget and the NextGenerationEU". Under the Recovery and Resilience Facility (RRF), grants are mostly financed by borrowing operations to be repaid from the EU budget, while loans need to be repaid by the borrowing EU Member State.

11 See Darvas, Z. and Wolff, G., "A green fiscal pact: climate investment in times of budget consolidation", *Policy Contribution*, Issue No 18, Bruegel, September 2021.

12 See the European Commission communication entitled "2030 Digital Compass: the European way for the Digital Decade".

13 Progress is monitored through the Digital Economy and Society Index (DESI) Dashboard for the Digital Age. See the European Commission document entitled "2023 Report on the state of the Digital Decade" and the DESI Dashboard for the Digital Age.

14 See the European Commission technical report entitled "International benchmarking of private investments in Digital Decade thematic areas".

15 See the European Commission communication entitled "2023 Strategic Foresight Report".

bandwidth and ensure more reliable mobile connectivity).[16] Including the digital investment needed in infrastructure (roads, railways and waterways) of €26 billion increases the total digital connectivity investment gap to at least €173 billion.

Funding to meet the digital targets will stem from both public and private-sector sources. The European Commission has mapped EU funding instruments to the Digital Decade targets and found that these instruments could contribute more than €165 billion, with more than 70% of the funds originating from the RRF (i.e. about €130 billion being allocated to digital transformation initiatives).[17] EU investment efforts are directed primarily (that is to say 65% of digital funding) at the digital transformation of the public sector and the digitalisation of businesses. However, full achievement of the EU's digital transformation target will require additional investments, notably through multi-country projects.[18]

Lack of funding seems to be one of the most prominent obstacles to digitalisation, followed by uncertainty and the length of regulatory processes, according to the European Investment Bank.[19] Technical capacity, disagreements among stakeholders, technological uncertainty, agreements with public authorities and access to core infrastructures also play a role. Skills and expertise are another obstacle for digitalisation. High regulatory hurdles for firm entry and weak competition tend to slow digitalisation, and other challenges to digital investment are associated with small firm size and a low level of digital advancement. The European Commission Joint Research Centre points to the key conditions for a successful European digital transformation being sufficient private investment, internal demand and awareness of the benefits of digital technologies.

16 See the article entitled "Investment and funding needs for the Digital Decade connectivity targets" on the European Commission website.

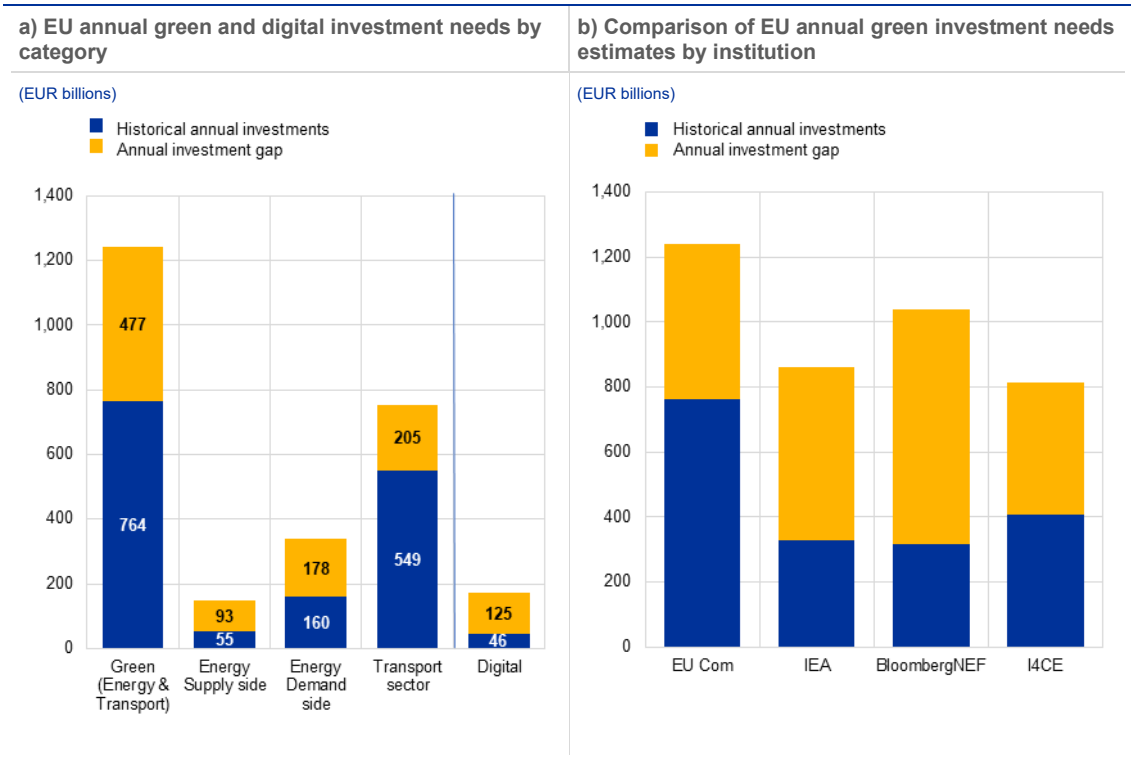
17 Ibid. In addition, €40 billion in public funding will support digital connectivity through EU programmes such as CEF Digital and the RRF.

18 A key element of the programme is the European Digital Infrastructure Consortia (EDICs), i.e. multi-country projects that will mobilise investments from the EU, Member States and the private sector for key digital areas, thereby facilitating the achievement of the general objectives and digital targets, but also promoting collaboration to enable Member States to embrace best practices and share their capabilities.

19 See the European Investment Bank report entitled "Digitalisation in Europe 2022–2023: Evidence from the EIB investment survey".

Chart A

EU green and digital investments



Sources: European Commission (EU Com), International Energy Agency (IEA), BloombergNEF, Institute for Climate Economics (I4CE) and ECB own calculations.
Notes: Panel a) shows green and digital investment needs. Historical annual green investments (including the sub-categories energy and transport) refer to the period 2011-2020 and for digital to the period 2014-2020. The annual investment gap is the additional annual investment needs until 2030 on the basis of the Fit for 55 policy package and the Digital Compass, respectively. The sum of the historical and additional investment gives the total annual investment needs until 2030. Panel b) shows the annual average of the estimates of green investment needs suggested by various institutions until 2030. Historical investment refers to the years 2023 for BloombergNEF and 2022 for the IEA and I4CE, and to the period 2011-2020 for the European Commission. BloombergNEF and IEA figures are converted from USD to EUR. For the IEA, the annual investment gap refers to the year 2030.

3.1.2 A new inflation and interest rate environment

From late 2020, euro area headline inflation, as measured by the Harmonised Index of Consumer Prices (HICP), climbed steadily, rising above the ECB's 2% target in July 2021.[20] It peaked at 10.6% in October 2022 after increasing throughout 2021 and most of 2022 (**Chart 1**). It then fell steadily to reach an estimated 2.4% in April 2024. The original rise mainly reflected a surge in energy and food prices, triggered by Russia's war in Ukraine. Past supply bottlenecks and pent-up demand from the coronavirus (COVID-19) pandemic, together with high input costs in production due to the rise in energy prices, ramped up price pressures across many sectors of the economy. From December 2022, the reversal in energy prices accounted for more than half of the drop in headline inflation. All major components of inflation saw gradual declines in year-on-year inflation rates over the second half of 2023, reflecting the fading impact of previous cost shocks and weaker demand due to tighter monetary policy.

[20] See Lane, P., "The 2021-2022 inflation surges and monetary policy in the euro area", *The ECB Blog,* 11 March 2024.

With inflationary pressures rising throughout the economy, the ECB took decisive action in 2022 to prevent longer-term inflation expectations from becoming unanchored above its 2% target. From July 2022 to September 2023 the ECB increased its key policy rates in ten steps by a cumulative 450 basis points (**Chart 1**).

Short-term euro area rates were influenced by the tightening of monetary policy decisions and resulting expectations. The ten-year overnight index swap (OIS) rate increased from slightly above 0% in January 2022 to 3% in October 2022. It then hovered around 3% for most of 2023, peaking at 3.3% in October 2023, before declining to 2.5% in December 2023. The decline in the ten-year OIS rate reflected lower financial market interest rate expectations, primarily driven by lower-than-expected inflation.

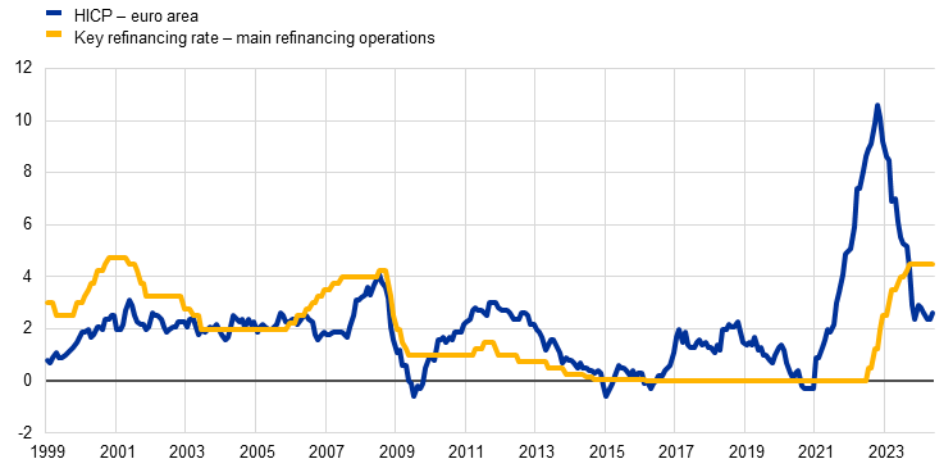
Heightened uncertainty about inflation and the reaction of monetary authorities led to a worldwide increase in risk-free long-term yields. The euro area ten-year GDP-weighted average of government bond yields closely followed developments in the short-term risk-free rate. The euro area GDP-weighted average of ten-year nominal government bond yields stood at 2.82% in December 2022 and 2.72% in December 2023, 269 and 259 basis points higher respectively than at the end of 2021.

Long-term euro area country rates closely followed developments in short-term rates, albeit with some variations. Despite some differences, movements in sovereign spreads were contained overall, in part owing to the Governing Council's announcement in June 2022 that it would apply flexibility in reinvesting redemptions falling due in the pandemic emergency purchase programme (PEPP) portfolio and the announcement in July 2022 of the Transmission Protection Instrument (TPI).

Chart 1

Euro area headline inflation and ECB key policy rate

(percentages; monthly data, Jan. 1999-Apr. 2024)



Sources: Eurostat and ECB.

Funding costs for euro area banks increased steeply in response to the monetary policy tightening measures. Increasing short and long-term risk-free

interest rates affected the overall funding environment for banks. Changes in the terms and conditions of the ECB targeted longer-term refinancing operations (TLTRO III) also contributed to higher bank funding costs. Finally, the gradual increase in the remuneration of customer deposits further elevated funding costs for banks, although increases in bank lending rates were higher overall in the euro area.

Bank lending rates for both firms and households saw significant increases from 2022, and credit standards tightened. The composite bank lending rate for loans to households for house purchases rose steeply, reaching its highest level in almost 15 years by the end of 2023. Lending rates for non-financial corporations increased substantially, rising by almost twice as much as those for households.

The increases in lending rates were rapid and large, reflecting the faster and more significant policy rate hikes implemented by the ECB from July 2022. Despite these increases, the transmission of monetary policy changes to lending rates across euro area countries remained smooth, albeit with disparities in lending rates for both households and corporates.

3.1.3 A much-needed resilience framework for the EU

The EU has developed an open strategic autonomy agenda to address rising geopolitical risks while maintaining economic openness and enhancing resilience. Measures in the financial sphere such as FDI screening aim to balance openness, efficiency and security. Nevertheless, such measures may entail trade-offs. The extent of the trade-offs depends on the full set of domestic policies adopted to ensure, for example, the more efficient functioning of domestic capital markets. In addition, the cost-benefit calculations for open strategic autonomy policies may differ depending on the time horizon considered. For example, strategic autonomy measures to defend against cybersecurity threats may entail costs in the short term but result in accumulated benefits in the longer run, including from a financial stability perspective. All in all, carefully targeted measures need to be taken in response to geopolitical tensions and with a view to ensuring strategic autonomy. These measures also need to be accompanied by EU policies that can also offset adverse effects arising from financial tensions.[21]

The EU's financial system must bolster financing through deeper and better functioning banking and capital markets. With the establishment of the banking union, a key step has already been taken towards increasing the stability of the euro area financial system.[22] Completing the banking union and making progress on the capital markets union will enhance market stability, depth and breadth. It will also

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21 For further details see Ioannou and Pérez, op. cit.

22 See De Guindos, L. "Banking union: achievements and challenges", speech at the High-level conference on "Strengthening the EU's bank crisis management and deposit insurance framework: for a more resilient and efficient banking union" organised by the European Commission, 18 March 2021; and Enria, A. "Welcome address", speech at the SRB and ECB Joint Conference "The test of time: banking union a decade on", Brussels, 23 June 2022 . For example, after the establishment of the Single Supervisory Mechanism, euro area banks' non-performing loans decreased from 8% in 2014 to about 2% at the end of 2021.

reduce reliance on foreign players[23] and mitigate the possible effects of materialising geopolitical risks on the availability and efficient use of capital.

Payments and financial market infrastructures need to function autonomously enough to prevent geopolitical risks or a misalignment of interests from creating financial stability risks.[24] Greater reliance on domestic financial infrastructures may increase resilience,[25] while continuing to ensure competition and innovation remains crucial. Against this background, **Box 2** assesses the EU's progress in reducing its dependence on UK clearing services and building more resilient EU clearing markets.

Safe assets play a vital role in financial resilience and stability.[26] The wider availability of safe assets, including at EU level, would facilitate monetary policy transmission, support EU public goods financing, and foster financial stability and integration (see also **Box 6**). Initiatives such as Next Generation EU (NGEU) and green bonds provide support in this regard, promoting long-term investments aligned with EU objectives.[27] Together with institutional enhancements, the improved EU financial landscape would be likely to attract more international investors, including during times of geopolitical stress.[28]

A resilient international role for the euro bolsters the euro area's economic and financial autonomy while preserving openness. Central banks holding euro reserves create ties not only between international partners but also between potential geopolitical adversaries. This may reduce geopolitical tensions. However, challenges such as sanctions[29] and digital currency competition exist, highlighting

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23 The EU relies heavily on foreign players in performing key services for capital markets. This exposes the euro area to a number of strategic autonomy risks. Although European banks are among the largest in the world, according to Dealogic data it is estimated that in 2021 about 45% of the banks involved in non-financial corporations' bond issuance activities in the euro area – as managers, co-managers, bookrunners, participants or underwriters – were foreign banks. Similarly, 48% of euro area initial public offering activities were carried out by non-euro area institutions.

24 For an analysis of the channels through which geopolitical risk may affect financial stability, see Special Feature A entitled "Turbulent times: geopolitical risk and its impact on euro area financial stability", *Financial Stability Review*, ECB, Frankfurt am Main, May 2024.

25 The current overreliance of EU market participants on third-country payment and clearing services is also a potential source of financial stability risks, with the EU authorities having only limited reach in the event of a crisis (see Box 2).

26 See Special Feature B entitled "How could a common safe asset contribute to financial stability and financial integration in the banking union?", *Financial Integration and Structure in the Euro Area*, ECB, Frankfurt am Main, March 2020.

27 For further considerations on the nature and adequacy of safe assets in this context, see Section 3.2.2 in Ioannou and Pérez, op. cit.

28 See Special Feature B entitled "How could a common safe asset contribute to financial stability and financial integration in the banking union?", *Financial Integration and Structure in the Euro Area*, ECB, Frankfurt am Main, March 2020.

29 For an analysis of the implications of sanctions for the use of international currencies, see Special Feature A entitled "Geopolitical fragmentation risks and international currencies", *The international role of the euro*, ECB, Frankfurt am Main, June 2023.

the need for sound policies and sufficient availability of safe assets to strengthen the euro's international standing.[30]

Box 2
The derivatives clearing landscape in the euro area three years after Brexit

Prepared by Oana Furtuna, Susanne Kretschmann and Francesco Vacirca

The United Kingdom's decision to leave the EU impacted the EU's financial infrastructure, in particular those financial market segments heavily reliant on UK firms operating outside the EU as a result of Brexit.[31] A high degree of reliance on non-EU services is not in keeping with the goals of the Capital Markets Union (CMU), which aims to foster the development of deep and liquid capital markets in the EU, advance financial integration within the euro area, and preserve financial stability.

When assessing the consequences of Brexit, EU policymakers and authorities expressed concerns about the financial stability risks associated with EU market participants' heavy reliance on UK clearing services for critical derivatives markets. As at December 2020 almost 80% of the over-the-counter (OTC) derivative positions of euro area clearing participants, as well as large shares of exchange-traded derivatives (ETD), were still being cleared through UK central counterparties (CCPs).[32] The reliance was particularly pronounced in the case of OTC interest rate derivatives (IRD) in euro and Polish zloty cleared at LCH Ltd, as well as credit default swaps (CDS) and short-term interest rate derivatives (STIR) in euro cleared at ICE Clear Europe (ICEU). Both CCPs are considered to be of substantial systemic importance for the EU.[33]

To avoid potential cliff-edge risks to EU financial stability, the European Commission implemented a time-limited equivalence decision for UK CCPs.[34] This was accompanied by a call for EU market participants to reduce their excessive exposures to UK CCPs and for EU CCPs to build up their own clearing capacity. Achieving a more balanced clearing landscape, in which EU CCPs offer safe,

30 Openness and sound economic policies ensure easy and swift convertibility in deep and liquid markets, which is demanded by investors in an international currency facing geopolitical risk. In addition, as Reinhart* puts it, "investors, central banks and anyone in general who buys a currency isn't really buying a currency, they buy debt". The availability of safe assets in a particular currency may therefore be a promoter or constraint in the potential use of that currency at international level. Ilzetzki et al.** find that this constraint may exist for the euro and argue that a "comparatively scarce supply of (safe) euro-denominated assets" is the most important element "limiting the euro's reach". Other aspects include the lack of an appropriate financial centre, limited geopolitical reach, and US and Chinese dominance in technology research.
*) Reinhart, C.M. (2019), Remarks at the Fourth ECB Annual Research Conference, 5 September.
**) Ilzetzki, E., Reinhart, C.M. and Rogoff, K.S. (2019), "Exchange Arrangements Entering the 21st Century: Which Anchor Will Hold?", Quarterly Journal of Economics, Vol. 134 (2), pp. 599-646.

31 For further details, see "Implications of Brexit for the EU financial landscape", Financial Integration and Structure in the Euro Area, ECB, Frankfurt am Main, March 2020.

32 The term "clearing participants" covers both clearing members and clearing clients. A clearing member is a financial institution that has a direct relationship with the CCP and therefore does not rely on an intermediary for access to clearing services. By contrast, a clearing client would typically access clearing services through a clearing member.

33 In a comprehensive assessment of the risk posed by the two systemically important CCPs, LCH Ltd and ICEU, the European Securities and Markets Authority (ESMA) identified the IRD service in euro and Polish zloty at LCH Ltd, and the CDS and STIR services in euro at ICEU to be of substantial systemic importance, i.e. that they pose risks that may not be fully mitigated by the current third-country CCP framework under the European Market Infrastructure Regulation (EMIR).

34 To avoid cliff-edge risks around the end of the Brexit transition period (31 December 2020) and to ensure continued access to clearing services, the European Commission adopted a time-limited equivalence decision for UK CCPs in September 2020. In January 2021 ESMA recognised LCH Ltd, ICEU and LME Clear Ltd as third-country CCPs. In February 2022 the European Commission extended the equivalence decision until June 2025.

resilient and attractive clearing services to EU and international market participants would not only reduce systemic risk, but also support the EU's open strategic autonomy and contribute to a well-functioning CMU. The following analysis examines the post-Brexit evolution of the clearing landscape, with a focus on the three euro-denominated clearing services considered to be of substantial systemic importance for the euro area. It considers the level of dependency of euro area market participants on third-country CCPs for these services and how the landscape could look in the future.

In the first three years after Brexit, CCPs based in the euro area achieved a modest increase in market share for all three euro-denominated clearing services. This positive development was driven not only by the UK's withdrawal from the EU, but also by developments in the macroeconomic environment and CCPs' business decisions. Globally, OTC IRD and exchange-traded STIR increased in terms of total notional outstanding between 2019 and 2023. Over the same period, euro-denominated CDS clearing was volatile, but did not increase considerably.

For euro-denominated OTC IRD, the global market share of Eurex Clearing (Eurex) rose in anticipation of Brexit, but has levelled off since 2021 following ESMA's recognition decision. (Chart A, left-hand panel). In the euro area, Eurex and BME Clearing (BME) are active in the cleared OTC IRD segment, with Eurex clearly dominating in terms of market share.[35] Between 2019 and 2021 Eurex increased its global market share from 14% to 20% vis-à-vis its main competitor LCH Ltd, while the US-based CCP CME retained a negligible market share. Eurex had previously launched an incentive programme in 2018 that may have contributed to this increase. A small basis between Eurex and LCH Ltd may have further supported this development.[36] The global market share seems to have stabilised since, at about 19% and 81% for Eurex and LCH Ltd respectively, as at December 2023.

Euro area CCPs' market shares in OTC IRD vary across product categories (Chart B, top left-hand panel).[37] The strongest growth in the market share of Eurex can be observed for interest rate swaps (IRS), which rose from 8% to 18% between 2019 and 2021, but has since remained stable at that level. Eurex has a relatively small market share for overnight index swaps (OIS), despite it rising slightly from 2% to 7% since 2019. For euro-denominated forward rate agreements (FRA), Eurex has persistently had a relatively high market share, which has oscillated around 32% since before Brexit. This may be attributable to the decision to continue computing and referencing a reformed EURIBOR alongside risk-free rates for IRS in the euro area.[38] While the OTC IRD products offered for clearing at euro area CCPs are comparable with those of their main non-euro

[35] BME has been clearing euro-denominated interest rate swaps (IRS) since 2015, albeit at very low volumes, with notional outstanding of IRS standing at €500 million in November 2023.

[36] The basis is the difference in rates for identical interest rate swap contracts cleared at two different CCPs, resulting in a higher price for one side of the trade and beneficial pricing for the other side. In this context, a small basis would imply a small price differential between Eurex and LCH Ltd. The basis saw a stark increase in 2022, reflecting the increasing interest rate environment in the euro area.

[37] The OTC IRD and CDS segments comprise several product categories serving different investor needs. For instance, while IRS enable investors to swap different types of interest rate (typically fixed rates for floating rates), forward rate agreements and basis swaps can be used to hedge risks arising from IRS transactions referencing various types of benchmark rate.

[38] While other jurisdictions, such as the United States or the United Kingdom have moved to risk-free rates in the context of the benchmark rate reforms, EURIBOR continues to be used in the euro area., Among other things, FRAs are used to hedge against fixing risk stemming from an IRS transaction referencing an IBOR rate. If there is less fixing risk, there is less demand for hedging instruments, such as FRAs.

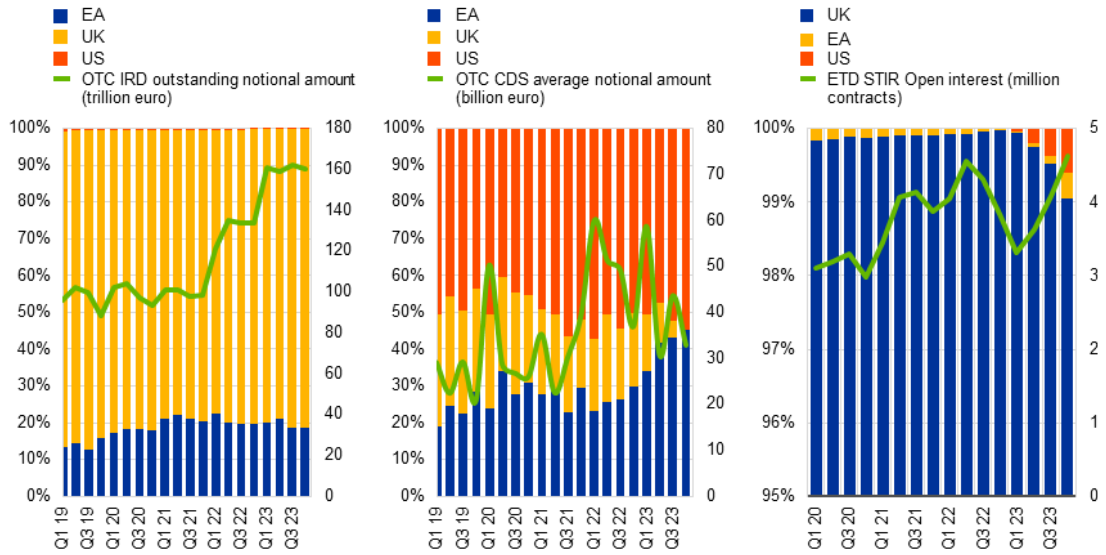
area competitor, clearing activity appears to be concentrated mainly in euro-denominated trades, potentially limiting the appeal for end clients with multi-currency portfolios.[39]

For euro-denominated CDS, LCH SA saw a sharp increase in its market share in 2023 following the decision of ICEU to close its CDS clearing service (Chart A, middle panel). LCH SA is the only CCP in the euro area that offers CDS clearing services. From 2019 to 2023 LCH SA's market share in euro-denominated CDS grew from 24% to 42%, vis-à-vis UK-based ICEU and US-based ICE Clear Credit. This development took place mainly in 2023 and was driven primarily by the business decision of ICEU to phase out its CDS operations, which led to a migration of open CDS contracts to alternative CCPs, namely ICE Clear Credit and LCH SA. The market share of LCH SA rose across the CDS product spectrum and is currently relatively balanced between index and single name CDS products, standing at 42% and 62% respectively. Index CDS are dominating the overall CDS market share in terms of notional outstanding (Chart B, top right-hand panel).

Chart A

CCP market shares in euro-denominated OTC IRD, OTC CDS and ETD STIR by CCP jurisdiction

(left-hand scale: percentages; right-hand scale: totals)



Sources: *Left-hand panel*: CME Clearing, BME Clearing, Eurex and LCH Ltd public data from the CCPs' websites. *Middle panel*: ICE Clear Credit, LCH SA, ICE Clear Europe CPMI-IOSCO public quantitative disclosures (PQD), item 23.1.2 – average notional value of trades cleared over the quarter. *Right-hand panel*: CME, ICE Clear Europe and Eurex public data from the CCPs' websites, LSEG data for ICE Clear Europe prior to 2022. *All panels*: ECB calculations.
Notes: *Left-hand panel*: Euro-denominated OTC IRD gross notional outstanding at the end of the quarter (left-hand scale: market share in percentages by CCP jurisdiction; right-hand scale: total in EUR trillions). The latest observations are for 21 December 2023. *Middle panel*: Euro-denominated OTC CDS average notional value of trades cleared over the quarter (left-hand scale: market share in percentages by CCP jurisdiction; right-hand scale: total in EUR billions). The latest observations are for the fourth quarter of 2023. *Right-hand panel: Open interest in three-month* EURIBOR futures and three-month euro short-term rate (€STR) futures (left-hand scale: market share in percentages by CCP jurisdiction; right-hand scale: total in million contracts). The latest observations are for 29 December 2023.

The footprint of euro area CCPs in the euro-denominated STIR market is very limited and did not change considerably after Brexit (Chart A, right-hand panel). Although Eurex is the only euro area CCP to offer exchange-traded STIR, it has historically had a negligible presence in this segment, as illustrated by a market share of less than 1% in the most traded euro-denominated STIR future contract, namely the three-month EURIBOR future. The existence of silos between trading venues

[39] LCH Ltd applies cross-currency portfolio margining across all OTC IRD products. A client with a multi-currency portfolio would prefer clearing at LCH Ltd to benefit from lower total margin requirements. A euro area clearing member offering client clearing services would thus clear at LCH Ltd on their clients' behalf. By contrast, Eurex applies cross-product margining across asset classes, e.g. IRD and fixed income products.

and CCPs may be one of the reasons why the over-reliance on non-euro area CCPs persists in this segment.[40]

However, there has recently been some slight improvement in the euro-denominated STIR markets. For instance, there has been a small uptick in Eurex's market share for three-month EURIBOR futures (Chart B, bottom left-hand panel), following the introduction of an incentive programme launched at the end of October 2023. In addition, vis-à-vis ICEU and CME, Eurex has secured a sizeable share (14% at the end of 2023) in the relatively novel market for three-month €STR derivative contracts, which it launched in January that year.[41] In terms of open interest, however, the market for €STR-based contracts is still considerably smaller than that for EURIBOR-based contracts (Chart B, bottom right-hand panel).

Chart B

Global market shares of CCPs in euro-denominated OTC IRD, OTC CDS and ETD STIR by CCP jurisdiction and product

(left-hand scale: percentages; right-hand scale: totals)

[40] Larger exchange groups often operate in silos, with exchange trades being cleared exclusively at CCPs within the same corporate group.

[41] Three-month €STR futures started trading on CME on 31 October 2022, on Eurex on 23 January 2023 and on ICEU on 27 March 2023. ICEU offered one-month €STR futures as of 2022.

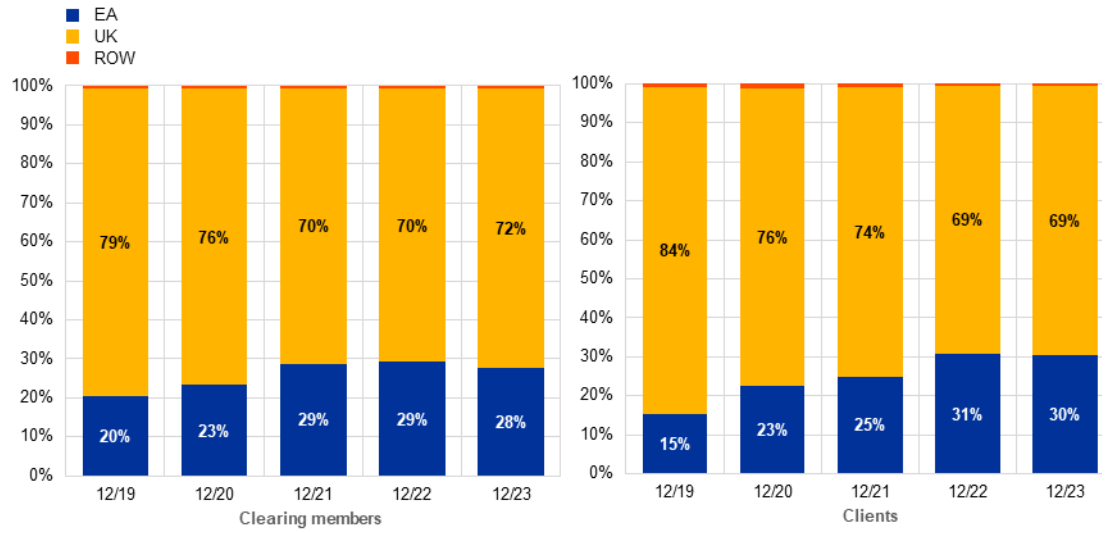
Sources: *Top left-hand panel:* CME, BME Clearing, Eurex and LCH Ltd public data from the CCPs' websites. *Top right-hand panel:* ICE Clear Credit, LCH SA, ICE Clear Europe CPMI-IOSCO public quantitative disclosures (PQD), item 23.1.2 – average notional value of trades cleared over the quarter. *Bottom panels*: CME, ICE Clear Europe and Eurex public data from the CCPs' websites, LGSE data for ICE Clear Europe prior to 2022. *All panels*: ECB calculations.
Notes: *Top left-hand panel:* Euro-denominated OTC IRD gross notional outstanding at the end of the quarter (left-hand scale: market share in percentages by CCP jurisdiction; right-hand scale: EUR trillions). The latest observations are for 1 and 6 December 2023. *Top right-hand panel*: Euro-denominated OTC CDS average notional value of trades cleared over the quarter (left-hand scale: market share in percentages by CCP jurisdiction; right-hand scale: EUR billions). The latest observations are for the fourth quarter of 2023. *Bottom panels*: Open interest in three-month EURIBOR futures (left-hand panel: market share in percentages by CCP jurisdiction (left-hand scale); total in million contracts (right-hand scale) and in three-month €STR futures (right-hand panel: market share in percentages by CCP jurisdiction (left-hand scale); total in number of contracts (right-hand scale). The latest observations are for 29 December 2023.

Although the market share of euro area CCPs has increased over time, the over-reliance of euro area market participants on non-euro area clearing services persists. Over the period from 2019 to 2023, euro area clearing members and clients reduced their use of UK CCPs across all euro-denominated OTC derivatives, primarily to the benefit of euro area CCPs, while their use of CCPs in other jurisdictions remained stable (Chart C).[42] Nevertheless, following the initial surge in relocation activities at the time of heightened uncertainty about major Brexit-related decisions, the decrease in the market share of UK CCPs levelled off in 2021 for euro area clearing members and in 2022 for clearing clients.

Chart C

Distribution of euro-denominated OTC derivatives notional outstanding for euro area clearing members and clients by jurisdiction of the clearing CCP

(percentages of gross notional outstanding)



Sources: EMIR data and ECB calculations.
Notes: The market shares are based on the end-of-year gross notional outstanding of euro-denominated and centrally-cleared OTC derivatives. The latest observations are for 29 December 2023.

The continued over-reliance on UK clearing services could have serious implications for the financial stability of the EU, especially under stressed market conditions. In such circumstances, difficult risk management decisions may have to be taken in order to contain losses, either at the discretion of the CCP or upon instruction by the home authority.[43] Such decisions could include margin increases or changes to eligible collateral or collateral haircuts, which could lead to further market stress or deepen financial difficulties for EU counterparties or the EU financial market as a whole. From a monetary policy perspective, disruptions in critical derivatives markets could hamper

42 See footnote 40 for the distinction between clearing members and clearing clients.

43 See "Central clearing in turbulent times: frontiers in regulation and oversight", keynote speech by Fabio Panetta, Member of the Executive Board of the ECB, at the Fifth Joint Deutsche Bundesbank, European Central Bank and Federal Reserve Bank of Chicago Conference on CCP Risk Management, Frankfurt am Main, 22 June 2023.

the effective implementation of monetary policy decisions.[44,45] While EMIR grants ESMA direct supervisory powers over systemically important third-country CCPs, these are not as stringent as those of the EU authorities with regard to EU CCPs. In addition, such third-country CCPs are also expected to follow applicable directives of their home authority, whose priorities may not be aligned with those of ESMA in an emergency situation.[46,47]

Reducing the size of EU counterparties' exposures to those UK clearing services remains a priority for EU policymakers from a financial stability perspective, together with building well-integrated, resilient clearing markets in the EU. Looking ahead, the development of the EU clearing landscape will be impacted by the EMIR review ("EMIR 3").[48] EMIR 3 foresees several measures to streamline the supervisory process, to strengthen EU CCP supervision and the requirement for EU clearing participants to clear some OTC IRD and STIR trades through an active account at an EU CCP ("active account requirement"). These measures could contribute to increasing the integration of EU centrally cleared financial markets, boosting competitiveness, reducing reliance on UK CCPs for critical clearing services and improving the resilience of EU CCPs. The active account requirement could benefit euro area CCPs active in the OTC IRD and STIR market, and further foster market-driven initiatives to attract more clearing business to euro area CCPs.[49] The European Commission may take further measures, following an assessment by ESMA of the effectiveness of the active account requirement in terms of substantially reducing reliance on UK CCPs for these clearing services.

3.2 Policy priorities

Progress on advancing financial integration in the euro area over the last decade has been disappointing. Although many important pieces of legislation have been passed, there has been no significant increase in cross-border financial market activities and risk sharing. In addition, a piecemeal approach appears to have been taken towards many of the reform efforts.

Despite the limited progress to date, the integration of the euro area internal market for financial services remains essential. This is especially the case in

44 For example, euro-denominated STIR play a crucial role in the effective implementation of monetary policy and are used by central banks to assess the effectiveness of the transmission of their measures and communication to markets.

45 In this context, it is worth mentioning that for the purpose of ensuring financial stability, the ECB and the Bank of England have arrangements in place for exchanging information and cooperating with regard to UK CCPs, as well as arrangements for facilitating the provision of liquidity support to CCPs established in the United Kingdom.

46 Regulation (EU) No 648/2012 of the European Parliament and of the Council on OTC derivatives, central counterparties and trade repositories.

47 EU authorities have no decision-making power in a resolution scenario at a third-country CCP. In the EU, however, resolution colleges are established under the CCP Recovery and Resolution Regulation (CCPRRR) where college members are involved in the development of resolution plans which need to consider financial stability aspects on an EU-wide basis.

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

49 In 2023 BME Clearing announced plans to strengthen its IRS clearing service and to launch an incentive programme to attract international clearing participants, having previously served primarily local markets.

view of the growing financing challenges resulting from the green, digital and defence transitions. Capital markets integration is crucial for facilitating the investments needed for the green, digital and defence transitions and for bolstering the EU's productivity and competitiveness in the face of challenging geopolitical dynamics. In addition, efforts to achieve a fully integrated financial services market should be accompanied by additional reforms to improve the conceptual framework of some regulations.

Progress in the six policy domains set out in this section is crucial for furthering the integration of Europe's financial markets and fully realising their potential.

3.2.1 Removing barriers to cross-border crisis management and facilitating cross-border banking

During the upcoming European legislative term, efforts should be made to tackle remaining barriers to cross-border crisis management and to complete the banking union's institutional architecture.

Impediments to group-wide risk management within cross-border banking groups are hampering financial integration through the banking sector. The incoming European Commission should make it a priority to complete the banking union. In particular, establishing a European Deposit Insurance Scheme (EDIS) could support authorities in providing added flexibility for group-wide risk management and enhance overall reassurance. As part of this wider work to complete the banking union, banking groups operating across borders should be granted the same risk management opportunities as those operating within a single Member State. The institutions of the banking union, the ECB and the Single Resolution Board should be entrusted with greater powers to (i) set appropriate requirements for capital, eligible loss-absorbing liabilities and liquidity at the level of each subsidiary in a banking group, and (ii) use recovery and resolution plans to make sure that losses can be properly distributed across groups and that liquidity can flow where needed in times of stress. Pending the establishment of a fully fledged EDIS, rules governing the transfer of Deposit Guarantee Scheme contributions should be reviewed to align such contributions with transferred risks when credit institutions change affiliations within the EU, ensuring that financial stability is preserved across the system.

3.2.2 Harmonising the definition of key concepts in EU regulatory frameworks

The rise of new financial business models calls for further EU regulatory harmonisation, beginning with definitions of key concepts. Harmonising these concepts is essential to prevent fragmentation and potential stability risks.

Differences in the transposition of the Markets in Financial Instruments Directive (MiFID)[50] across EU Member States has resulted in inconsistent definitions of "financial instruments". In addition, the enactment of the Markets in Crypto-Assets Regulation (MiCAR)[51] has resulted in additional regulatory uncertainties regarding the "financial instruments" category.[52] Differing definitions increase compliance costs for issuers and hinder cross-border financing. Uncertainty in defining certain concepts such as "deposits" and "extending credit" exacerbates regulatory ambiguity, leading to market fragmentation and difficulty in identifying stability risks.

Establishing a uniform regulatory regime for agents and distributors across the EU is vital for integration and stability. The absence of EU-wide rules for regulating non-regulated or lightly regulated entities distributing financial products also creates an uneven playing field and the potential for arbitrage.

3.2.3 Integrating the EU capital markets regulatory and supervisory architecture

A single rulebook for EU capital markets legislation would enhance integration. A single rulebook would, among other things, address remaining barriers in securities post-trade services such as those concerning collateral management. Harmonisation in related areas such as insolvency laws, securities law, accounting and corporate taxation would facilitate integration, offering clarity to cross-border investors.

Integrated supervision of EU capital markets would harmonise practices, preventing market fragmentation and enhancing scale and depth.[53] While the European Supervisory Authorities (ESAs) promote supervisory convergence, further harmonisation is needed for transparency and predictability.

Improving the governance of ESAs, particularly the European Securities and Markets Authority (ESMA) and the European Insurance and Occupational Pensions Authority (EIOPA), would help ensure better European outcomes. Adequate resources and oversight powers are crucial for effective action. The possibility of ESAs supervising the most systemic cross-border market actors in cooperation with national supervisors should be assessed with a view to furthering EU capital market integration.

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

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

52 MiCAR expressly excludes from its scope crypto-assets that qualify as financial instruments as defined in MiFID.

53 Lagarde, C., "A Kantian shift for the capital markets union", speech at the European Banking Congress, Frankfurt am Main, 17 November 2023.

3.2.4 Reviving securitisation for the capital markets union

Securitisation should effectively transfer risks from banks to a broader investor base, freeing up bank capital and fostering additional real economy financing and transition related lending. A mix of policy measures targeting both supply and demand are crucial for developing securitisation markets in a prudent and sustainable way. This includes reviewing the prudential treatment of securitisation for banks and insurance companies while accounting for international standards and assessing potential amendments to disclosure and due diligence requirements.

Pan-EU issuances – potentially backed by a public guarantee – can broaden investor bases and support targeted segments such as green securitisation. It is not so much differences in the regulatory framework as the role that US government-sponsored enterprises play in supporting the standardisation and depth of the US securitisation market that explains the difference with the European market.[54,55] A European platform for green securitisation could act as a catalyst by playing the role of issuer and standard-setting agent. Progress in harmonising insolvency regimes, corporate law and taxation law would be the most effective way of creating harmonised pools of assets that would scale up securitisation and help to achieve of a single market for capital more generally.

3.2.5 Increased standardisation and transparency in the field of structured products

Increased standardisation and transparency are also needed in the field of structured products, climate-related disclosures could be improved through work on a number of regulatory areas. Asset-backed securities and covered bonds represent a large share of the collateral mobilised by counterparties to Eurosystem refinancing operations, yet information is lacking to properly assess their climate change-related risks. Regulatory disclosures could close this information gap. First, regarding covered bonds, the European Commission has invited the European Banking Authority (EBA) in a call for advice[56] to investigate the role of green covered bonds and to assess the need to introduce disclosure requirements regarding the environmental, social and governance risks of cover pools of covered bonds. A revision of the Covered Bond Directive (CBD)[57] could introduce new disclosure requirements that would provide the Eurosystem and other investors with the information needed to properly assess climate-related risks. Second, with regard

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54 The US framework for securitisation offers less room for capital optimisation than in the EU, and the US regulators have proposed reverting back to more conservative methodologies by removing internal models for credit risk with the implementation of Basel III (which is still pending).

55 See also Chart 21, panel b, and Section 4.3.1.

56 Call for advice to the European Banking Authority on the performance and review of the EU covered bond framework.

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

to green securitisation, the EU Green Bond Standard Regulation (EU GBS)[58] provides a welcome standard for securitisations based on the alignment with the EU taxonomy of the use of proceeds by the originator of the securitised assets. However, a revision of the securitisation templates by ESMA would be needed to require additional climate-related disclosures for non-green securitisation (such as information on energy performance for real estate assets), which would allow the climate-related risks of the underlying assets to be properly assessed.

3.2.6 Promoting vibrant EU risk capital and equity markets

Vibrant, pan-EU capital markets are vital for securing funding for investments and bolstering the EU's productivity and competitiveness. Risk capital markets are particularly critical for fostering the innovation necessary for the green and digital transition and enabling companies to access the funding needed for investing and growing.

One approach to enhancing the appeal of listing in the EU could involve harmonising listing requirements. To date, EU policy has been aimed at reducing regulatory costs, especially for smaller companies, so as to alleviate administrative burdens. Extending these efforts to larger companies would promote the expansion of EU capital markets, encouraging these companies to list within the EU rather than elsewhere (see also **Box 7**). Fragmentation within the EU stock exchange landscape poses a challenge, as larger and more efficient markets tend to attract greater initial public offering (IPO) activity and liquidity. Therefore, further consolidation of EU stock exchanges and measures to cultivate large EU-based institutional investors, such as asset managers and pension funds, could enhance the attractiveness of listing in the EU.

Additionally, implementing tax incentives to reduce the debt-equity bias for corporations and encourage retail investor participation in equity markets could further deepen EU public equity markets. More efficient and harmonised insolvency laws and regulatory frameworks for equity investments could also help improve certainty for investors, reducing costs and facilitating cross-border investments, while at the same time making risk capital more attractive and accessible to companies.[59]

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58 Regulation (EU) 2023/2631 of the European Parliament and of the Council of 22 November 2023 on European Green Bonds and optional disclosures for bonds marketed as environmentally sustainable and for sustainability-linked bonds (OJ L, 2023/2631, 30.11.2023).

59 See Box 1 entitled "Making euro area equity markets fit for green and digital innovation", *Financial Integration and Stability Report*, ECB, Frankfurt am Main, April 2022.

4 Analytical contributions

4.1 Developments in the financial system structure

The euro area financial sector has shrunk in absolute nominal terms since 2022. Despite a rise in nominal GDP, the total financial assets of the euro area financial sector have declined across sectors, mainly because of valuation effects (**Chart 2, panel a** and Statistical Annex (SA) – Chart 1 – ST25)[60]. The Eurosystem recorded the largest decline as the central bank gradually reduced its balance sheet from 2022 as part of the monetary policy normalisation. All segments of the non-bank financial intermediaries sub-sector saw a decline in financial assets (relative to nominal GDP), except for money market funds (MMFs).

At the same time, the composition of the euro area financial sector has remained broadly unchanged. The share of banking sector assets in total financial system assets (including Eurosystem assets) has stabilised at around one-third.[61] Meanwhile, after growing continuously from December 2011 to December 2019, the share of non-bank financial intermediary (NBFI) assets decreased up until September 2021.[62] The subsequent gradual increase in the NBFI footprint since late 2021 comes against the background of a declining Eurosystem balance sheet and broadly stable credit institution assets (**Chart 2, panel b**).

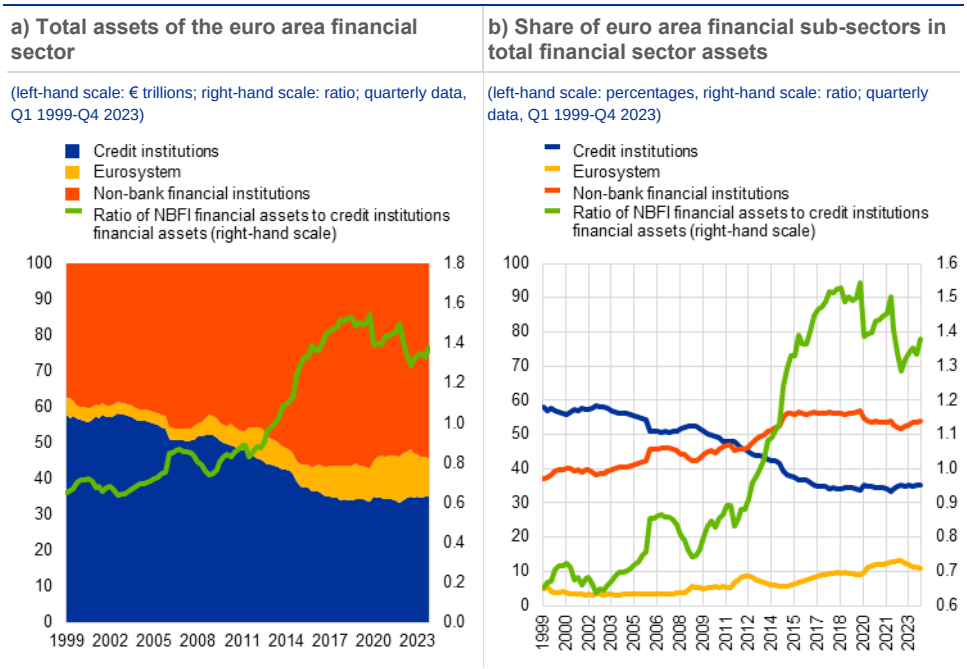
[60] The charts labelled SA – Chart *x* – S or ST *y* are to be found in the Statistical Annex and the underlying financial integration or financial structure indicators.

[61] References to “assets” in this section specifically mean “financial assets”.

[62] The decrease resulted from a decline in investment fund (IF) and insurance corporations and pension fund (ICPF) assets (see Section 5.2).

Chart 2

Size and composition of the euro area financial sector



Source: ECB.
Note: Non-bank financial institutions include investment funds, insurance companies and pension funds, money market funds and other financial intermediaries.

4.1.1 Banking sector

Banking sector total assets stabilised at around one-third of financial system (including central bank) total assets. This was driven mainly by the normalisation of monetary policy and valuation effects.

Euro area banks' profitability surged owing to increased net interest margins. This resulted in their highest profits since the inception of the Single Supervisory Mechanism, with significant institutions achieving a 10% year-to-date return on equity in the third quarter of 2023, up from 7.6% the previous year. Less significant institutions also improved significantly compared with the previous year. However, worsening asset quality and higher funding costs pose headwinds to profitability.[63]

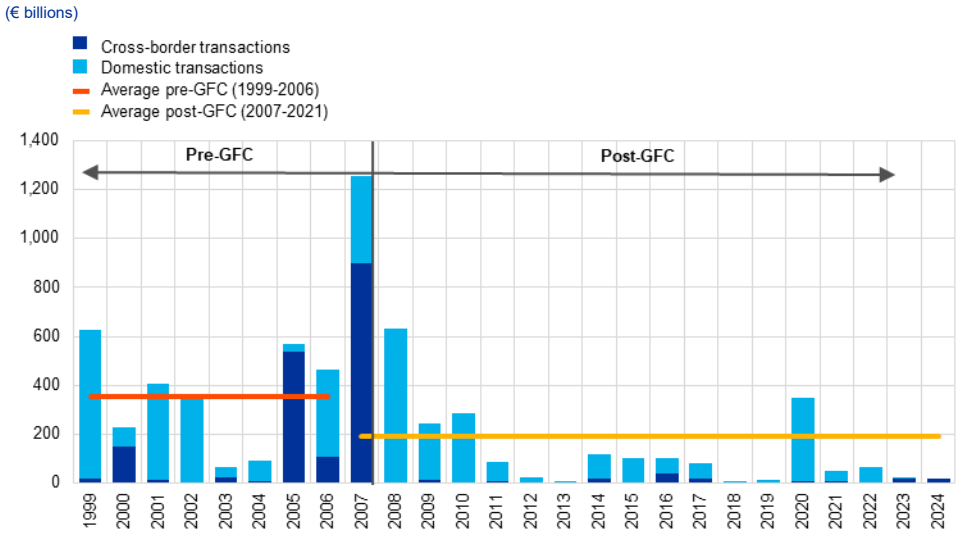
Despite the favourable profitability, banking sector consolidation has seen limited progress since the banking union's inception. The declines in the number of credit institutions in the euro area (SA – Chart 15 – ST38) and in mergers and acquisitions (M&A) activity have slowed in recent years (**Chart 3**). Various factors are hindering bank mergers, including divergent tax regimes and national legislation on competition, credit and customer protection. Harmonisation efforts are crucial and should extend beyond banking regulations to encompass key concepts in banking and financial services. Regulatory uncertainty is impeding business development, fostering market fragmentation within Member States' borders. New

63 See *Financial Stability Review*, ECB, Frankfurt am Main, November 2023.

financial business models are further complicating matters. Progress on removing regulatory barriers to cross-border risk management as part of wider work to complete the banking union is essential, necessitating clear frameworks for group-wide risk management and the free flow of liquidity and capital across borders.[64]

Chart 3

Total assets of target banks in the euro area



Sources: ECB and ECB calculations.
Notes: The sample includes M&A transactions involving significant institutions and less significant institutions in the euro area, excluding some private transactions and transactions among small banks not reported in Dealogic. Transactions associated with the resolution of banks and distressed mergers were removed from the sample. Transactions are reported based on the year in which they were announced. GFC stands for global financial crisis.

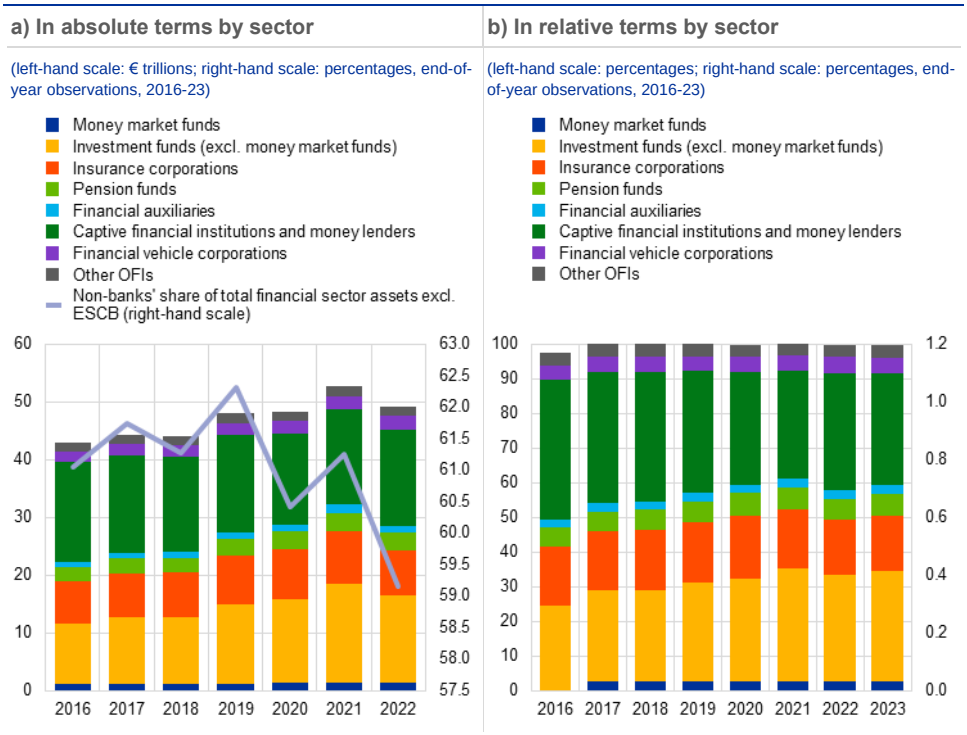
4.1.2 Non-banking sector

Total assets of the euro area non-bank financial sector increased to €52 trillion in 2023, reversing a decline in 2022. This development was driven by growth in the total assets of investment funds, insurance companies and pension funds following declines in the value of these sectors' equity and debt securities portfolio holdings in 2022 as interest rates increased (**Chart 4, panel a**). As a result, the size of these sectors increased relative to that of other financial institutions (OFIs, i.e. financial auxiliaries, captive financial institutions and money lenders, financial vehicle corporations and other OFIs) in 2023 (**Chart 4, panel b**). Similarly, there was a marginal increase in non-banks' share of total financial sector assets between 2022 and 2023.

64 See Sections 3.2.1 and 3.2.2.

Chart 4

Total assets of the euro area non-bank financial sector



Sources: ECB (QSA, BSI, IVF, PFBR, ICB) and ECB calculations.
Note: ESCB stands for European System of Central Banks.

Money market and investment funds

Money market funds' (MMFs') total assets stood at €1.7 trillion in the fourth quarter of 2023, an increase of 24% from the first quarter of 2022. MMF assets remained highly concentrated in Ireland, Luxembourg and France. Following the increase in euro area interest rates between July 2022 and September 2023, MMFs experienced strong inflows as their returns increased.

The investment fund (IF) sector has experienced a sharp decline followed by a strong rebound in total assets since the first quarter of 2022. IF sector assets are concentrated in Luxembourg, Ireland, Germany and France (SA – Chart 41 – ST23). Total assets of the sector had declined to €16 trillion by December 2022, driven by declines in the value of equity and debt securities holdings as interest rates increased (**Chart 5, panel a**), as well as significant outflows from bond and equity funds (SA – Chart 38 – ST29).[65] Subsequently, total assets of the sector increased to €17.1 trillion in December 2023. This reversal was supported in particular by positive inflows for equity and bond funds and rising equity valuations during 2023.

The composition of the IF sector continues to evolve, with the share of equity funds in total sector assets rising relative to the mixed and bond fund segments. Equity, bond and mixed funds collectively accounted for 76% of IF sector

[65] See Section 4.2 of *Financial Stability Review*, ECB, Frankfurt am Main, November 2023.

assets in December 2023 (Chart 5, panel b). The share of equity funds initially declined in 2022 before growing to 32% in December 2023. Part of this rise can be attributed to strong growth in passive investment via exchange-traded funds (ETFs). ETFs' total assets increased from €1.4 trillion to €1.7 trillion between March 2022 and December 2023 (SA – Chart 39 – ST30). Similarly, the share of other funds in the IF sector has also increased in recent years, reaching 14% at the end of 2023. This appears to be partly driven by growth in private equity and credit funds.[66] Private equity funds provide an alternative source of financing for the real economy by funding typically riskier companies that may otherwise be unable to access bank lending, public debt or equity markets.[67]

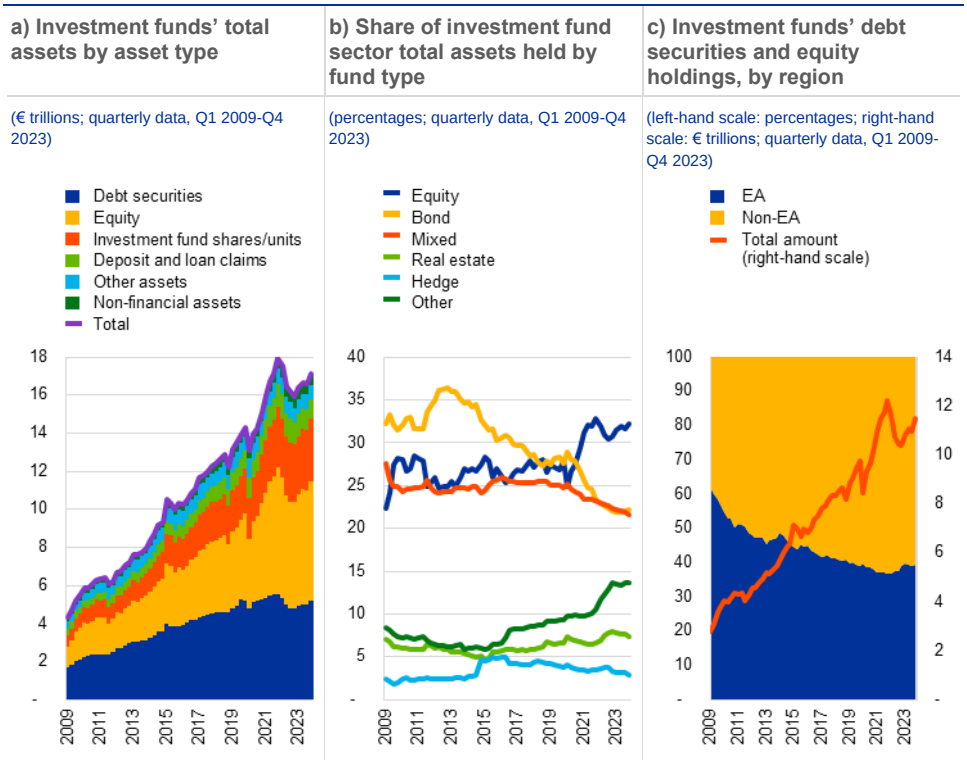
While growth in the IF sector can contribute to financial integration, a large share of inflows to the sector are invested outside the euro area. Investment funds facilitate cross-border financing and risk sharing. However, a large share of IF sector assets continue to be invested outside the euro area, which has not helped fund domestic companies (**Chart 5, panel c**). While investors in euro area investment funds thus benefit from diversified portfolios and investment opportunities in foreign economies, this could also point to less intra-euro area equity market integration due to less developed capital markets.

66 Private equity funds saw their assets grow by €85 billion between March 2022 and December 2023, equivalent to 29% of the growth in the total assets of all other funds over this period.

67 See Cera, K., Daly, P., Hermans, L., Molitor, P., Schwartz Blicke, O., Sowiński, A. and Telesca, E., "Private markets, public risk? Financial stability implications of alternative funding sources", Special Feature C, *Financial Stability Review*, ECB, Frankfurt am Main, May 2024.

Chart 5

Developments in the euro area investment fund sector



Source: ECB (IVF).
Notes: Panel c: outstanding value of investment funds' holdings of euro area and non-euro area debt securities and equity (excluding investment fund shares). EA = euro area.

Insurance companies and pension funds

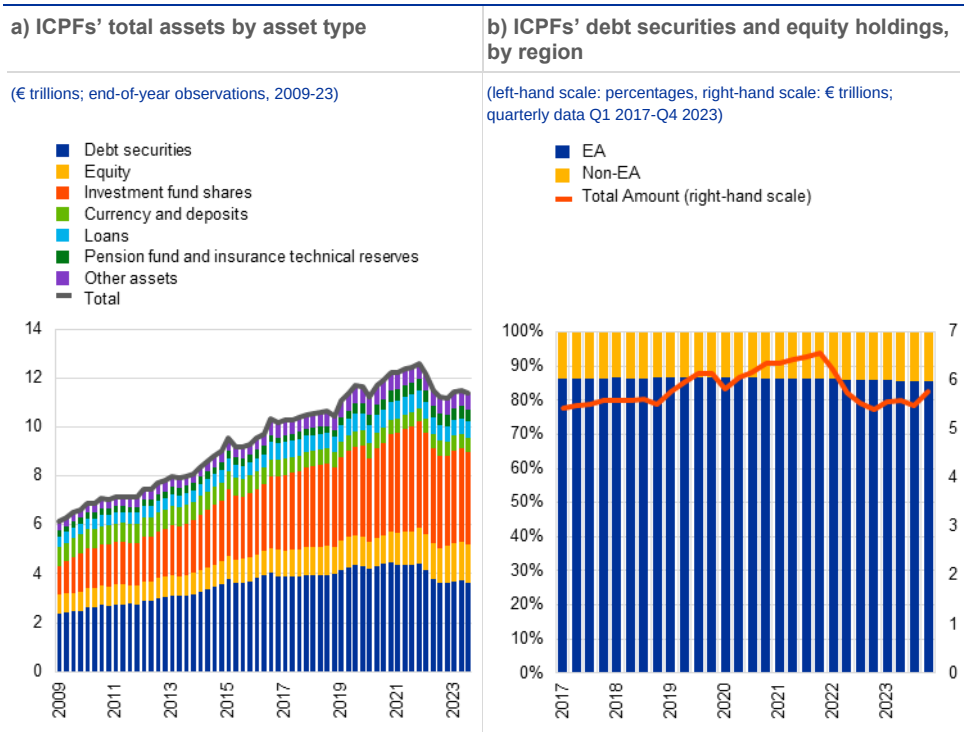
Insurance companies and pension funds (ICPFs) have experienced a decline in total assets since 2022. Total assets of the sector fell from €12.1 trillion in the first quarter of 2022 to €11.4 trillion in the third quarter of 2023 (**Chart 6, panel a**). This decline was mainly driven by falling valuations of longer-dated debt securities due to interest rate increases, together with falls in the value of investment fund shares.[68]

More generally, ICPFs assets remain concentrated in relatively few euro area countries, where they tend to focus on offering their services domestically. Over 70% of the sector's assets relate to insurance companies (SA – Chart 31 – ST33). Insurance companies' assets are concentrated in France, Germany and Italy, while the Netherlands accounts for most of the euro area pension fund sector (SA – Chart 32 – ST34). As well as focusing on providing their services domestically, ICPFs also typically invest in euro area assets, thereby helping to fund domestic companies (**Chart 6, panel b**).

[68] Information from EIOPA on the asset exposures of insurance corporations and pension funds indicates that the decline in the value of investment fund shares mainly relates to a decline in the outstanding value of equity and bond fund shares held.

Chart 6

Insurance companies' and pension funds' balance sheet developments



Source: ECB (ICB, PFBR).
Note: Panel b: outstanding value of investment funds' holdings of euro area and non-euro area debt securities and equity (excluding investment fund shares, where holdings are also primarily focused on the euro area).

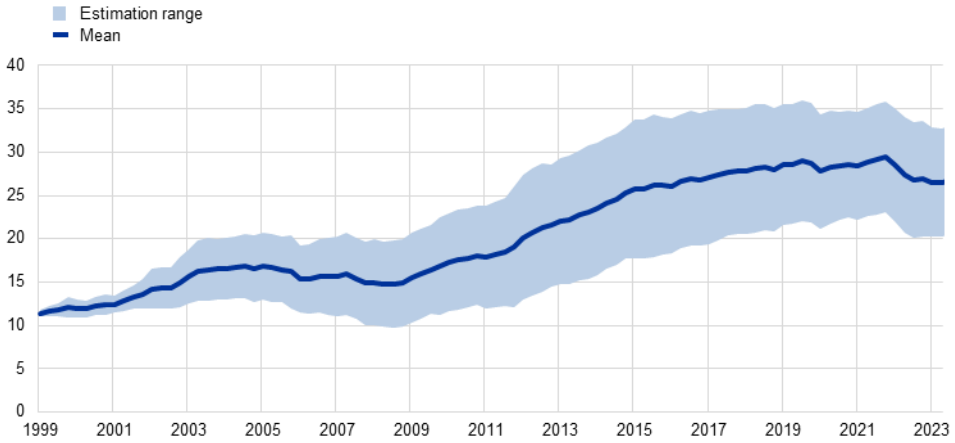
4.1.3 Role of non-bank financial intermediaries

The role of NBFIs in financing the real economy has become more important over the past decade, despite a decline in their share of total credit granted since 2022. NBFIs accounted for 27% of outstanding credit to non-financial corporations as of the third quarter of 2023, down from 30% at the end of 2021 (**Chart 7**). This decline was mainly driven by falling market valuations of corporate debt securities held by non-banks in 2022.

Chart 7

Share of non-bank credit to non-financial corporations

(percentage of total credit granted by financial institutions; quarterly data, Q1 1999-Q4 2023)



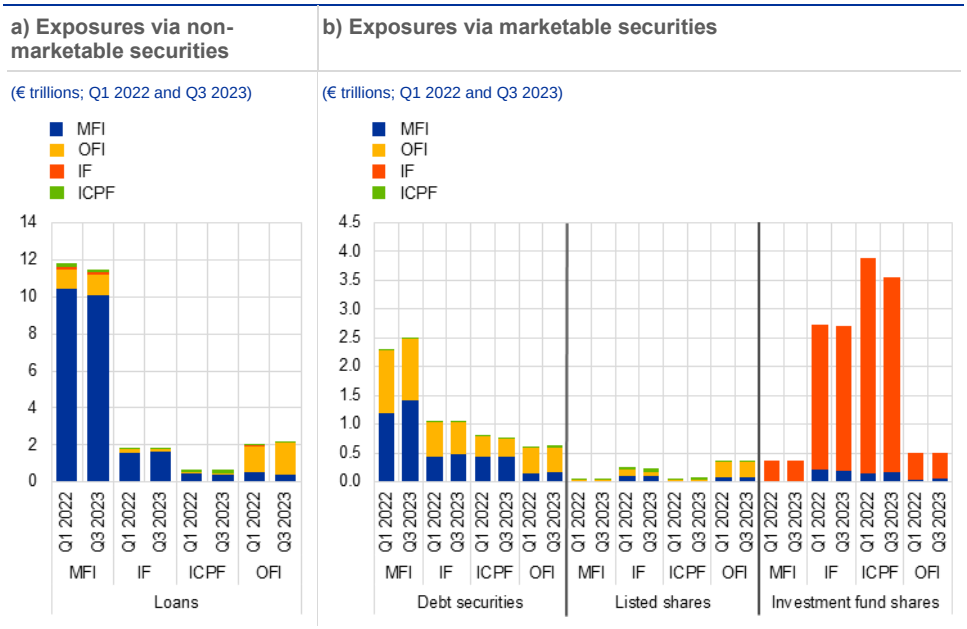
Sources: ECB (SHSS/CSDB; Box 2 entitled "Measuring market-based and non-bank financing of non-financial corporations in the euro area" *Financial Integration and Structure in the Euro Area*, ECB, Frankfurt am Main, April 2022.

Leaving aside the broadly stable lending and increased debt securities exposure among banks, the scale of interconnectedness between banks and non-banks has remained largely unchanged since 2022. As of the third quarter of 2023, cross-exposures between monetary financial institutions (MFIs) and non-banks mainly related to asset exposures to OFIs, including exposures via loans to OFIs (around €1.1 trillion) (**Chart 8, panel a**) and debt securities issued by OFIs (approximately €1 trillion) (**Chart 8, panel b**). Aside from OFIs, the most significant link to the non-bank sector are MFIs' holdings of IF shares. As for NBFIs, IFs hold exposures to banks via loans, while OFIs hold exposures to banks via debt securities issued by banks.

Interconnectedness among different non-banks derived predominantly from non-banks holding IF shares, and cross-exposures among non-banks remained relatively stable from the first quarter of 2022. Collectively, ICPFs, IFs and OFIs held €6.3 trillion in IF shares as of the third quarter of 2023, down from €6.7 trillion in the first quarter of 2022. Most of the decline relates to revaluations of IF shares held by ICPFs (**Chart 8, panel b**). Holdings of debt securities issued by OFIs represent the next largest cross-exposure among non-banks, with aggregate ICPF, IF and OFI holdings of such securities increasing by €0.1 trillion to €1.4 trillion in the period from the first quarter of 2022 to the third quarter of 2023.

Chart 8

Trends in cross-exposures among sectors of the euro area financial system, by instrument type and holder sector



Sources: ECB (EEA, BSI) and ECB calculations.
Notes: The data include intragroup positions. OFIs are specifically non-monetary financial corporations, including financial vehicle corporations and excluding non-MMF IFs.

4.2 Financial integration developments

4.2.1 Developments in price-based and quantity-based financial integration indicators

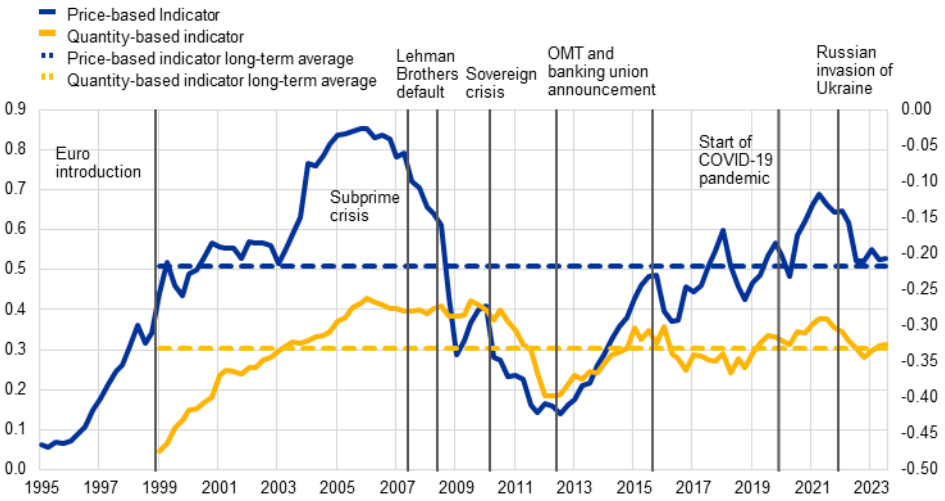
The evolution of financial integration in the euro area has remained disappointing, despite the resilience shown during crises. Financial integration as measured by both the price-based and the quantity-based financial integration composite indicators has declined substantially over the last two years (**Chart 9**). For the price-based indicator this has been driven by sizeable drops in both the equity market and banking market sub-indices (SA – Chart 1 – S1-S4).

In addition, financial integration in the euro area has not increased in either price-based or quantity-based terms since the start of Economic and Monetary Union (EMU). Since the second quarter of 2023, both indicators have stabilised around their respective long-term average value. **Box 3** sheds further light on the actual state of euro area financial integration by highlighting that traditional measures of financial integration are inflated by large cross-border assets and liabilities in euro area financial centres.

Chart 9

Price-based and quantity-based financial integration composite indicators

(quarterly data; price-based indicator: Q1 1995-Q4 2023; quantity-based indicator: Q1 1999-Q3 2023)



Sources: ECB and ECB calculations.
Notes: The price-based composite indicator aggregates ten indicators for money, bond, equity and retail banking markets; the quantity-based composite indicator aggregates five indicators for the same market segments except retail banking. The indicators are bounded between zero (full fragmentation) and one (full integration). Increases in the indicators signal greater financial integration. From January 2018 onwards the behaviour of the price-based indicator may have changed due to the transition from EONIA to €STR interest rates in the money market component. OMT stands for Outright Monetary Transactions. For a detailed description of the indicators and their input data, see the Statistical Web Annex to this report and Hoffmann, P., Kremer, M. and Zaharia, S., "Financial integration in Europe through the lens of composite indicators", *Working Paper Series*, No 2319, ECB, Frankfurt am Main, September 2019.

Box 3

Reassessing euro area financial integration: the role of euro area financial centres

Prepared by Roland Beck and Martin Schmitz

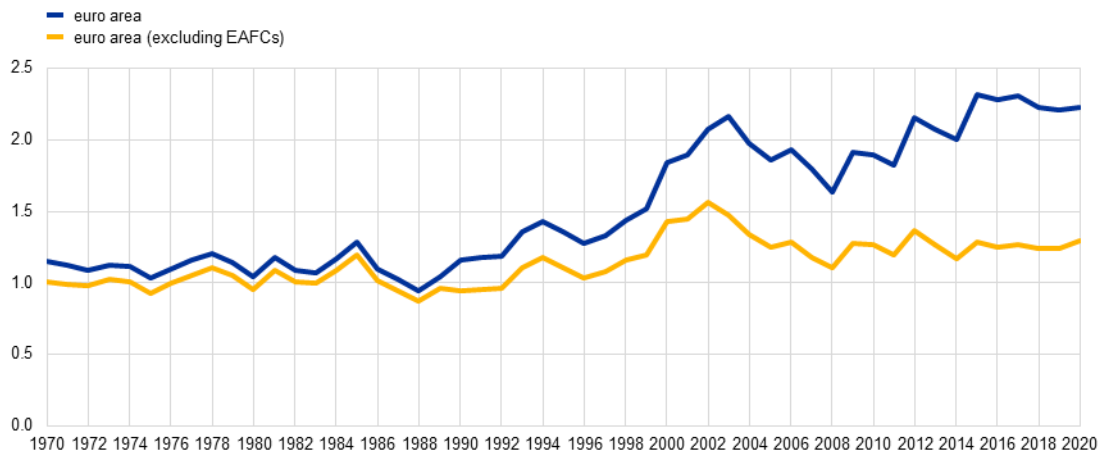
This box reassesses the patterns of euro area financial integration, adjusting for the role of financial centres in the euro area. Since the introduction of the euro, Luxembourg, Ireland and the Netherlands have accumulated large volumes of cross-border assets and liabilities, vis-à-vis both intra- and extra-euro area counterparts. In fact, as shown in Chart A, the exceptional growth in euro area cross-border financial positions since 1990 has been driven largely by positions vis-à-vis Luxembourg, Ireland and the Netherlands which are referred to as "euro area financial centres" (EAFCs).[69] Their special role involves acting as one of the euro area's major hubs for (i) the investment fund industry, and (ii) securities issuance by affiliates of foreign companies. For example, investment funds domiciled in Luxembourg and Ireland hold around 40% of the euro area's cross-border equity and debt securities, while 33% of all intra-euro area cross-border holdings of corporate bonds are in securities issued in EAFC jurisdictions.

[69] See also Beck, R., Coppola, A., Lewis, A.J., Maggiori, M., Schmitz, M. and Schreger, J., "The Geography of Capital Allocation in the Euro Area", *Working Paper*, No 32275, National Bureau of Economic Research, March 2024. Hereinafter, this working paper is referred to as "BCLMSS (2024)".

Chart A

Gross external position

(relative to GDP and average for a set of advanced countries)



Source: Reproduction from BCLMSS (2024).
Notes: The gross external position is defined as the ratio of the gross assets and gross liabilities of all euro area countries relative to the sum of their GDPs. The chart plots a time series for this gross positions index scaled by the average value of the gross external position for a set of other advanced economies (blue line), which includes the United States, Japan, the United Kingdom, Switzerland, Australia, New Zealand, South Korea, Norway and Canada. The yellow line shows the equivalent series when Luxembourg, Ireland and the Netherlands are excluded from the set of euro area countries.

Looking through the dual role of EAFCs as hubs for investment funds and securities issuance provides a nuanced picture of euro area financial integration and portfolio exposures.[70] The results presented in this box are based on the methodology developed in BCLMSS (2024), which combines various security-level, commercial and macro-financial data sources. The restatements of the euro area's external positions by BCLMSS (2024) involve two steps. First, the ECB's Securities Holdings Statistics provide information about euro area investment in individual securities, including fund shares, at the euro area country-sector level. When combing this information with estimates of fund-level investment for funds domiciled in Luxembourg and Ireland (based on commercial data sources), a granular look-through approach enables the fund investments to be traced to investors based in other euro area countries and in the rest of the world (RoW).[71] Second, the resulting data are combined with a mapping algorithm that reassigns each globally-issued security from its immediate issuer entity to the ultimate parent entity, and thereby determines its nationality.[72] Finally, the aggregates built-up from the micro-level data are benchmarked to the euro area and the Member States' data on international investment positions.

The restatements methodology reveals that the euro area as a whole is less financially integrated with the rest of the world, i.e. it has a smaller external portfolio investment position, than implied by the official data. Quantitatively, this is largely because a sizeable

70 When investment funds domiciled in the EAFC countries hold securities on behalf of other euro area or global investors, these holdings are recorded in the official statistics as belonging to these EAFCs rather than to the countries of the underlying owners. Similarly, when firms issue bonds or equities through subsidiaries in these jurisdictions, these securities are recorded in the official statistics as liabilities of the EAFC rather than of the country of their ultimate parent entity.

71 RoW investments are derived as a residual, i.e. securities that are not reported to be held by euro area investors are assumed to be owned by RoW investors. BCLMSS (2024) provides evidence that this is very likely the case for the largest part of the residual, e.g. using a "revealed micro-level preference" approach.

72 For further details on the mapping of issuers by nationality, see Coppola, A., Maggiori, M., Neiman, B. and Schreger, J., "Redrawing the Map of Global Capital Flows: The Role of Cross-Border Financing and Tax Havens", *The Quarterly Journal of Economics*, Vol. 136, No 3, August 2021, pp. 1499-1556.

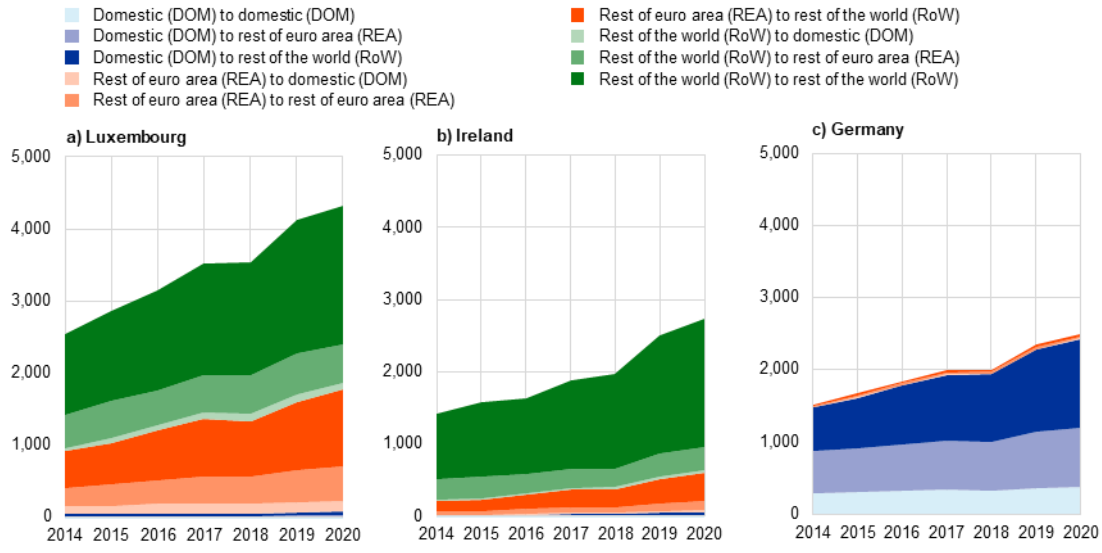
fraction of the fund share holdings in Luxembourg and Ireland are identified as not being held by euro area residents (Chart B, green areas). Such investments do not constitute an economically meaningful exposure for the euro area since they are held on behalf of RoW investors. To the extent that RoW investors mainly invest in non-euro area countries via funds in Luxembourg and Ireland, these positions constitute a form of pass-through via EAFCs (Chart B, dark green areas).

The restatements also reveal that Luxembourg and Ireland act as a source of portfolio diversification for the other euro area countries, since the methodology factors in their indirect fund holdings via EAFCs.[73] These holdings are sizeable, in particular those that are invested in RoW countries (Chart B, panels a) and b), dark red areas). For instance, the exposure of euro area investors to securities issued by Chinese companies is found to be much larger than in the official data. This is mainly due to the fact that offshore issuance by affiliates of Chinese companies is assigned to the Chinese parent entities in the restated data. The patterns observed for Ireland and Luxembourg contrast with those for other euro area countries such as Germany, where fund shares are largely held by domestic investors (Chart B, panel c). Moreover, the restatements show that the underlying portfolio of securities held by euro area investors differs considerably from that of RoW investors via these funds. Funds held by euro area investors are more likely to invest in securities issued by euro area entities and in euro-denominated bonds, as compared with funds held by RoW investors.

Chart B

Heterogeneity in holdings through investment funds in Luxembourg, Ireland and Germany

(EUR billions)



Source: Reproduction from BCLMSS (2024).
Notes: This chart uses the methodology to decompose the assets of investments funds domiciled in Luxembourg, Ireland and Germany in the ECB's Securities Holdings Statistics into who the ultimate investors are and which countries' securities (by nationality) the investments are in. Blue areas correspond to domestic investors, red areas to investors in the rest of the euro area (REA) and green areas to unaccounted-for investors, potentially in the rest of the

[73] This finding is consistent with previous studies that have performed a fund unwind. See, for example, 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, Frankfurt am Main, February 2021, in which the fund share holdings by euro area members are unwound by assuming that investors own a representative portfolio of fund holdings. See also Lambert C., Vivar, L. M. and Wedow, M., "Is home bias biased? New evidence from the investment fund sector", ECB Working Paper No. 2924, April 2024, in which the authors perform an unwind at the fund-security level and find that the home bias within the mutual fund sector is lower for euro area member countries when the unwound positions are included.

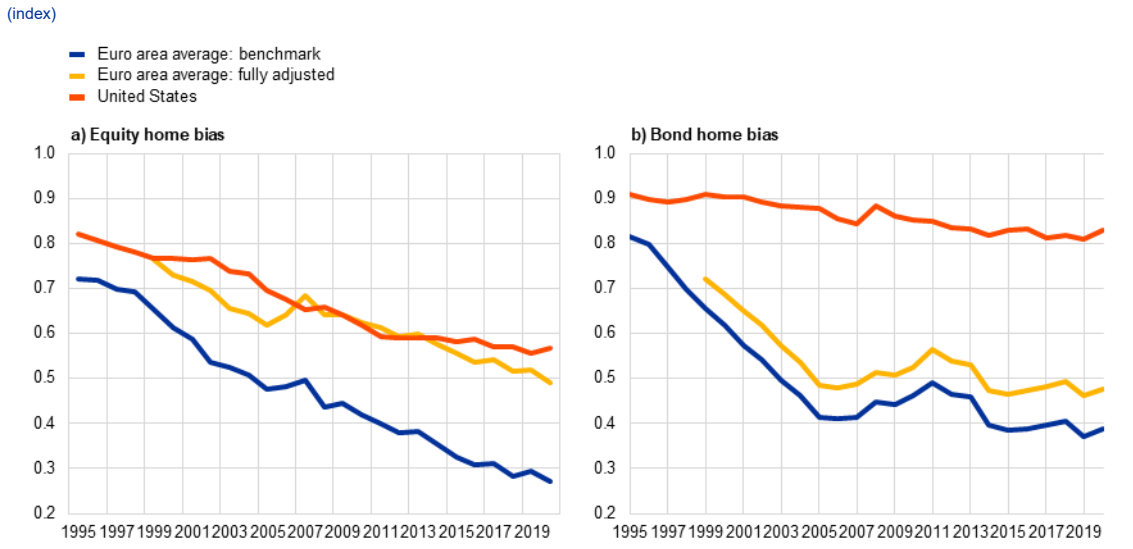
world (RoW). Light shades correspond to investment in domestic securities, medium shades to investment in REA securities and dark shades to investment in RoW securities.

The adjusted dataset provides new evidence on the extent of euro area financial integration with the rest of the world, as measured by home bias.[74] Chart C shows the estimated time series of equity and bond home bias for the euro area for the period 1995-2020 compared with the same measure for the United States. According to standard benchmarks used in the literature, there was a sharp decline in home bias in the euro area for both bonds and equities relative to the United States around the time of the introduction of the euro (Chart C, red solid line). Yet, owing to the unavailability of granular data, these benchmarks were based on a number of assumptions which tended to significantly overstate the fall in equity home bias for the euro area relative to the United States. The distortion in the measurement of home bias occurs largely because euro area holdings of fund shares in Luxembourg and Ireland were treated as claims on foreign common equities in standard estimation methodologies, while they in fact also reflect claims on domestic assets, as well as on debt securities and other non-equity assets.[75] Moreover, EAFC fund positions are partly held on behalf of RoW investors, who tend to invest in more diversified funds.

Following the adjustments, the evolution of equity home bias in the euro area looks very similar to that of the United States since 1995, while euro area bond home bias declined significantly (Chart C). The introduction of the common currency thus had an impact on bond home bias, also when using the restated data, which is in line with economic theory.

Chart C

Home bias in equities and bonds in the United States and the euro area



Source: Reproduction from BCLMSS (2024).
Notes: The blue lines show the baseline average home bias estimate for the euro area countries without corrections, while the yellow lines adjust for the presence of RoW investors' holdings in funds in Luxembourg and Ireland and for the indirect portfolios held by euro area investor countries. For comparison, the red lines show the home bias for the United States.

Bonds issued in EAFCs are more widely held by other euro area investors than those issued in domestic capital markets (Chart D, panel a). Firms which raise capital through EAFCs

[74] See, for example, Coeurdacier, N. and Rey, H., "Home Bias in Open Economy Financial Macroeconomics", *Journal of Economic Literature*, Vol. 51, No 1, March 2013, pp. 63-115, and the references provided therein.

[75] For example, see Coeurdacier, N. and Rey, H. (2013), in which the authors consider intra-euro area cross-border equity holdings as foreign holdings of common equity.

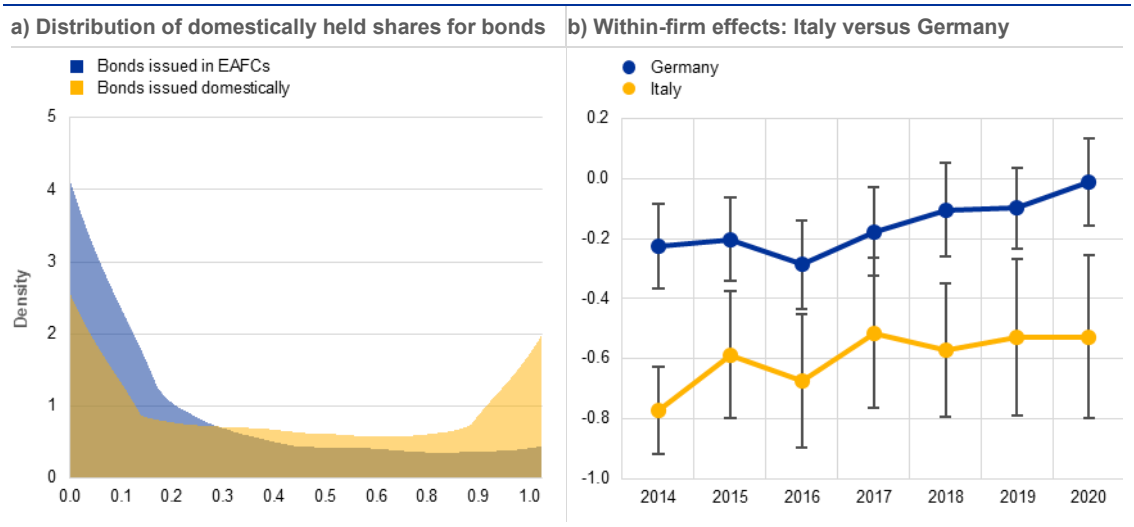
therefore better approximate the policy goal of a capital markets union, with their bonds held more widely by investors within the euro area. The analysis in BCLMSS (2024) demonstrates that, within a given firm's bond issuance, investors based in other euro area countries are more likely to hold bonds issued in EAFCs than those issued domestically. As shown in panel b) of Chart D, this allocative effect is stronger for southern European Member States, such as Italy, than for Germany.

The analysis suggests that the use of financing structures in EAFCs helps European firms to overcome some of the frictions in cross-border financial integration. Such frictions may arise from differences in information on the functioning of the legal systems across the EU, which may be particularly true for firms in the southern EU Member States.[76] At the same time, to the extent that setting up EAFC financing affiliates involves fixed costs, the effects presented might skew financial integration towards those firms that are largest, most productive and most sophisticated.

At the same time, the outsized role of EAFCs overstates the extent of euro area financial integration – both within the euro area and vis-à-vis the rest of the world –particularly in the case of equity investment. This may have implications for macro-financial stability and surveillance in the euro area, in addition to other implications for economic governance. For instance, tracing portfolio investments from ultimate issuers to the underlying investors has become increasingly difficult, owing to the complex chains of financial intermediation in the euro area.

Chart D

Impact of EAFC issuance on the investor base



Notes: Reproduction from BCLMSS (2024). Panel a): For each bond issued by a European ultimate parent entity, the chart computes the share held by domestic investors, after accounting for indirect holdings through the fund unwind step. The blue density shows kernel estimates of the distribution of domestically held shares for bonds issued via domestic entities, while the red density shows the same, but for bonds issued through EAFC affiliates. The data are shown as of 2020, and ultimate parent entities with nationality in Luxembourg, Ireland or the Netherlands are excluded. Panel b): The chart plots the estimated marginal within-firm effects of an EAFC indicator on the domestically held share of euro-denominated bonds, inclusive of firm fixed effects, for the two subsamples of Italian (blue estimates) and German (red estimates) ultimate parent entities. The estimates are calculated separately for each year in the sample. The chart also shows point estimates and the corresponding 95% confidence band. Standard errors for the estimated PPML coefficient are clustered at the firm level, and they are converted to standard errors on marginal effects using the delta method.

[76] This effect could be similar to that of premia for bonds issued in foreign jurisdictions, which can offer more legal protection than domestic bonds. See, for example, Chamon, M., Schumacher, J. and Trebesch, C., "Foreign-law bonds: can they reduce sovereign borrowing costs?", *Working Paper Series*, No 2162, ECB, Frankfurt am Main, June 2018.

4.2.2 Money market

Money market integration has improved thanks to the increase in money market activity as excess liquidity is withdrawn. Interbank money market activity used to be largely confined to national borders (see also **Chart 13** in Section 4.2.3), with cross-border transactions representing only a third of the total, and conducted predominantly by big banks. However, the weight of cross-border transactions started to increase with TLTRO III repayments. Banks mainly resorted to three funding sources to substitute their large maturing TLTRO III funds: (i) excess liquidity holdings, (ii) reserves redistributed via the money markets across borders, and (iii) bank bond issuances.[77]

After the repayments of the TLTROs, interbank reserve redistribution mainly took the form of repo transactions. The euro money market, dominated by secured segments, recorded a volume of repo trades four times larger than that for unsecured trades (**Chart 10, panel a**). Repo rate developments have become essential for assessing the level of integration in short-term financing markets. An analysis of bilateral repo trades reveals that total daily cross-border activity in Italy, Spain, Germany and France was higher in every quarter of 2023 compared with 2022 (**Chart 11**). While Italy, Spain and France have consistently been net importers of liquidity in bilateral repos, Germany has been a net exporter in bilateral repos since the second quarter of 2023.[78]

Collateral availability improvements led to convergence in secured rates across euro area jurisdictions. Government bond scarcity affected repo rates, with German government bonds in high demand in 2022 (**Chart 10, panel b**). However, collateral availability subsequently improved thanks to strong sovereign net debt issuance, TLTRO III repayments that facilitated the release of securities pledged as collateral with the Eurosystem and the reduction in the Eurosystem's asset holdings. The improved collateral availability reduced rate dispersion in 2023 and aligned repo rates more closely with the ECB deposit facility rate. **Box 4** further investigates whether lenders penalise borrowers for pledging domestic collateral.

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77 There was a very marginal recourse to other Eurosystem credit operations, as loan deleveraging and new deposits also contributed to reducing the TLTRO III substitution needs.

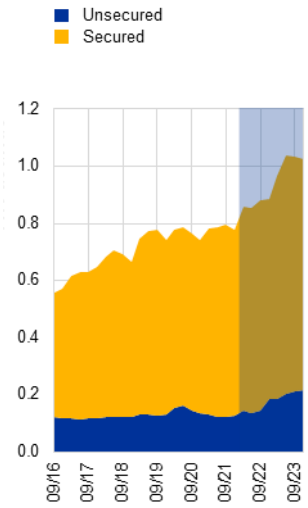
78 Cross-border flows and the level of integration in the repo market are best analysed through the directional flows in bilateral repo transactions using MMSR data. Since most repo transactions are centrally cleared, such transactions in the MMSR dataset do not allow geographical flows to be identified, as the CCP is always a counterparty to one of the parties.

Chart 10

Euro money market turnover and overnight repo rates by collateral issuer jurisdiction

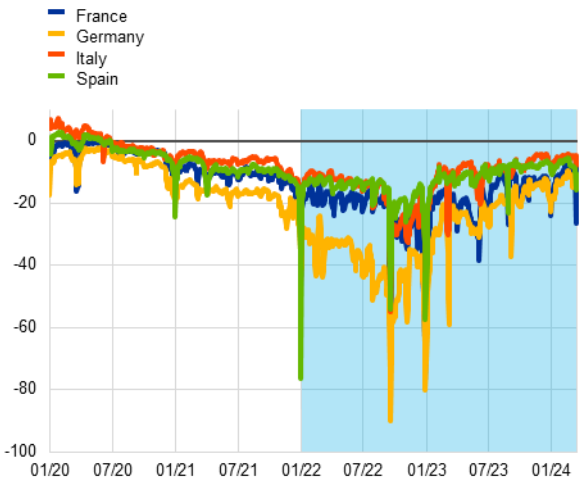
a) Daily transaction volume in unsecured and secured segments

(EUR € trillions; quarterly data, Q3 -2016-Q4 2023)



b) Difference between the repo rate and the deposit facility rate

(basis points; monthly data, Jan. 2020 – -Jan. 2024)



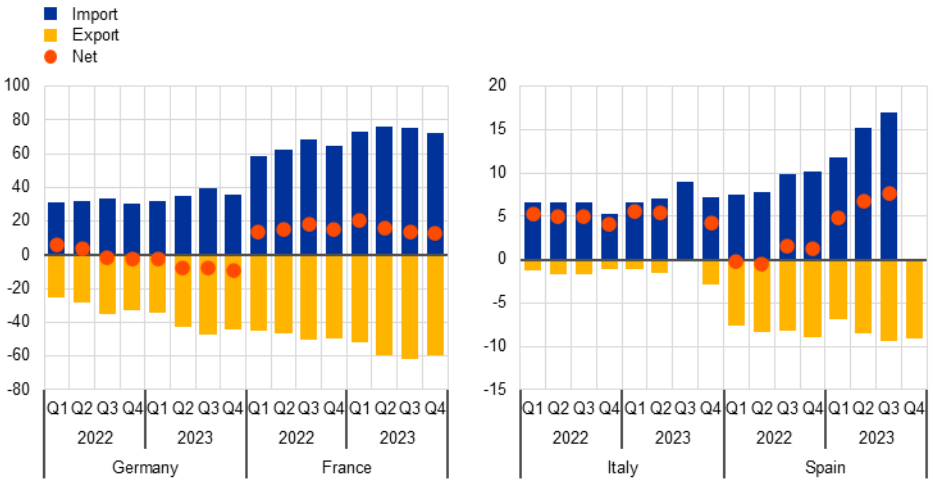
Sources: ECB (MMSR) and ECB calculations.
Notes: Panel a: the money market statistical reporting (MMSR) dataset is based on transaction-by-transaction data from a sample of the 50 largest euro area reporting agents. Panel b: end-of-quarter dates excluded. The rates include both general collateral (GC) and non-GC trades aggregated.

Chart 11

Bilateral repo flows in the big four countries

Imports, exports and net flows

(€ billions; quarterly data, Q1 2022-Q4 2024)



Notes: The figures represent the average of the daily import, export and net flows of liquidity via bilateral repos of all maturities against all collateral on a quarterly basis. Liquidity imports have been calculated as the sum of borrowing of domestic reporting agents (RAs) from foreign counterparties and lending of foreign RAs to domestic non-RA counterparties. Liquidity exports are the sum of lending of domestic RAs to foreign counterparties and the borrowing of foreign RAs from domestic non-RA counterparties. Net flows are imports minus exports. End-of-quarter dates excluded. The rates include both general collateral (GC) and non-GC trades aggregated. For confidentiality reasons, the export data point for Italy in the third quarter of 2023 and the import data point for Spain in the fourth quarter of 2023 are not shown.

On the unsecured market, rate dispersion persisted. Activity in the unsecured interbank market remained limited in size and largely concentrated in Germany. Banks benefiting from rating upgrades could trade at more competitive prices in money markets, leading to price convergence in the upper range of unsecured borrowing. At the same time, dispersion in the lower range of unsecured borrowing rate distribution increased, reflecting transactions between depositors without access to the central bank balance sheet (e.g. NBFIs) and banks with high credit ratings.[79] The continued rate dispersion driven by NBFIs has not disrupted the pass-through of changes in the key ECB interest rates to unsecured money market rates. However, it explains the asymmetry that emerged in 2023 in the reaction of the spread between the €STR and the ECB's deposit facility rate, which has been less responsive to the reduction of excess liquidity compared with the earlier increase of liquidity.

Bank bond issuance also contributed to cross-border liquidity redistribution. An analysis of TARGET balance levels and the gross bank bond issuance volumes per country between mid-2022 and the end of 2023 suggests that investors from core countries absorbed bank bond issuances to benefit from the better returns offered (**Chart 12, panel a**).

TARGET data reflected increased cross-border flows. Since 20 March 2023,[80] TARGET has comprised the new wholesale payment system T2,[81] which contributes to cross-border payment integration by enabling banks to centralise their euro-denominated payments including money market transactions in central bank money. Between April 2023 and February 2024, the share of cross-border payments in T2 showed a slightly more pronounced increase in value terms than in volume terms (**Chart 12, panel b**).

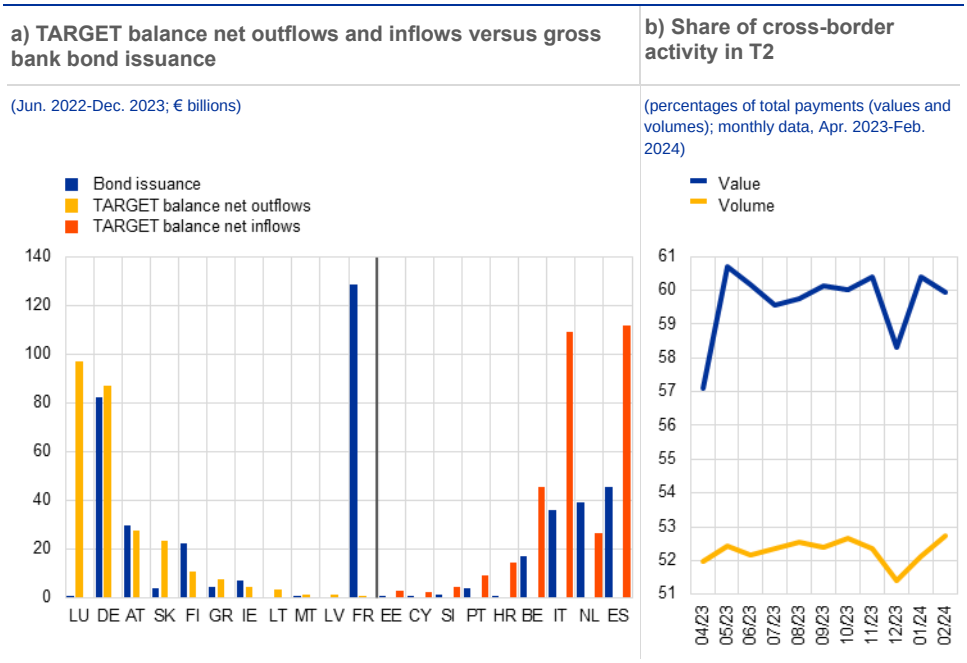
79 Owing to the limited regulatory value of those deposits and a persistently high level of excess liquidity in the financial system, reporting banks retained the market power to pass through the cost of an unwanted balance sheet expansion to the depositors. This led to a growing volume of market transactions being priced at lower rates.

80 See the ECB press release of 21 March 2023.

81 T2 is the real-time gross settlement system for the euro. It replaced TARGET2 on 20 March 2023, following the T2-T2S consolidation.

Chart 12

Bank bond absorption flows per jurisdiction and cross-border activity in T2



Sources: Dealogic, ECB eligible assets databaseand Eurosystem balance sheet data, T2 data and ECB calculations
Notes: Panels a) and b): bond issuance includes covered and senior unsecured bond issuance of euro area banks since mid-June 2022. TARGET balance net inflows and outflows are measured as the difference between the average A9.4 and L10.3 balances on the eighth maintenance period of 2023 and on the fourth maintenance period of 2022. Panel c): cross-border activity is defined as a payment made between institutions holding accounts at different central banks in the RTGS service of T2. Central bank payments, liquidity transfers and technical transactions are excluded. Data for euro-denominated cross-border transactions are aggregated on a monthly basis.

Box 4

Home bias and repo rates

Prepared by Glenn Schepens and Jean-David Sigaux

It is well documented that European banks' securities portfolios consist largely of domestic securities, which is referred to as the "home bias". Less attention, however, has been paid to the fact that the composition of a bank's securities portfolio could affect its activities in the money market. Since the 2008-09 financial crisis, the unsecured segment of this market has gradually lost importance as a broad-based funding avenue, leading to a market dominated by repurchase agreements (repos), in which participants borrow cash and use securities as collateral.[82] Given the home bias in their securities portfolios, European banks often borrow in repo markets, pledging domestic government bonds as collateral (Chart A).[83]

Using domestic collateral to borrow cash in repo markets can affect funding costs, as the ability of collateral to protect the lender depends on who has pledged it.[84] Suppose that an Italian and a Portuguese borrower with similar risk profiles pledge an identical Italian government bond as collateral. As documented in the literature on the sovereign-bank nexus, there tends to be a positive

82 See, for example, "Euro money market study 2022", ECB, Frankfurt am Main, April 2023.

83 During our sample period (from October 2016 to April 2020), approximately 55% of the repo trades are backed by government bonds, and around 60% of those trades are backed by domestic government bonds.

84 The findings in this box are based on Barbiero, F., Schepens G. and Sigaux, J.-D., "Liquidation value and loan pricing", Journal of Finance, Vol. 79, No 1, February 2024, pp. 95-128.

relation between the default risk of a bank and the default risk of its home country.[85] As such, the Italian borrower is more likely to default than the Portuguese borrower if the Italian government bond has a low value. In other words, the Italian government bond used as collateral protects the lender of the Italian borrower less than the lender of the Portuguese borrower. As a consequence, the correlation between collateral and borrower risk (hereinafter referred to as "wrong-way risk") is a key determinant of lender protection.

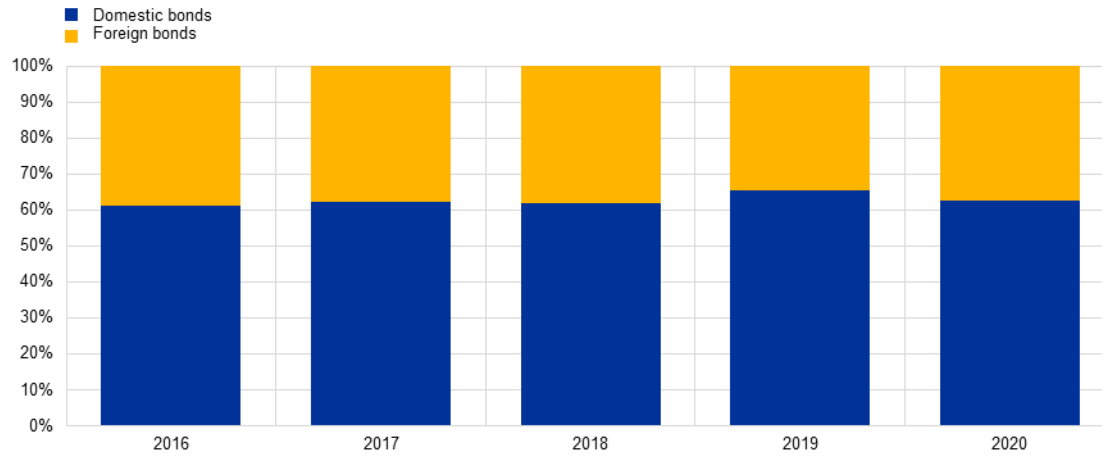
This box assesses the extent to which wrong-way risk is priced by lenders in bilateral repo markets, and whether borrowers adjust their behaviour accordingly.[86] If wrong-way risk is priced, it constitutes an additional borrowing cost for banks seeking to borrow against their typically large domestic sovereign bond portfolios. In times of crisis, lenders may even decide to stop lending against domestic collateral entirely, thereby limiting tradability to certain borrowers and exacerbating the variation in repo funding costs.

Chart A

Collateral types in repo borrowing

A significant share of banks' borrowing is collateralised by domestic sovereign bonds.

(percentages)



Source: Money market statistical reporting (MMSR) data.
Notes: This chart shows that a significant share of banks' borrowing is collateralised by domestic sovereign bonds. The share of the repo volume traded that is backed by domestic or non-domestic euro area government bonds is shown as a percentage of the total volume traded that is backed by government bonds. Volume shares are calculated by averaging quarterly, bank-level volume shares for each category (domestic and foreign) over the year. The sample covers all bilateral repo trades of EU banks in our sample that are backed by sovereign collateral between 3 October 2016 and 16 April 2020.

To test whether lenders consider wrong-way risk in their lending decisions, we gather bilateral repo data and exploit the sovereign-bank nexus. We gather data on bilateral repo trades between October 2016 and April 2020 using the Money Market Statistical Reporting (MMSR) database. This database includes contract-level information, such as the identity of the counterparties, the ISIN code of the collateral, and the rate and volume of the trade. We focus on trades in which euro-denominated government bonds are used as collateral. Our identification strategy exploits the sovereign-bank nexus, which implies that a bank's default risk is correlated with the risk of its

85 For an overview of the literature on the sovereign-bank nexus, see, for example, Dell'Ariccia, G., Ferreira, C., Jenkinson, N., Laeven, L., Martin, A., Minoiu,C. and Popov, A., "Managing the sovereign-bank nexus", *Working Paper Series*, No 2177, ECB, Frankfurt am Main, September 2018.

86 We study bilateral repo markets and not CCP-cleared trades. Borrower-collateral correlation should be of little interest to the lender in CCP-cleared trades, as all legal repayment obligations fall on the CPP if the borrower defaults. It is thus the CCP that is exposed to this type of wrong-way risk. As a consequence, CCPs typically place a limit on the amount of domestic collateral that counterparties can pledge.

sovereign. In our analysis, we compare loans that differ only in terms of whether the borrower is from the same country as the collateral. In particular, in our most stringent set-up for identifying the impact of wrong-way risk, the loans are from the same lender, granted on the same day and secured with the same collateral. We also control for other observable determinants of interest rates, such as borrower default risk and collateral quality. As an example, we compare the interest rates on two loans issued to a similar Italian and Portuguese borrowing bank by the same lender, on the same day and against the same Italian government bond.[87] If wrong-way risk is priced, the Italian borrower should be paying a premium compared with the Portuguese borrower, as its default risk is more positively correlated with the default risk of the Italian government.

We find that, in the repo market, lenders increase interest rates when a borrower is from the same country as the issuer of the collateral (Table A). Specifically, we regress the interest rate of a repo contract on a wrong-way risk dummy, which is equal to 1 if the borrower is from the same country as the collateral issuer, and equal to 0 otherwise. The underlying assumption is that there is a strong positive relation between the default risk of a bank and the default risk of its home country, as documented in the literature on the sovereign-bank nexus. The first column of Table A corresponds to a specification with day fixed effects. We find a large and positive impact of 10.3 basis points of wrong-way risk on the interest rate charged by lenders. In column (2), we add ISIN-day fixed effects to control for time-varying collateral-level determinants of repo rates. This reduces the premium to 3.9 basis points. In column (3), we further saturate the specification with borrower-day fixed effects to control for borrower risk. The premium falls further to 2.5 basis points, but remains statistically significant at the 1% level.

In columns (4) and (5), we control for lender heterogeneity. Some lenders might be more risk-averse than others, or lenders' risk preferences might change over time. To ensure that this does not affect our results, we either control for the lender's sector (banking, non-bank financial institutions, etc.) by means of lender-sector-day fixed effects (column 4) or, in our most conservative set-up, for lender-day fixed effects (column 5). This results in an estimated premium of 2.6 and 1.1 basis points respectively. Importantly, this cost is on top of any borrower default risk and collateral risk premium paid by the borrower, as we fully control for these factors by means of the borrow-day and ISIN-day fixed effects. Given the average interest rate of minus 60 basis points in our sample, the additional cost is high in this low-margin, high-volume market.

[87] We focus on interest rates given that haircuts are equal to zero for 95.5% of the loans in our sample.

Table A

Borrower-collateral correlation and repo rates

Lenders increase the interest rate by 1.1 to 2.6 basis points when borrowers are from the same country as the collateral issuer.

	Repo rate (%)					Repo ratio
	(1)	(2)	(3)	(4)	(5)	(6)
Wrong-way dummy	0.103***	0.0385***	0.0250***	0.0255***	0.0110***	-0.000688***
	(0.0129)	(0.00339)	(0.00567)	(0.00574)	(0.00413)	(0.000181)
Holdings ratio						0.722
						(0.0331)
Observations	828,718	795,572	792,735	792,364	227,598	49,727
Number of banks	47	47	40	40	39	28
Adjusted R2	0.189	0.811	0.846	0.847	0.924	No
Day fixed effects	Yes	No	No	No	No	No
ISIN-day fixed effects	No	Yes	Yes	Yes	Yes	No
Borrower-day fixed effects	No	No	Yes	Yes	Yes	No
Lender-sector-day fixed effects	No	No	No	Yes	No	No
Lender-day fixed effects	No	No	No	No	Yes	No
Trade-level controls	Yes	Yes	Yes	Yes	Yes	No
Bank-quarter fixed effects	No	No	No	No	No	Yes

Sources: MMSR data, SHSG data and ECB calculations.
Notes: For columns (1) to (5), we use daily, trade-level data from the MMSR database. The dependent variable is the trade-level interest rate (annualised, in percentages). The wrong-way dummy is a dummy equal to 1 if the country of the collateral is the same as the country of the borrowing bank. Trade-level control variables include the log of the volume of the trade and a set of maturity fixed effects. The sample period is from 3 October 2016 to 16 April 2020. Robust standard errors (clustered at the bank-ISIN level) are reported in parentheses. For column (6), the data are at the bank-quarter level and taken from the SHSG database. The dependent variable is the repo ratio. The wrong-way dummy is a dummy equal to 1 if the country of the security is the same as the country of the borrowing bank. The sample period is from the fourth quarter of 2018 to the second quarter of 2020. Robust standard errors (clustered at the borrower-ISIN level) are reported in parentheses.

Given that using wrong-way collateral is expensive, borrowers try to avoid pledging domestic collateral. As borrowers are most likely aware of the extra cost that comes with borrowing against wrong-way collateral, the question arises as to why they use this type of collateral. Using security-level quarterly data on banks' asset holdings from the ECB's Securities Holdings Statistics by Banking Group (SHSG) database, we investigate whether pledging domestic securities does not necessarily contradict the fact that banks internalise this cost. To do so, we construct two variables for each bank-quarter-security combination: a "repo ratio", which captures the share of a security in the borrower's total pledged collateral, and a "holdings ratio", which captures the share of a security in the borrower's securities portfolio. We then regress the repo ratio on our wrong-way risk proxy (which is equal to 1 if a security is issued by a bank's home country) and the holdings ratio, while also including bank-quarter fixed effects. This allows us to test whether a domestic ISIN is less likely to be pledged than a non-domestic ISIN for the same bank in the same quarter. Controlling for the holdings ratio is crucial given that the composition of the portfolio is likely to shape collateral usage.

The results in column (6) of Table A suggest that borrowers do internalise the correlation premium and, subsequently, avoid pledging correlated collateral. The repo ratio of a domestic security is on average 0.06 percentage points lower than the repo ratio of a non-domestic security. This is a sizeable effect given that, on average, an individual security makes up 0.3% of a borrower's total

repo collateral. We thus find that a domestic asset is 20% less likely to be used as collateral than a non-domestic asset, all else being equal.

For some borrowers wrong-way collateral is still the best or only option. This is because (i) the wrong-way premium is not the only premium that matters, and (ii) some borrowers are constrained. First, some collateral might be more likely to lose value than others, leading to a collateral-specific risk premium. If the wrong-way premium is lower than the collateral risk premium, it may be better to pledge wrong-way collateral. This is especially true for those borrowers that have a choice between domestic but relatively safe collateral and foreign but riskier collateral. Second, a non-negligible fraction of borrowers in our sample simply do not have enough foreign collateral to cover all their needs (Chart B). For them, wrong-way collateral is the only option. More specifically, Chart B depicts the distribution of the unconstrained ratio. The latter is defined as the ratio of non-domestic holdings to pledged collateral. A borrower with a ratio of 1 or more is able to collateralise all of its repo borrowing with non-domestic securities. This borrower is thus unconstrained. By contrast, a borrower with an unconstrained ratio below 1 is constrained.

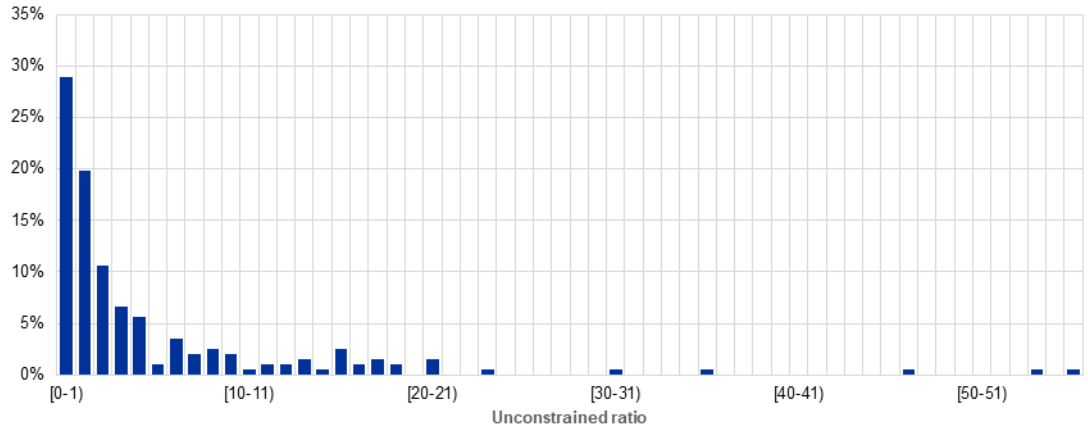
Chart B shows that the unconstrained ratio is in the [0-1) interval for almost 30% of the borrower-quarter observations in our sample. These borrowers borrow an amount that exceeds the volume of their non-domestic holdings. They have to use domestic collateral for part of their repo borrowing. Constraints therefore play an important role in a borrower's decision to pledge domestic collateral.[88]

Overall, the findings in this box suggest that, all else being equal, holding a geographically diversified government bond portfolio is beneficial for banks' funding costs in repo markets.

Chart B

Distribution of the unconstrained ratio

Almost 30% of the borrowers in the sample do not have enough non-domestic collateral to cover their needs.



Sources: Securities Holdings Statistics Group (SHSG) data and ECB calculations.
Notes: This figure shows the distribution of the Unconstrained ratio. The ratio is defined as the volume of nondomestic sovereign debt in a bank's securities portfolio divided by the total repo borrowing of the bank that is backed by sovereign collateral. The first bar on the left indicates the observations for which the unconstrained measure belongs to the [0,1) interval. The next bar is the [1-2) interval, and so on. The sample period is 2018Q4 to 2020Q2.

[88] For further evidence on the link between securities holdings and the use of collateral, also see e.g. Tischer, J., 2021. Quantitative easing, safe asset scarcity and bank lending, Deutsche Bundesbank Discussion Paper No. 35.

4.2.3 Loan market

Banks are the largest suppliers of loans to the euro area economy. They provided around 45% of the stock of loans outstanding as at the end of 2023 (SA – Chart 5 – ST51). Non-financial corporations and other financial intermediaries each provided 16% of the stock of loans outstanding – often in the form of inter-company loans.

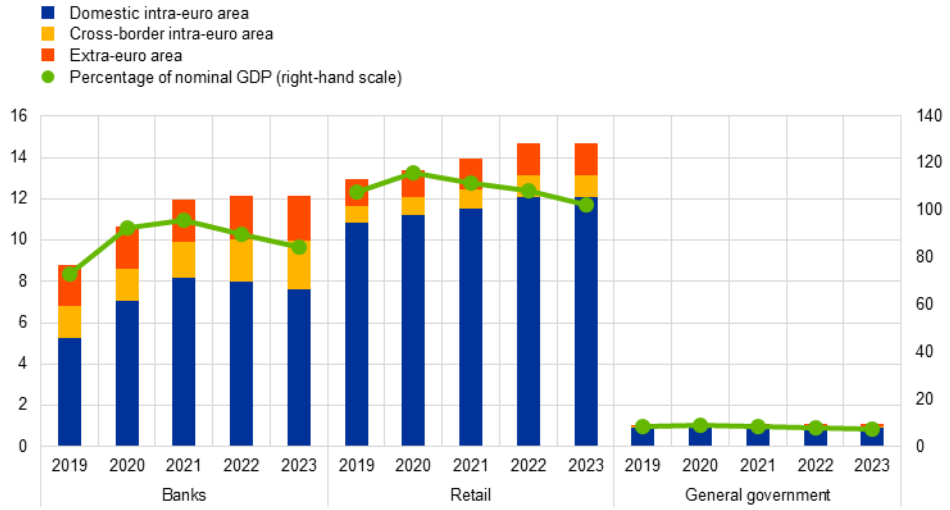
Both retail and interbank loans have increased in nominal terms since 2021, although they have declined relative to nominal GDP (Chart 13). Interbank lending stabilised at around €12 trillion from 2021, while both intra-euro area and extra-euro area cross-border interbank lending rose. Retail bank lending grew by €0.8 trillion from €13.9 trillion at the end of 2021. By the end of 2023, extra-euro area and intra-euro area loans as a share of total retail bank loans had increased by 0.2 percentage points each to 10.5% and 7.4%, respectively.

Outstanding bank loans to governments have hovered around €1.1 trillion for the past decade, playing a relatively minor role as governments primarily rely on debt securities issuances for financing.[89] Notably, (cross-border) extra-euro area bank loans to governments account for a larger share than (cross-border) intra-euro area loans (around 9.9% versus 3.5% in 2023).

Chart 13

Stock of bank loans in the euro area by counterparty type and domicile

(left-hand scale: € trillions; right-hand scale: percentages; end-of-year data, 2019-23)



Source: ECB.

Loan market integration has increased in quantitative terms owing to increased interbank lending, a less resilient form of banking market integration.[90] Aggregate intra-euro area cross-border lending across counterparty sectors reached a record high in 2022. At the same time, direct cross-border retail

89 See Section 4.3.1 and Chart 20.

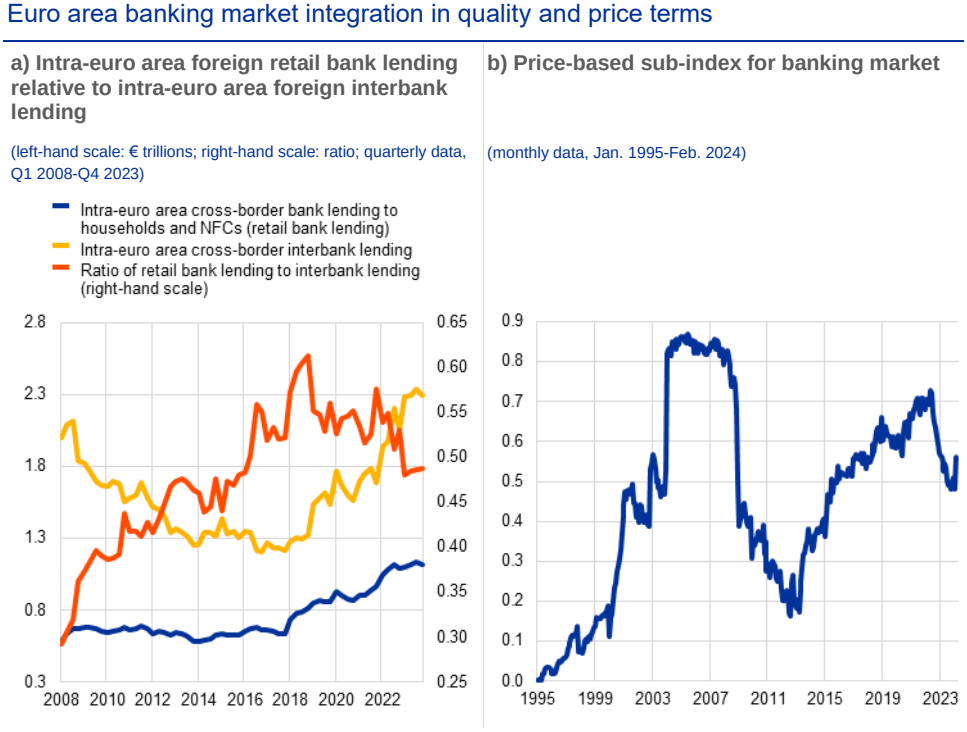
90 A higher level of cross-border retail lending activities helps increase the resilience of the European banking sector by allowing further diversification of bank loan portfolios.

bank lending within the euro area remained limited, while cross-border interbank lending picked up from the end of 2021 (**Chart 14, panel a**). **Box 5** highlights the importance of cross-border bank lending within the euro area, focusing on the growth of direct cross-border lending as a driver of banking market integration, while also discussing the implications of different lending approaches.

Disparities in bank interest rates for new loans to non-financial corporations and households have remained limited from a historical perspective despite rate fluctuations. This points to a smooth transmission of monetary policy changes to lending rates across euro area countries (SA – Chart 27 – S36, SA – Chart 28 – S37 and Section 3.1.2). Meanwhile, the sub-index for the banking market, reflecting rate differences in both new loans and deposits (**Chart 14, panel b**), has significantly decreased since mid-2021, partly due to increased disparity in household deposits (SA – Chart 25 – S34).

Chart 14

Euro area banking market integration in quality and price terms



Sources: ECB and ECB calculations.
Notes:
a) The blue line shows the total amount of intra-euro area cross-border bank lending to households and non-financial corporations, i.e. retail bank lending. The yellow line shows the total amount of intra-euro area cross-border lending between MFIs, i.e. interbank lending. The orange line shows the ratio between the two. For more discussion on the interpretation of these indicators, see Special Feature A entitled "Financial integration and risk sharing in a monetary union" *Financial integration in Europe*, ECB, Frankfurt am Main, April 2016.
b) The indicators aggregated into the sub-index are the cross-country dispersions of interest rates on new loans to households (for consumer credit and total loans) and non-financial corporations, and the cross-country dispersions of deposit rates for households and non-financial corporations on deposits with agreed maturity. Data for Greece are included.

Box 5

Intra-euro area cross-border bank lending: a boost to banking market integration?

Prepared by Francesca Lenoci and Philippe Molitor

Cross-border bank lending to non-banks is an important element of banking market integration within the Economic and Monetary Union (EMU).[91] Cross-border bank lending may follow a direct or an indirect model. With direct lending, a lender based in euro area country A lends money to a borrower domiciled in euro area country B. In an indirect model, a banking group headquartered in euro area country A lends money – via a branch or a subsidiary located in euro area country B – to a borrower residing in euro area country B. Using credit register data available at the ECB, this box sheds light on the relevance of cross-border bank lending in the euro area.[92]

A small though significant share of euro area banks' lending to non-banks is direct cross-border lending. Comparing the domicile of euro area banks and of borrower legal entities gives an idea of the scale of direct cross-border lending. As at the end of 2023, direct intra-euro area cross-border lending amounted to €1.03 trillion, or 14.1% of euro area bank lending to non-banks, with this share increasing by 1.65 percentage points from March 2019 (**Chart A, panel a**).[93]

When assessing the role of the direct and indirect approach to banking market integration, it is essential to consider the group structure of lenders and borrowers, and the domicile of their respective parents. In the case of genuine cross-border lending, the legal entities of the bank and the borrower reside in two different euro area jurisdictions and their respective parents are not domiciled in the same country. With pseudo cross-border lending, the parent entities of the lender and the borrower that are in a cross-border relationship reside in the same country, which is outside the jurisdiction of their subsidiaries. For example, in pseudo cross-border cases, a bank domiciled in country A lends to a firm domiciled in country B, but the parent entity of both the lender and the firm are resident in country C. Domestic bank lending can also be broken down into genuine, pseudo and financing of the local business abroad. Pseudo domestic refers to cases where the subsidiaries of a bank and a borrower are domiciled in the same country, but (at least) one of their parents is domiciled in a different jurisdiction. For example, a bank domiciled in country A lends to a firm domiciled in country A, but at least one of either the bank's or firm's parent is domiciled in country C. Finally, when the legal entities of the bank and the borrower reside in the same country, and their parents reside in the same country that is different from the jurisdiction of their subsidiaries, we classify such cases as financing of the business abroad.

Accounting for the group structure of lenders and borrowers, and the domicile of their respective parents, intra-euro area cross-border exposures increased by 67%, from €1.03

91 For the purposes of this box, the term "non-banks" includes non-financial corporations (ESA Sector "S.11"), other financial intermediaries ("S.125"), financial auxiliaries ("S.126") and captive financial institutions ("S.127"). Retail bank lending to households, as well as bank lending to government and other non-bank financial intermediation entities (insurance companies, pension funds, investment funds and money market mutual funds) are excluded from the analysis.

92 The analysis in this box focuses on the integration of euro area bank lending market using credit register data available at the ECB. The analysis in the article entitled "Determinants of currency choice in cross-border bank loans" – published in "The international role of the euro" ECB, Frankfurt am Main, June 2023 – focuses on cross-border bank lending in major international currencies, including in euro, using bilateral Bank for International Settlements (BIS) locational banking statistics to assess various potential determinants of currency choice in international cross-border bank lending, such as bilateral distance, measures of financial and trade linkages to issuer countries of major currencies, and invoicing currency patterns. The analysis shows that international cross-border bank lending in euro is highly concentrated in a small number of countries, such as the United Kingdom.

93 At the same date, 19% of total lending by euro area banks was to extra-euro area domiciled non-banks.

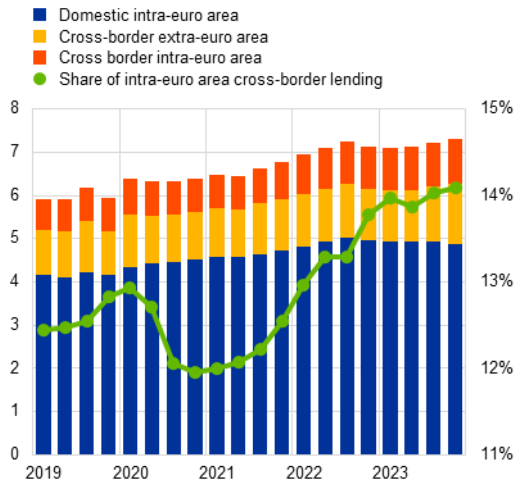
trillion to €1.72 trillion, as of December 2023. This is due to the shift of more than €600 billion from the domestic case to the pseudo-domestic case, 85% of which refers to indirect cross-border lending (Chart A, panel b). The financing of the local business abroad, i.e. when bank and borrower parents are domiciled in the same country that is different from where the deal occurs, and pseudo-cross border cases are less relevant than pseudo-domestic cases and constitute mainly loan exposures.

Chart A

Intra-euro area cross-border bank lending exceeded €1 trillion in December 2023…

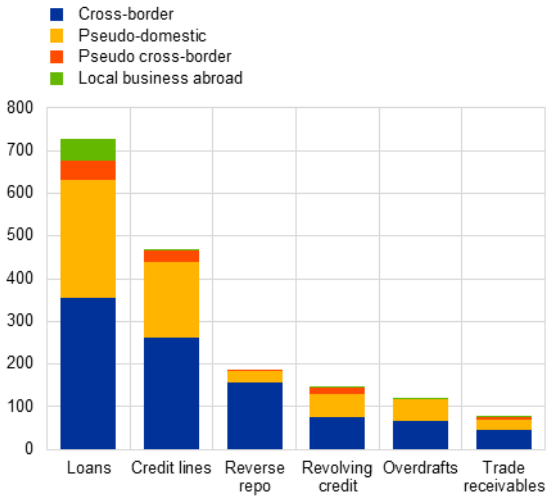
a) Bank lending by euro area-domiciled credit institutions to non-banks

(Q1 2019 – Q4 2023, outstanding nominal exposures in EUR trillions (left-hand scale); percentage of total lending by euro area banks to non-banks (right-hand scale))



b) Cross-border intra-euro area loan exposures by type of instrument

(Dec. 2023, outstanding nominal exposures in EUR billions)



Sources: ECB (AnaCredit) and ECB calculations.
Notes: Panel a): The reported figures represent a lender-borrower relationship at the entity level and disregard the residence of the respective parent entities. They include credit exposures of euro area domiciled banks (ESA sector "S.122") to euro area and globally-domiciled non-financial corporations ("S.11"), other financial intermediaries ("S.125"), financial auxiliaries ("S.126") and captive financial institutions ("S.127"). The credit exposures include overdrafts, trade receivables, revolving credit, credit lines, reverse repos and term loans. Overdrafts are debit balances on current accounts, i.e. current accounts with agreed overdraft limits. Revolving credit is not necessarily linked to a current account, and the debtor may withdraw funds up to a pre-approved credit limit without giving prior notice to the creditor; in this way, the amount of available credit can increase and decrease as funds are borrowed and repaid, and the credit may be used repeatedly. Credit lines allow the debtor to withdraw funds up to a pre-approved credit limit without giving prior notice to the creditor; in this case, the credit may be used in tranches, but it is not revolving. With credit lines, the amount of available credit can only decrease as funds are drawn, and repaying funds does not increase the available amounts. Panel b): The reported figures include credit exposures between euro area-domiciled banks and euro area-domiciled non-banks, irrespective of the domicile of the parents (i.e. provided that the legal entities of the lender and borrower are domiciled in the euro area). "Cross-border" includes cases where (i) a bank's parent and subsidiary are domiciled in the same country, but that country differs from the country of domicile of the borrower's parent and subsidiary, or (ii) a bank's parent and subsidiary are domiciled in different countries and those countries differ from the country of domicile of the borrower's parent and subsidiary, or (iii) a bank's parent and subsidiary are domiciled in the same country, but that country differs from the country of domicile of the borrower's parent, which is not the same country of domicile of the borrower's subsidiary. The bars of "local business abroad" and "pseudo cross-border" could include cases of intragroup transactions if the ultimate parent of the lender and the ultimate parent of the borrower are both banks and are domiciled in the same country.

A more integrated lending market could improve banks' risk diversification and make the funding structure of borrowers more resilient. Cross-border lending generates several benefits, usually related to private sector risk-sharing across euro area countries. On the lender side, banks might reduce the concentration and home bias of their exposures by increasing the cross-country diversification. On the borrower side, multiple cross-border bank relationships may broaden access to financing, strengthen borrowers' funding resilience or potentially stabilise funding when the

domestic market is under stress.[94] A more integrated banking market may also better support firms' growth and their international expansion. As at the end of 2023, roughly 14% of the turnover generated by euro area non-financial corporations is related to operations in other euro area countries, and this share started to grow in 2019, although not homogeneously across sectors.[95]

Almost 70% of intra-euro area cross-border bank lending to non-banks is to non-financial corporations, with some heterogeneity in the most common type of exposures. The largest cross-border lending volumes are associated with the home countries of the largest euro area banking groups, i.e. France and Germany. Direct and indirect cross-border intra-euro area lending primarily targets firms. Exposures to other financial institutions (OFIs) and captive financial institutions are concentrated in specific jurisdictions depending on the domicile of the banks – again French and German lenders respectively (**Chart B, panel a**).

Credit exposures take the form of loans, credit lines or reverse repos, with credit lines originated mainly by German banks and reverse repos by French banks. Italian lenders' cross-border lending activity is primarily via loans (**Chart B, panel b)**. Lending to OFI borrowers has a strong footprint in France, and it occurs mainly via reverse repo. More than two-thirds of lending to captive financial institutions is directed to borrowers in Luxembourg and, to a lesser degree, in the Netherlands.[96] These exposures are mainly via loans (46%) and credit lines (34%). Lending to financial auxiliaries consists mainly of French and Irish borrowers, and loans cover almost half of the exposures to these borrowers (**Chart A, panel b**).[97] French and Dutch lenders are mostly involved in the genuine cross-border lending business. The pseudo-domestic component of cross-border lending is quite significant in Germany and Italy. For example, in Italy it covers around 80% of total cross-border lending (**Chart B, panel c**).

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94 Domestic lenders may be more squeezed in the event of a *country-specific* crisis and may reduce lending more than non-domestic banks. The literature reports contrasting views on the benefits of cross-border lending. Investigations of lending by global banks to emerging market economies during the global financial crisis find that a liquidity shock in developed countries reduces lending in emerging market economies owing to a contraction in direct cross-border lending by foreign banks and in local lending by foreign banks' affiliates in emerging market economies. For further details, see Cetorelli, N. and Goldberg, L., "Global Banks and International Shock Transmission: Evidence from the Crisis", *IMF Economic Review*, Vol. 59, No 1, 2011, pp. 41-76; and Vogel, U. and Winkler, A., "Do foreign banks stabilize cross-border bank flows and domestic lending in emerging markets? Evidence from the global financial crisis", in Brada, J. and Wachtel, P. (eds.), *Global Banking Crises and Emerging Markets, Palgrave Readers in Economics*, pp.201-226. The withdrawal of banks from their cross-border business leads to a deterioration in the borrowing conditions of small firms, see Bremus, F. and Neugebauer, K., "Reduced cross-border lending and financing costs of SMEs", *Journal of International Money and Finance*, Vol. 80, Issue C, pp. 35-58.

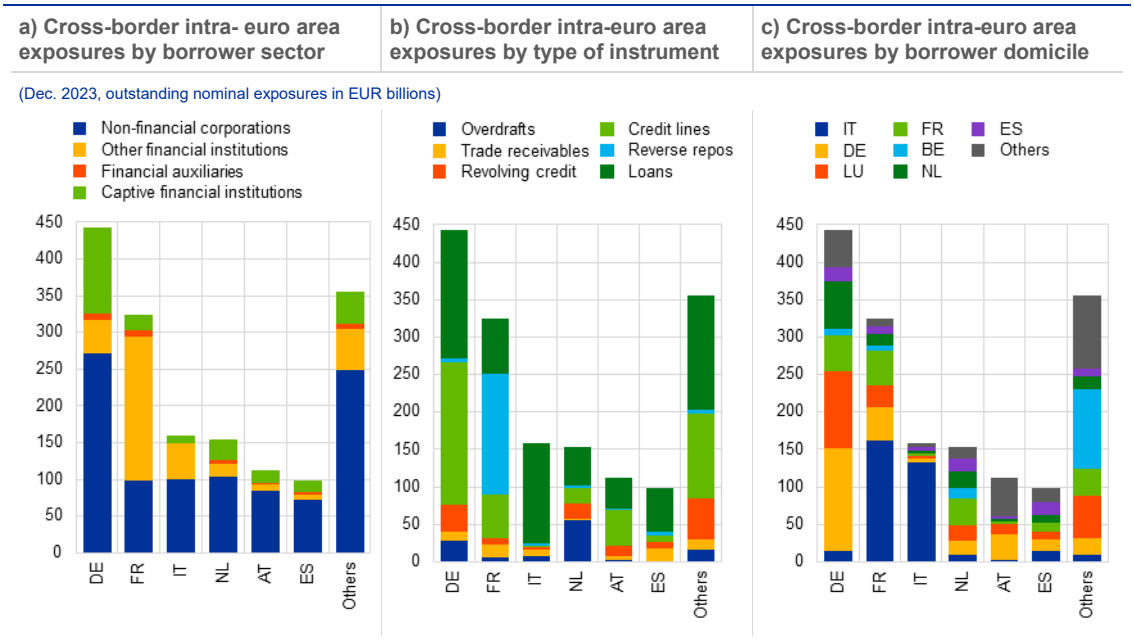
95 There are several reasons that might drive a firm's decision to run its business abroad, ranging from moving steps of its production processes to somewhere cheaper to incentives to establish the parent entity in a jurisdiction offering tax reliefs.

96 For further details, see Di Filippo, G. and Pierret, F., "Key features of captive financial institutions and money lenders (sector S127) in Luxembourg", *Working Paper*, No 150, Banque centrale du Luxembourg, December 2020; and Di Filippo, G. and Pierret, F., "A Typology of Captive Financial Institutions in Luxembourg: Lessons from a New Database", *Working Paper*, No 157, Banque centrale du Luxembourg, February 2022.

97 Financial auxiliaries are companies that provide auxiliary financial services and other financial advisory and consultancy services, such as loan brokers and investment advisers.

Chart B

…with some types of exposure concentrated in specific borrower countries



Sources: ECB (AnaCredit) and ECB calculations.
Notes: The reported bank lending figures include direct and indirect cross-border lending. Countries on the x-axis represent the domicile of euro area banking group parents. Panel b): Around 70% of direct and indirect intra-euro area cross-border lending via reverse repos refers to lending by a central clearing counterparty that has a banking licence.

The cross-border lending market is quite competitive for banks domiciled in large euro area economies, while borrowers are concentrated in only a few sectors.[98] A larger number of German and French lenders are involved in cross-border lending than is the case for banks in the Netherlands and Luxembourg (**Chart C, panel a**). The real estate sector is the one that benefits most from cross-border lending in terms of lending volumes, with lending evenly spread across different sizes of firm. Other borrowers are mainly large firms involved in manufacturing, professional and scientific activities, as well as in wholesale and retail trade. Services sector borrowers (e.g. from the ICT or professional science activities sectors) are the largest cross-border lending beneficiaries in relative terms (**Chart C, panel b**).

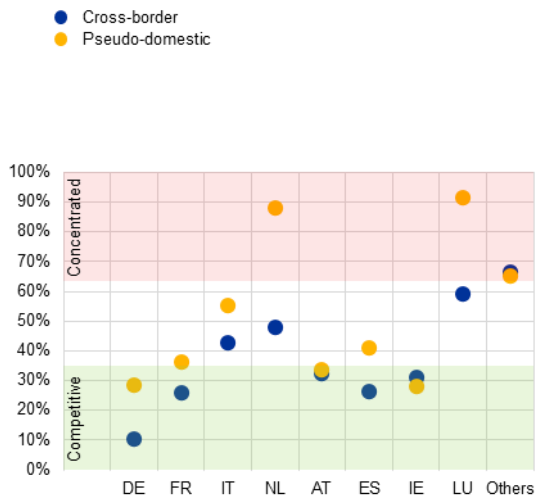
[98] The analysis in this box focuses on cross-border bank lending only. However, euro area banks also compete with non-bank lenders, ranging from traditional credit providers, such as finance companies, mortgage lenders and consumer credit firms, to newer market entrants, including fintech and big tech companies. As outlined in Section 4.1.2, the role of these non-bank lenders in the provision of credit to clients has continued to increase over the last few years. The regulatory approach to these entities should be adapted to cater for the opportunities and risks they pose.

Chart C

Cross-border borrowers are mainly firms involved in the services sector

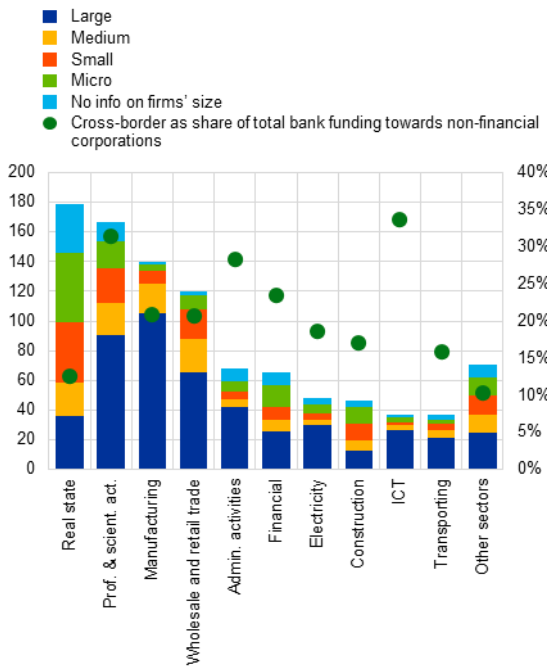
a) Concentration of banks involved in cross-border lending

(Dec. 2023, HH Index in percentages)



b) Size and sectoral breakdown of non-financial corporations involved in cross-border lending

(Dec. 2023, outstanding nominal exposures in EUR billions, percentages)



Sources: ECB (AnaCredit) and ECB calculations.
Notes: Panel a): The Herfindahl-Hirschman (HH) Index is calculated based on the domicile of the banks' parents. Panel b): The sector and firm size breakdown refers to the sample of non-financial corporations (ESA sector "S.11") involved in cross-border and pseudo-domestic cross-border lending.

The direct cross-border lending approach is currently a stronger banking market integration force than the alternative indirect lending approach. While insolvency law and taxation are driving the direct approach to banking market integration, regulatory and supervisory frameworks are behind the indirect approach.[99] Further developing a single euro area banking market and making progress on cross-border risk-sharing via bank loans would be beneficial to supporting the complementarity of banks and capital markets. This box documents that only a limited number of large banking groups are active in cross-border lending, and this is likely part of their business model. Further developments in cross-border intra-euro area mergers and acquisitions could also enhance the role of indirect cross-border lending. Progress is required to make the regulatory, supervisory and crisis management frameworks further "country blind" in order to strengthen a single market for banking groups active in cross-border interbank, government, corporate, or retail bank lending.[100]

99 The development of banking market integration under the indirect approach is achieved by expanding banking groups' lending activities abroad through the cross-border consolidation of euro area banking groups. The state and challenges of this approach to banking market integration is discussed in Section 2.1 of Financial Integration and Structure in the Euro Area, ECB, April 2022 and in the article entitled "Cross-border bank consolidation in the euro area" in Financial Integration in Europe, ECB, May 2017.

100 This may require giving cross-border banking groups a specific treatment in general banking union legislation, particularly as regards the free movement of capital, liquidity and other prudential resources within the banking groups in this category. For further details, see Angeloni, I., "The Next Goal: euro area banking integration", European Parliament, February 2024.

4.2.4 Bond market

Market expectations drove the rise in average sovereign yields from February 2022, before the ECB started to actually raise policy rates in July of that year. As soon as market expectations that central banks were approaching the peak of the rate hiking cycle consolidated, bond yields stabilised, as did yield spreads. The existence of ECB government bond purchase programmes such as the public sector purchase programme (PSPP) and the public sector portion of the PEPP, along with the rapid announcement of anti-fragmentation instruments such as PEPP flexibility (June 2022) and TPI (July 2022), helped to keep yield dispersion contained, thereby preserving the functioning of the monetary policy transmission mechanism.

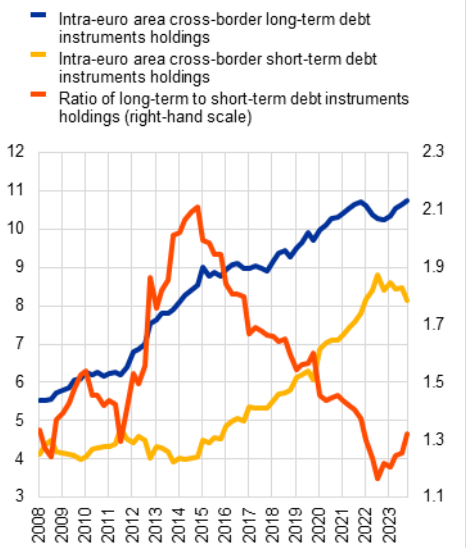
Price-based measures of bond market integration have recovered since 2022. After a significant fall in the first half of 2022, the price-based sub-index for bond markets has recovered since July 2022, although it remains below its 2021 level (**Chart 15, panel b**). The cross-country dispersion of government bond yields has remained relatively well contained despite the rapid increase in average yields that has taken place since 2022 (see SA – Chart 11 – S18). Although some sovereign spreads widened in the first half of 2022 – notably in Italy and Greece – this spread widening was more contained in terms of magnitude and duration than during episodes such as the 2009-14 sovereign debt crisis. Government bond market integration has increased since 2020, reaching levels close to historical hight (see SA – Chart 12 – S20). While the integration indicator (**Chart 15, panel b**) remains below its 2021 peak, this may reflect divergences in macro and fiscal fundamentals across euro area countries rather than undue market fragmentation.

Chart 15

Euro area bond market integration in quality and price terms

a) Intra-euro area foreign long-term debt investments relative to intra-euro area foreign short-term debt investments

(left-hand scale: € trillions; right-hand scale: ratio; quarterly data, Q1 2008-Q4 2023)



b) Price-based sub-index for the bond market

(monthly data, Jan. 1995-Mar. 2024)

Sources: ECB and ECB calculations.
Notes:
a) The indicators aggregated into the sub-index are the cross-country standard deviations of two-year and ten-year sovereign bond yields (Greece excluded), and the cross-country standard deviation of the bond yields of uncovered corporate bonds issued by non-financial corporations (data are aggregated at country level).
b) The figures cover not only debt securities liabilities, but also other instruments such as currency deposits and loans (F2 and F4), trade advances and account payables (F81 and F89), insurance, and pensions (F6) and FDI debt instruments (FL). As a convention, F6 and FL are classified entirely as long-term liabilities.

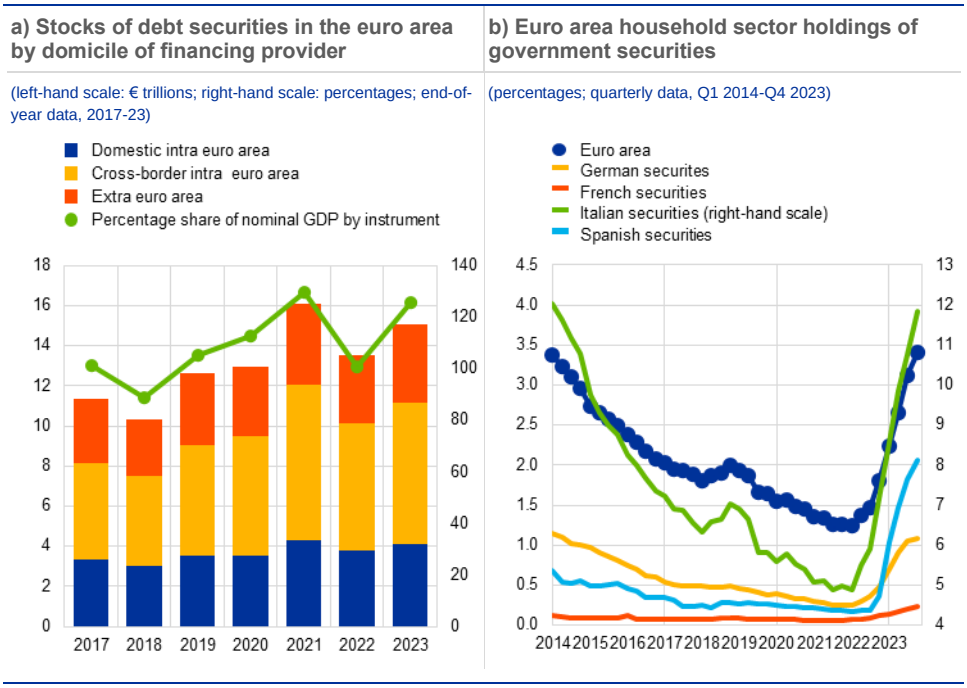
In contrast to price-based measures of bond market integration, quantity-based measures do not show any significant improvement in integration since the last report. Intra-euro area cross-border long-term debt securities holdings have stabilised while short-term holdings have decreased since mid-2022. This is due to a flattening in yield curves driven by central bank rate hikes and lower growth expectations (**Chart 15, panel a**). Cross-border holdings of debt securities, which are at the core of integration, have reflected broad relative stability since 2017 (**Chart 16, panel a**). The share of cross-border euro area MFI and fund holdings of government and corporate debt securities (see SA – Chart 14 – S22 and SA – Chart 15 – S23) has remained broadly stable. In addition, there has only been a small recovery – back to 2020 levels – in the share of cross-border euro area MFI holdings of other MFI securities (SA – Chart 19 – S28).

A noticeable development since 2022 has been the marked increase in households' holdings of domestic government debt in a number of countries. This has contributed to a decline in the share of cross-border holdings of government debt. The increase has been particularly visible in countries such as Italy where there have been large issuance programmes specifically targeting domestic retail investors but also in countries such as Spain and Germany that do not have such programmes, but where the low remuneration of bank deposits has made channelling savings to government debt particularly attractive to households (**Chart**

16, panel b). This investor base diversification is one element mentioned in **Box 6**, which analyses the contribution of EU SURE and NGEU bonds to financial integration.

Chart 16

Holdings of euro area debt securities



Sources: ECB (SHS) and ECB calculations.

Box 6

Do EU SURE and NGEU bonds contribute to financial integration?

Prepared by Alexandra Born, Claudia Lambert, Luis Molestina Vivar, Andrzej Sowiński, Josep Maria Vendrell Simon

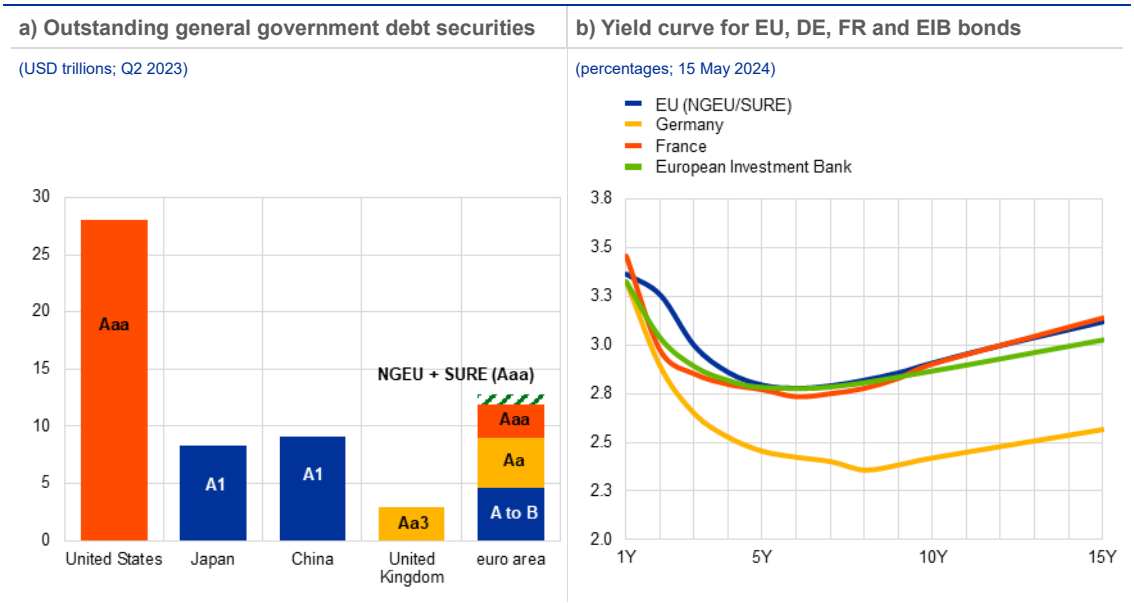
Over the period 2024-26, the European Commission will become the largest net issuer of euro-denominated securities with the issuance of bonds under the temporary Support to mitigate Unemployment Risks in an Emergency (SURE) and Next Generation EU (NGEU) programmes. To counter the negative economic and social consequences of the COVID-19 pandemic in Europe, the EU Council adopted two programmes to issue common EU bonds. The first was SURE, an EU programme to finance short-term employment schemes, with a view to helping Member States cope with sudden increases in public expenditure to preserve employment. This was followed by NGEU, which aimed at putting Member States on a path towards a sustainable recovery and a greener, more digital and more resilient Europe. In total, the European Commission had issued around €100 billion of SURE bonds by the end of 2022, when the programme ended, while the total issuance of NGEU bonds will amount to €806.9 billion over the period 2021-26, with €306 billion having already been issued by the end of 2023. This will render the Commission the largest net issuer of euro-denominated securities and result in the largest supranational stock of EU bonds in the history of

the EU, akin to that of a medium-sized euro area sovereign.[101] In addition, EU bond issuance will increase the Aaa-rated segment of euro area government and supranational bonds by almost 40% (Chart A, panel a).

The issuance of these temporary recovery instruments has renewed the discussion on the benefits of a common safe asset and their transformative potential for EU financial integration. Given that a common safe asset may foster financial integration in the euro area by facilitating diversification and de-risking banks' sovereign portfolios, this box assesses the extent to which these newly issued EU bonds (i) are perceived by market participants as a common safe asset, and (ii) can facilitate diversification and affect banks' sovereign portfolio composition.[102]

Chart A

Total SURE and NGEU bond issuances will increase the Aaa-rated segment of euro area government bonds substantially, but they continue to trade at a discount compared with euro area government bonds with similar or even slightly lower ratings



Sources: Bank for International Settlements, Haver Analytics, Bloomberg, European Commission and ECB calculations.
Notes: The data for panel a) refer to total debt securities issued by general government. For NGEU, they refer to the planned total issuance volume. Credit ratings use the Moody's latest local currency long-term sovereign debt rating reported as of January 2024.

While EU bonds fulfil most of the criteria to be a safe asset, market participants still consider them to be more like those of other supranational issuers than the highest quality bonds of euro area sovereign issuers.[103] A safe asset should be of a high credit quality, retain its value in the event of market stress and have a liquid market. Despite the high rating assigned to EU bonds (substantially above the average rating of EU Member States weighted by the nominal amount of debt outstanding) for a number of maturities, they trade at a discount compared with euro area

101 The European Commission has committed to issuing up to 30% of NGEU bonds as green bonds, which is expected to make it the largest green bonds issuer in the world. By the end of 2023 €49 billion of green bonds had already been issued.

102 For further information, see the discussion in Alogoskoufis, S., Giuzio, M., Kostka, T., Levels, A., Molestina Vivar, L. and Wedow, M., "How could a common safe asset contribute to financial stability and financial integration in the banking union?", *Financial Integration and Structure in the Euro Area*, ECB, Frankfurt am Main, March 2020.

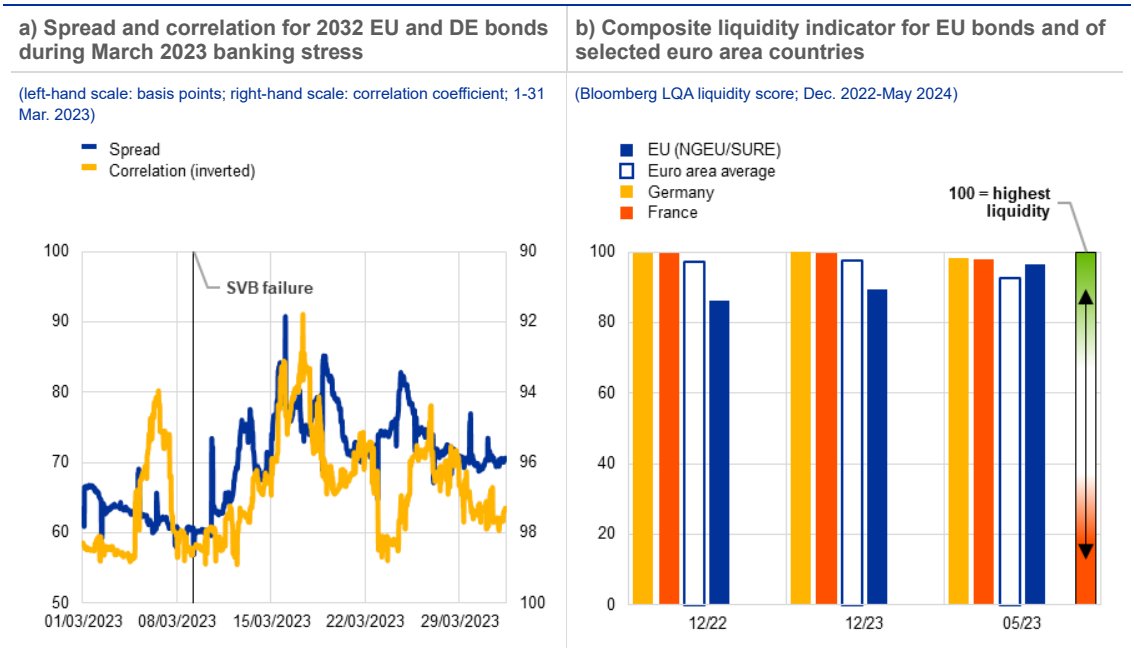
103 See Bletzinger, T., Greif, W. and Schwaab, B., "Can EU bonds serve as euro-denominated safe assets?", *Working Paper Series*, No 2712, ECB, Frankfurt am Main, August 2022 (also published in *Journal of Risk and Financial Management*, Vol. 15, No 11, November 2022, pp. 1-13).

government bonds with similar or even slightly lower ratings (Chart A, panel b).[104] In addition, EU bonds are typically priced off the swap curve, a pricing characteristic more common for supranational bonds than for European government bonds (EGBs).

EU bonds have had a commendable track record in risk-hedging, but they remain less liquid than euro area sovereign bonds of the highest quality. During the US and Swiss banking stress episodes in March 2023, EU bonds remained highly correlated with German bonds. The EU-DE spread widened only temporarily, with correlation levels remaining consistently high (Chart B, panel a). While spreads for EU bonds correlate positively with interest rates' implied volatility, they show no such correlation with equity implied volatility, which is more often seen as a gauge of market stress. However, although the liquidity of EU bonds has improved substantially, it remains lower compared with that of the safest euro-denominated sovereign bonds, such as those issued by Germany (Chart B, panel b). According to Bloomberg data, the most common liquidity indicators, such as bid-ask spreads, suggest the transaction costs are still higher than those of the highest quality EGBs, which might partly explain why EU bonds trade at a discount. While EU bonds are available on multiple trading platforms, also for repo trading, they are used almost entirely in overnight transactions, indicating a limited role in actively supporting trading, and instead rather serving funding purposes.[105] Several factors might adversely impact the liquidity of EU bonds, including the growing, but still low, free float, limited participation in bond indices (confined to supranationals) and a lack of derivative contracts referencing EU bonds.

Chart B

EU bonds are highly correlated with German sovereign bonds and also appreciated during the March 2023 banking stress episodes, but scarcer liquidity might be a key risk premia factor



Source: Bloomberg.
Notes: In panel a), benchmark EU and DE bonds (maturing in 2032) were chosen based on comparable maturity, duration and amount outstanding. Moving

[104] As of 15 May 2024 EU bonds were rated AAA/Aaa by Fitch, Moody's, Scope and DBRS, and AA+ by Standard & Poor's with a stable outlook.

[105] That EU bonds are used almost entirely in overnight transactions is based on data collected by the ECB under Regulation (EU) No 1333/2014 of the European Central Bank of 26 November 2014 concerning statistics on the money markets, OJ L 359, 16.12.2014, p. 97.

average (100) correlation of 10-min returns. In panel b), the Bloomberg LQA liquidity score represents the percentile of liquidity measure across the bond universe; the scores represent the average weighted by the nominal amount of debt outstanding.

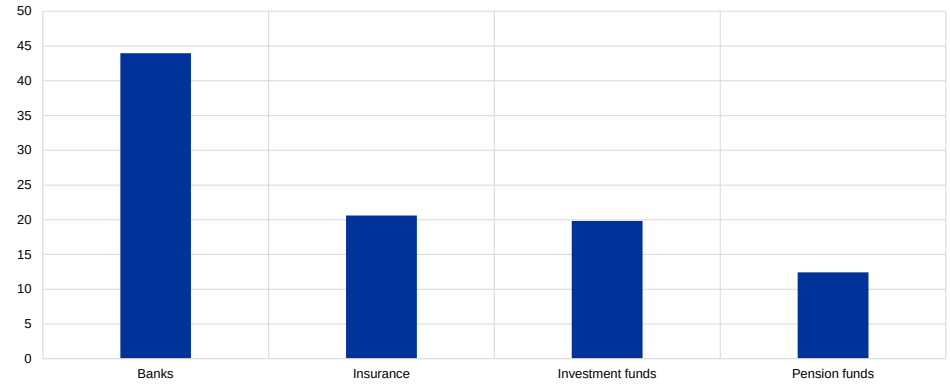
To foster the development of the EU bonds ecosystem, the European Commission and the ECB have taken a number of strategic actions. The Commission has established an incentivisation scheme for primary dealers aimed at reducing trade execution uncertainty. Other initiatives include the introduction of a repo facility, anticipated in mid-2024, and the launch of the EU Issuance Service (EIS) in January 2024, facilitating full integration into the Eurosystem payments and settlement infrastructure. An investor survey to gauge perspectives on features that would align EU bonds more closely with EGBs has already been completed.[106] In addition, since 29 June 2023 the ECB's collateral treatment of EU bonds has been the same as for central government bonds, classifying them as Level 1 high-quality liquid assets for banks' liquidity coverage ratio calculations.[107] Additionally, EU bonds can be used as collateral with various central counterparties, such as Eurex and LCH.

EU bonds tend to have a diversified investor base, with banks being the largest euro area sector investing in these bonds. Around one-third of EU bonds are held by euro area sectors excluding the Eurosystem. Focusing on these euro area investors, they are located across various countries, with investors in Germany, France and the Netherlands holding the largest amounts. The euro area banking sector is the largest sector investing in EU bonds, holding around 44% of the total euro area holdings of these bonds (Chart C).

Chart C

Newly issued SURE and NGEU bonds have a diversified euro area investor base, while the banking sector has the highest exposure to these bonds

(percentages; Q2 2023)



Sources: Securities Holdings Statistics by Sector (SHSS) database and authors' calculations.

To date, euro area banks' EU bond holdings are small relative to their domestic government bond holdings, although there is substantial heterogeneity across countries. German banks hold the largest amount of EU bonds among the euro area banking sectors, followed by France, the Netherlands, Italy and Spain. The share of EU bond exposures relative to domestic government bond holdings is relatively low in most euro area banking sectors, with a euro area average of 10%

106 For a summary of the responses, see European Commission, "Deepening the market for EU-Bonds – EU-Bond Investor Survey", September 2023.

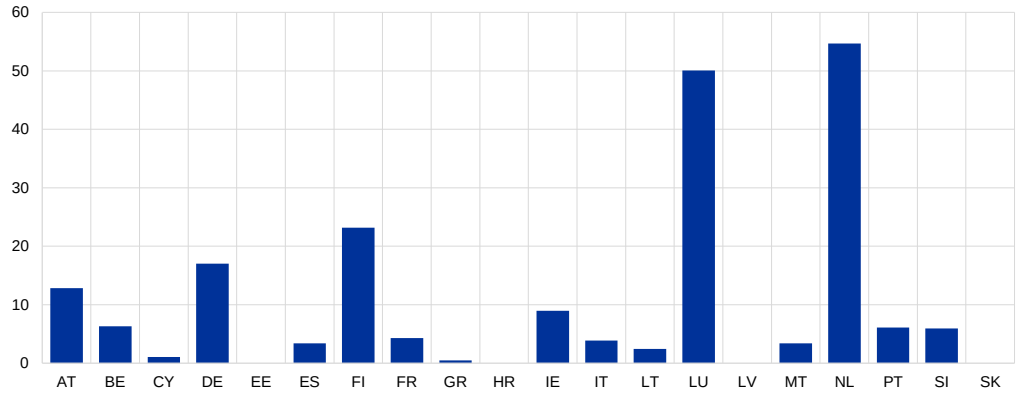
107 See Guideline (EU) 2023/832 of the European Central Bank of 16 December 2022 amending Guideline (EU) 2016/65 on the valuation haircuts applied in the implementation of the Eurosystem monetary policy framework (ECB/2015/35) (ECB/2022/49), OJ L 104, 19.4.2023, p.40.

(Chart D). Notably, the share of EU bonds in banks' portfolios relative to domestic sovereign bonds is higher in the Netherlands and in Luxembourg, relative to other euro area banking sectors. While Dutch banks invest a considerable amount in EU bonds relative to other euro area banking sectors, the high share of EU bonds in Luxembourgish banks' portfolios is driven largely by their relatively small holdings of domestic sovereign bonds.

Chart D

In most countries, euro area banks' EU bond (SURE and NGEU) holdings are small relative to domestic government bond holdings, although there is substantial heterogeneity across countries

(percentages; Q2 2023)



Sources: FINREP, Securities Holdings Statistics by Sector (SHSS) database and authors' calculations.
Notes: The blue bars show banks' holdings of SURE and NGEU bonds relative to banks' holdings of domestic general government debt securities (in percentages). While data on SURE and NGEU bonds are taken from the SHSS database, data on government debt securities are based on FINREP.

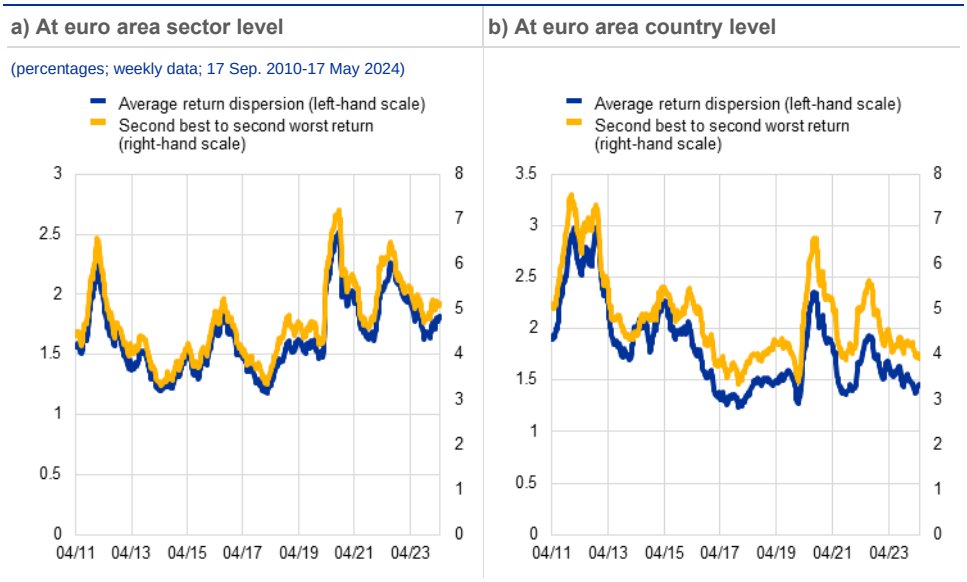
While EU bonds fulfil most of the criteria to be a common safe asset, it has so far been difficult to fully exploit their associated potential benefits. EU bonds are of a high credit quality and have had a good track record in risk-hedging during recent market stress events. However, they are less liquid than high-quality euro-denominated sovereign bonds. The temporary nature of EU bonds seems to be one of the biggest hurdles. Market participants still consider EU bonds to be more like those of supranational issuers than those of euro area sovereign issuers, despite a number of actions taken to further develop the EU bond ecosystem. Other factors that could boost the status of EU bonds include their inclusion in EGB indices and potentially also futures contracts on EU bonds – though this is outside of the European Commission's control. A more general discussion about the future of EU bonds may be important, as market participants' investment decisions could be heavily impacted by issues regarding the certainty and general perception of this project. In terms of EU bonds' impact on financial integration, the evidence is not conclusive. Initial data on banks' holdings of these bonds suggest limited diversification relative to domestic government bond holdings in most countries, but these results are only indicative given the limited amount of EU bonds that have been issued at this point. More analysis is needed once the issuance of EU bonds reaches a more sizeable level.

4.2.5 Equity market

Equity market integration has decreased since 2018 against the background of a general increase in stock prices. Over this period, the price-based sub-index for equity markets (see SA – Chart 1 – S3) has been on a declining trend, bottoming out in December 2022, although still showing that the degree of overall equity market integration remains at the lower end of its historical measurement range. The initial surge in equity price return dispersion from the post-pandemic lows was broadly reversed as of August 2022, both at sector and country level (**Chart 17** and SA – Chart 10 – S15).

Chart 17

Equity price return dispersion



Sources: Bloomberg and ECB calculations.
Notes: Cut-off: 12 April 2024. The panels of this chart use two metrics to offer a high-level perspective on the euro area (price) return dispersion of the equity market at sector and country level. The first is the 30-week moving average of the weekly standard deviation of sector/country (price) returns – at sector level, the weekly standard deviation of (price) returns is calculated using the individual (price) returns recorded by the 20 sectors represented in the Euro Stoxx index. The second is the 30-week moving average of the weekly range of (price) returns at sector/country level – the weekly range of (price) returns is calculated as the (price) return difference between the second-best performer and second-worst performer in each week (separately, at sector and country level).

Cross-border holdings of equities, another core integration metric, have displayed broad relative stability since 2017. This stability holds true for listed equity securities affected by valuation effects (**Chart 18, panel a**), but also for a broader measure of marketable and non-marketable equity instruments (**Chart 18, panel b**).

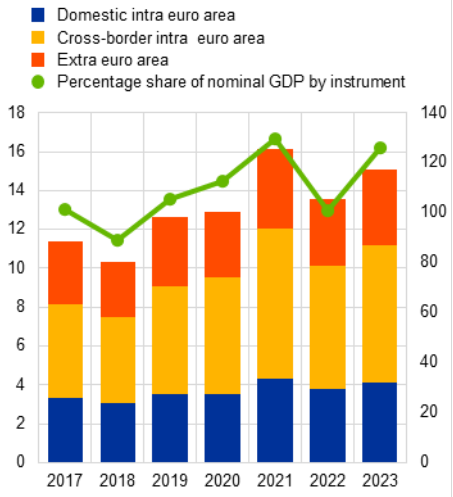
The quality of euro area equity integration has broadly returned to its pre-crisis level but indicates a declining trend. Following a significant drop in the course of 2020, the ratio of intra-euro area cross-border holdings of equities to intra-euro area cross-border holdings of debt instruments has now nearly recovered to the pre-pandemic level (**Chart 19, panel a**). Intra-euro area FDI as a share of cross-border direct investment and portfolio equity investment has increased sharply since mid-2022, reaching pre-pandemic levels by mid-2022 before declining again (**Chart 19, panel b**).

Chart 18

Euro area equity holdings

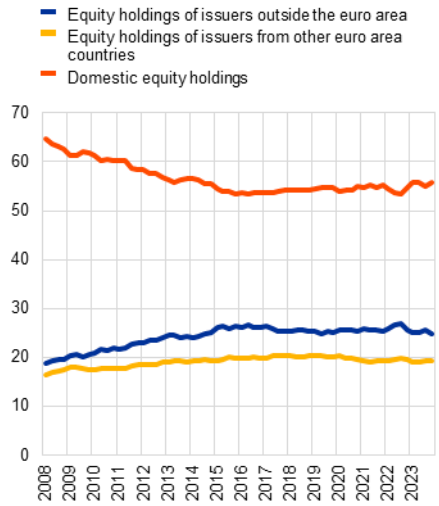
a) Stocks of listed shares in the euro area by domicile of financing provider

(left-hand scale: € trillions; right-hand scale: percentages; end-of-year data, 2017 to 2023)



b) Holdings (including investment fund shares and other equity holdings) by geographical issuer counterparty

(percentages of total euro area holdings of equities, quarterly data, Q1 2008-Q4 2023)

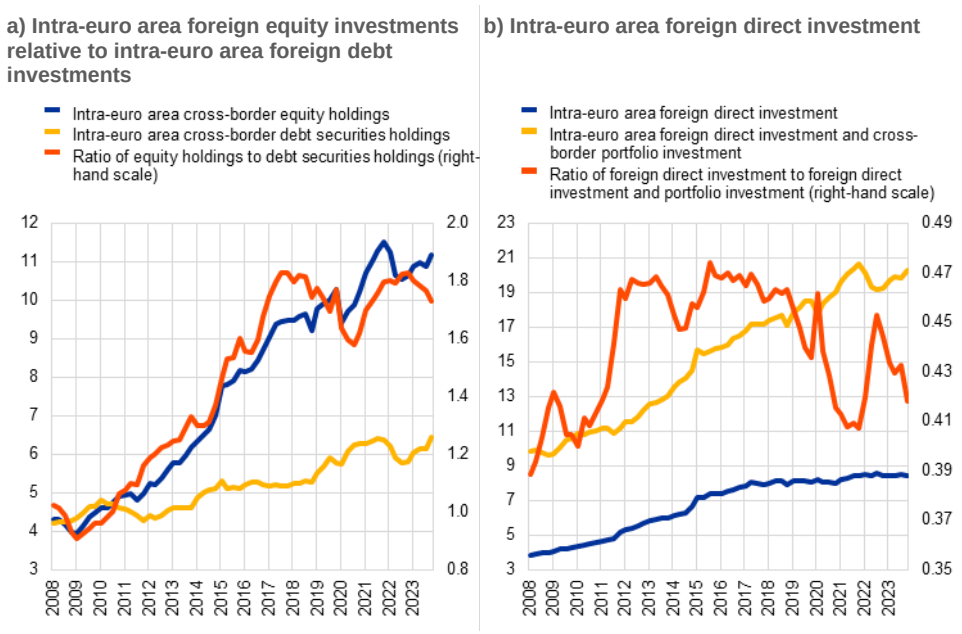


Source: ECB.
Note: Panel b: Equity holdings include listed and unlisted shares, investment fund shares (of any type of investment fund) and other equities including, among other things, participations in international organisations (e.g. the ECB or the European Stability Mechanism) and holdings of real estate outside the domestic economy.

Chart 19

Indicators of equity market integration resilience in the euro area

(left-hand scale: € trillions; right-hand scale: ratio; quarterly data, Q1 2008-Q4 2023)



Sources: ECB and ECB calculations.
Notes:
a) Both portfolio and direct investment holdings are included under equity holdings. For debt securities, only portfolio investment is included, since debt securities are not available for FDI (only total "debt instruments"). Even restricting the analysis to portfolio investment only, we still see the rising importance of equities in intra-euro area cross-border holdings. Looking at the sector contribution, we see a general increase in equity holdings for all sectors except money market funds (S123).
b) Intra-euro area FDI is calculated as the average of asset and liability positions to account for possible asymmetries. For portfolio investment, only the asset side is used since liabilities are not reported owing to the custodial bias.

4.2.6 Trends in risk sharing

Improving risk sharing across national borders is an essential driver for advancing financial integration in the euro area. The concept of risk sharing generally refers to the notion that economic agents, such as households and firms, attempt to insure their consumption streams against fluctuations in the business cycle of their country.

Risk sharing has been slightly improving while remaining at comparatively low levels. While the coefficient of correlation between euro area consumption and output had shifted upward in 2019/2020 (SA – Chart 4 – S7) – suggesting that a change in output and income tends to translate directly into a change in consumption and hence indicating a low degree of consumption risk sharing – this measure of risk sharing across euro area member countries has been fairly stable in recent years. Other recent estimates of risk sharing highlight an improvement attributed to the savings-credit channel.[108] As the euro area remains a predominantly bank-based

[108] Giovannini, A., Ioannou, D. and Stracca, L., "Public and private risk sharing: friends or foes? The interplay between different forms of risk sharing", *Occasional Paper Series*, No 295, ECB, Frankfurt am Main, June 2022.

financial system, and in the absence of risk sharing through capital markets, the absolute level of risk sharing in the EU remains lower than in the United States.[109]

4.3 Avenues for broader funding bases

4.3.1 Financing requirements

The ample internal sources of finance and elevated levels of retained earnings available to euro area non-financial corporations helped them to achieve strong growth in investment from 2022. While government investment also grew, household investment remained stable.

Fluctuations in external financing of non-financial corporations from 2022 reflected changing economic and financial conditions, as well as firm-specific factors. External financing of non-financial corporations grew throughout 2022, driven by strong borrowing from banks and robust inter-company lending, as well as increased trade credit flows and net issuance of shares (**Chart 20**). External financing of non-financial corporations then declined sharply during 2023, as borrowing from banks weakened owing to higher bank lending rates, tighter credit standards and an uncertain growth outlook. The net issuance of debt securities declined, as did trade credits, amid reduced inventory growth and imports. The net issuance of (specifically non-listed) shares remained strong, driven by M&A activity. **Box 8** examines EU FinTech companies' choices of location and assesses their funding mix. It finds that one of the reasons for the clustering of FinTechs close to financial centres is that being present in these locations may make it easier for them to access to equity finance.

After surpassing pre-pandemic levels in 2022, household financing flows decreased strongly in 2023. As banks tightened credit conditions, new lending to households weakened markedly after summer 2022 (**Chart 20**).

The fluctuations in government budgetary positions from 2022 onwards reflected economic conditions and policy decisions. In 2022 there was a significant improvement in the euro area deficit-to-GDP ratio (compared with 2021) which was largely driven by reductions in the general government expenditure-to-GDP ratio. In 2023 the euro area deficit-to GDP ratio improved only marginally, with the drop in the general government expenditure-to-GDP ratio roughly balancing the drop in the general government revenue-to-GDP ratio. Government investment spending as a percentage of GDP rose in 2023, which was also linked to the NGEU scheme.

Financing decisions translated into a higher share of equity in the euro area economy's financing mix. The overall weight of debt instruments – debt securities, loans and trade financing – in the euro area financing mix decreased from 2022

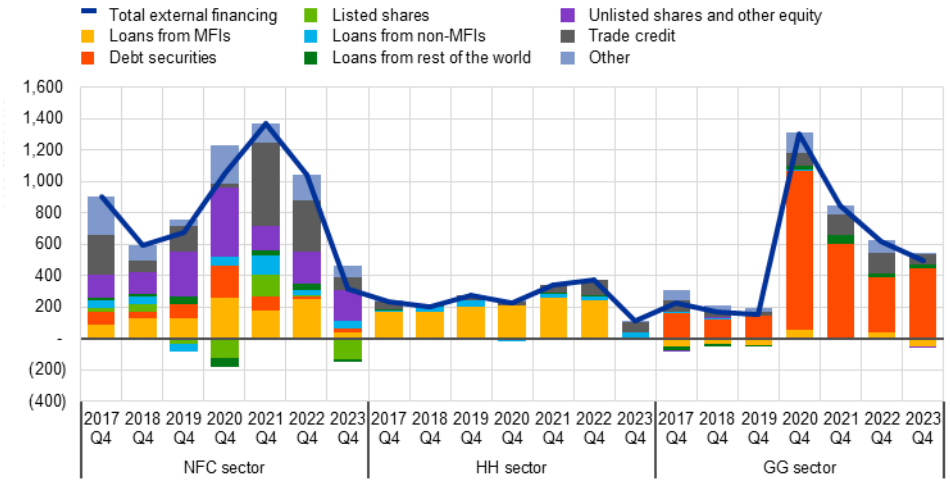
[109] Cimadomo, J., Gordo Mora, E. and Palazzo, A.A., "Enhancing private and public risk sharing", *Occasional Paper Series*, No 306, ECB, Frankfurt am Main, September 2022.

(Chart 21, panel a). Meanwhile, the breakdown of financial corporation debt securities by instrument shows a slight preference for asset-backed securities over covered bonds. The breakdown also shows that the relative shares of non-mortgage backed securities (around 6%) and mortgage backed securities (around 5%) in the stock of debt securities issued by financial institutions (mainly banks) remained broadly stable (**Chart 21, panel b**).

Chart 20

External financing flows of euro area non-financial corporations, households and general governments by instrument

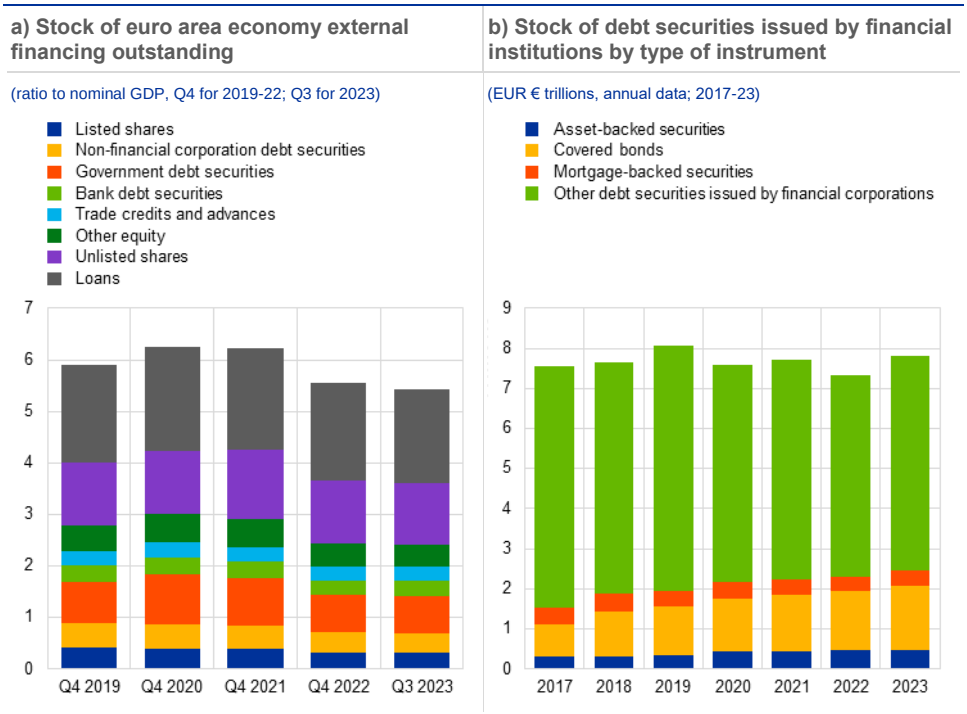
(flows; four-quarter sums; € billions, Q4 for 2019-23)



Sources: ECB (euro area accounts) and ECB calculations.
Notes: MFIs stands for monetary financial institutions. Non-MFIs include other financial institutions (OFIs) as well as insurance corporations and pension funds (ICPFs). "Other" is the difference between the total and the instruments included in the figure and includes inter-company loans and the rebalancing between non-financial and financial accounts data. Figures shown represent the sum of flows over the last four quarters at the end of the fourth quarter for 2019-22 and at the end of the third quarter for 2023. NFC stands for non-financial corporation, HH stands for household, and GG stands for general government.

Chart 21

External financing of euro area economy (stocks)



Source: ECB.

Box 7

Examining the causes and consequences of the recent listing gap between the United States and Europe

Prepared by Zakaria Gati, Claudia Lambert, Davide Ranucci, Clément Rouveyrol and Hanni Schölermann

Recent high-profile delistings from European stock exchanges and a gap in the number of listings in Europe compared with the United States have prompted concerns about the attractiveness of European equity markets.[110,111] The role of listed shares issued by large non-financial corporations is fundamental in bolstering the depth and liquidity of public equity markets. However, unlike their counterparts in countries such as the United States, EU firms predominantly rely more on non-listed equity financing than listed shares.[112] Expanding the presence of listed equity is crucial for the growth of EU capital markets for a number of reasons, including its greater liquidity and its accessibility to a wider array of retail investors.[113] Moreover, listed equity can play a

110 Such delistings include Flutter Entertainment, CRH, Linde, Rothschild & Co and Smurfit Kappa, which were delisted from EU exchanges in 2023 and at the start of 2024. Some companies, such as British semiconductor company ARM Holdings, chose not to list in Europe at all, but to go directly to US exchanges to launch their initial public offerings (IPOs).

111 See, for example, Augar, P., "How the US is crushing Europe's domestic exchanges", *Financial Times*, 25 September 2023.

112 See, for example, Financial Integration and Structure in the Euro Area, ECB, Frankfurt am Main, March 2020, p. 7: "…the euro area financial structure is characterised by a continuing dominance of non-marketable financing instruments, such as loans and unlisted shares".

113 For an overview of the main determinants of listing decisions, see Lowry, M., Michaely, R. and Volkova, E., "Initial public offerings: A synthesis of the Literature and Directions for Future Research", *Foundations and Trends in Finance*, Vol. 11, Issues 3-4, January 2017, pp. 154-320. Reasons include financing of investment needs, achieving higher valuations, capital structure adjustments, liquidity needs and diversification of the ownership base.

significant role in supporting the decarbonisation of economies.[114] One of the priorities of the 2020 CMU action plan for making financing more accessible to EU companies was to support access to public markets.[115] Against this backdrop, this box aims to shed more light on the gap in listings between the United States and Europe, and examines the reasons behind the delisting activities of EU companies. Additionally, it takes stock of dual and direct listings of EU companies in the United States to gauge the relative attractiveness of European and US markets for EU companies.

The number of listed companies in Europe and the United States were on a similar downward trend between the early 2000s and 2019, but the gap in market capitalisations increased significantly. Although the decline in the number of listed companies in Europe and the United States was initially comparable, the number of companies listed in Europe rose temporarily prior to the global financial crisis. It fell again thereafter, however, with the number of companies listed in the EU generally remaining slightly above that in the United States. At the same time, the average market capitalisation of US companies has historically been much higher than that of EU companies, a gap that has widened significantly since 2010, with US companies achieving, on average, a 3.3 times higher market capitalisation than EU companies in 2022 (Chart A, panel a).

However, since 2019 the number of listed companies has surged, with growth in US-listed companies significantly outpacing that in Europe – which is particularly evident for foreign company listings. The number of listed companies on the two main US stock exchanges has increased much more rapidly since 2019 and now exceeds that on the four major European exchanges for the first time in two decades.[116] By contrast, the number of listed companies in Europe continues to be substantially lower than it was before the global financial crisis. This suggests that US stock markets have been more successful in attracting new company listings. Moreover, the share of foreign companies as a percentage of all listed companies in the United States rose considerably, from around 18% in 2017 to 24% in 2022 (Chart A, panel b). Over the same period, foreign listings on European markets were on a slight downward trend.[117]

Concerns about a possible trend in delisting from European stock exchanges do not seem to be supported by the evidence. In light of the increase in the number of listed companies since 2019, recently observed delistings represent only a small share of the overall market capitalisation. For instance, yearly delistings reached 10.3% of the year-end market capitalisation at Euronext in 2019 – in a period when the number of listed companies was generally on the rise. By contrast, delistings represented only 4.8%, on average, over the period 2019-22 in terms of market capitalisation (Chart A, panel c). This compares with capital raised through initial public offerings (IPOs) equivalent to 0.17% of market capitalisation over the same period. Overall, delistings outweigh capital raised through IPOs, although these figures do not include capital raised and withdrawn from the market while the firm remains listed.[118]

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114 De Haas, R. and Popov, A., (2023) "Finance and green growth", *The Economic Journal*, Vol. 133, No 650, February 2023, pp. 637-668.

115 See Capital markets union 2020 action plan: A capital markets union for people and businesses, European Commission, 2020.

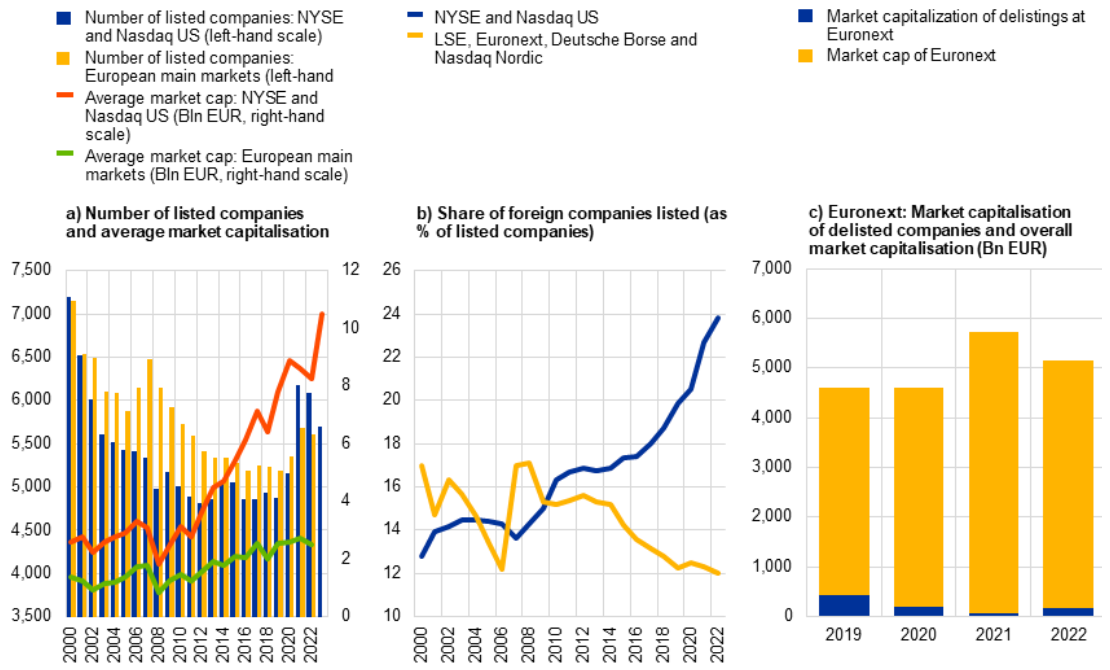
116 The comparison focuses on the largest stock exchanges in both jurisdictions, taking into account that European stock exchanges are more numerous and fragmented.

117 Importantly, for selected European domestic exchanges, the sample comprises companies domiciled in European countries that are not the same as the location of the respective reporting exchange. Notably, both Europe and the United States experienced a small downtick in listings in 2022, but this is more likely the result of cyclical factors than a delisting trend.

118 This statement does not take into account transferred securities or direct listings.

Chart A

Aggregate dynamics of listing and delisting: comparing the United States with Europe and the United Kingdom



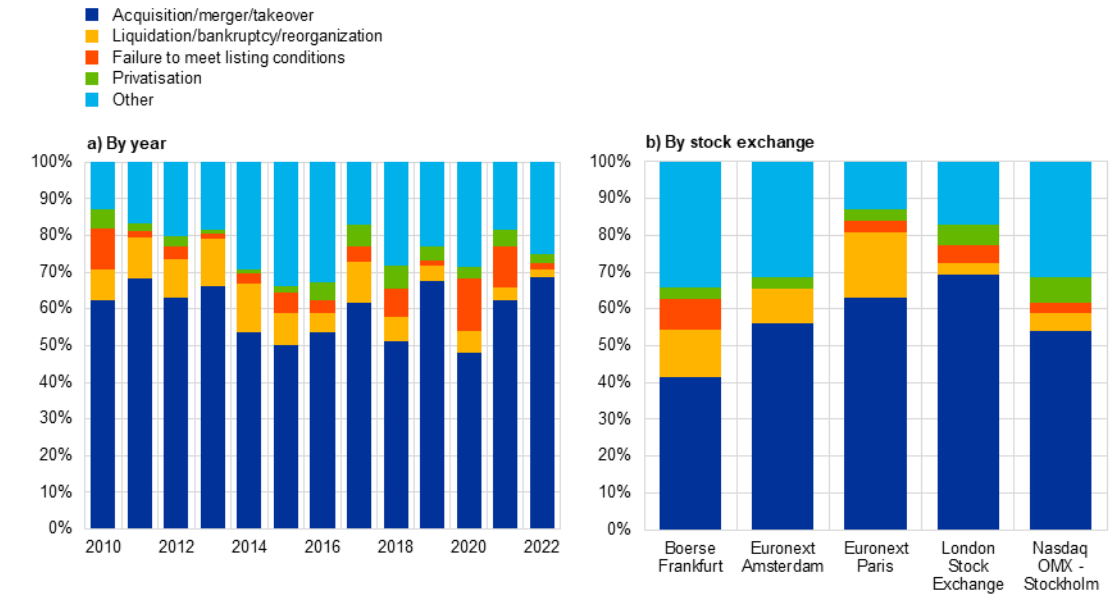
Sources: Panels a) and b): World Federation of Exchanges and ECB staff calculations; panel c): Euronext and ECB staff calculations.
Notes: Panel a): Number of listed companies (domestic and foreign) aggregated across a relevant subset of US exchanges including NYSE and Nasdaq (blue bars) and a subset of relevant EU exchanges, including the London Stock Exchange, Deutsche Börse, Euronext and Nasdaq Nordic constituents (yellow bars). The underlying data for World Federation of Exchanges are based on reporting at the exchange federation level. Average market capitalisation represents averages of domestically listed companies. Panel b): The sample comprises foreign listed companies, depicted as a percentage share of listed companies, for a relevant subset of US exchanges (blue line) and a subset of relevant EU exchanges, including the London Stock Exchange (yellow line). Importantly, for specific European domestic exchanges, the sample comprises companies domiciled in European countries that are not the same as the location of the respective reporting exchange. Panel c): The chart shows the size of aggregated delistings at Euronext per year relative to year-end market capitalisation of Euronext in terms of listed companies. For comparison, in 2022 25% of shares traded in Europe were exchanged on Euronext markets.

In addition, the primary reasons for delisting have not changed and remain largely related to acquisitions, mergers and takeovers (Chart B, panel a).[119] The most recent delistings by EU and UK companies were due to acquisitions, mergers or takeovers, and remained roughly in line with historical proportions. By contrast, the share of privatisations, i.e. decisions by company owners to revert to non-listed equity funding, has remained quite low over time. These observations are common to all major European exchanges, although Börse Frankfurt has a somewhat lower share of mergers and acquisitions (Chart B, panel b). This low prevalence of delistings as a result of privatisation or a failure to meet listing conditions could suggest that the burden of listing rules and the associated costs are not the main factor at play in companies' decisions to delist.

[119] For an overview of the classification, see Macey, J., O'Hara, M. and Pompilio, D., "Down and Out in the Stock Market: The Law and Economics of the Delisting Process", *The Journal of Law and Economics*, Vol. 51, No 4, November 2008, pp. 683-714.

Chart B

Drivers and reasons behind the delisting of European companies



Sources: Panels a) and b): Bureau Van Dijk's Orbis, Bloomberg and Compustat databases, and ECB staff calculations.
Notes: Panel a) depicts relative shares of delisting reasons over time for the 4,554 companies reported as delisted in our sample. Panel b) clusters these reasons across different European exchanges for the period 2015-22. 1,001 firms were reported for the chosen stock exchanges for this period, including 92 for Börse Frankfurt, 32 for Euronext Amsterdam, 280 for Euronext Paris, 452 for the London Stock Exchange and 143 for Nasdaq OMX – Stockholm. Privatisation comprises companies that voluntarily exited stock exchanges without a significant change in the shareholder structure. The data were compiled by identifying formerly publicly listed companies in Bureau Van Dijk's Orbis database and identifying delisting reasons in Bloomberg's corporate action database and the Compustat database. The category "privatisation" includes reasons such as buybacks, being delisted at the company's request and securities called for redemptions. The category "Other" includes reasons such as transfer of shares, cancellation of listing, and security expired or inactive.

More worryingly, there is some evidence that the recent listing gap between the United States and Europe is due, at least in part, to the greater attractiveness of US stock markets for foreign firms. A narrative at times voiced in the financial press in recent years has been that there may be strong incentives for European firms, notably large companies, to move their primary listings to US exchanges.[120] In addition to benefiting from higher market depth and a broader investor base in the United States, large European firms listing there may also benefit from listing standards for foreign issuers at the NYSE that are geared towards large companies.[121] Another reason is that dual-listed firms also take advantage of the foreign private issuer status granted by the US Securities and Exchange Commission, which alleviates a considerable share of the compliance costs associated with listing. Accordingly, the number and market capitalisation of EU-domiciled companies that are dual-listed in both the EU and the United States, have also increased steadily in recent decades (Chart C). To some extent, this is also true for EU-domiciled companies that are listed in the United States only. In 2022 EU-domiciled companies that are dual-listed in both the EU and the United States were around six times more numerous than EU companies listing only in the United States. This, in turn, represents an aggregated market capitalisation that is

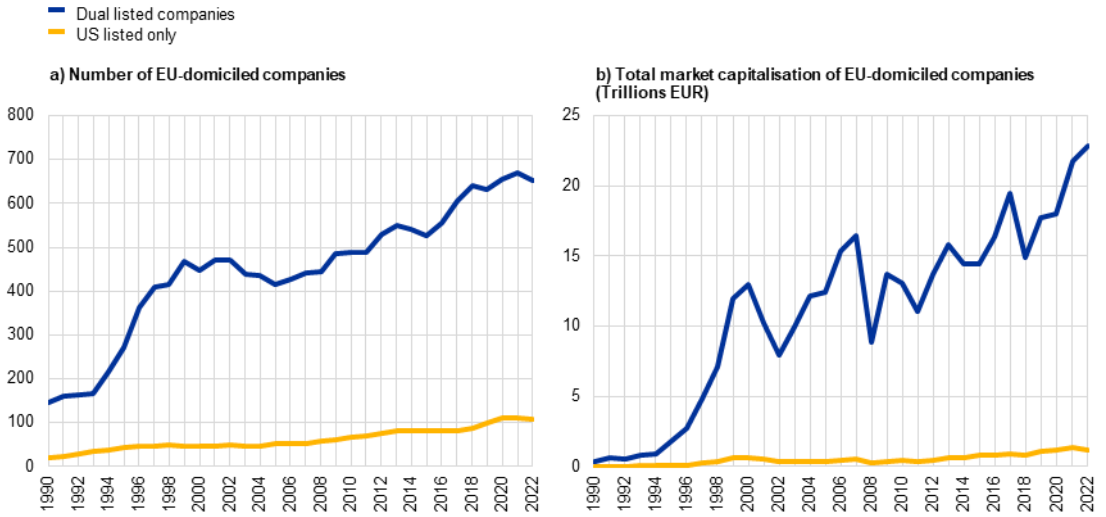
120 See, for example: Mathurin, P. and Chassany, S., "Flight risk? London listings are the most vulnerable to New York's allure", *Financial Times*, 25 March 2023. While press reports link this narrative to the attractiveness of US markets, other factors such as US-based shareholders or expanding US-based operations may also lead firms to list in the United States.

121 For instance, for a foreign firm to qualify to list at the NYSE solely on the basis of its market capitalisation, it must reach a valuation of USD 750 million compared with the GBP 30 million of issued securities requirement at the London Stock Exchange. For more details, see the Overview of NYSE Quantitative Listing Standards.

18.8 times larger for EU-domiciled dual-listed companies than for EU firms listed in the United States only.

Chart C

Comparison of EU companies dual-listed in the United States and EU-domiciled companies listed solely in the United States



Sources: Compustat and ECB staff calculations.
Notes: The set of dual-listed companies comprises the set of companies observed in both the Compustat North America database (filtered to only include NYSE and Nasdaq-listed companies) and the Compustat Global databases (filtered to only include EU stock markets) for a given year. Similarly, the set of EU companies identified as solely listed in the United States includes EU-domiciled companies that only appear in the Compustat North America database for a given year.

If the listings gap between EU and US stock markets were to widen further, particularly for larger firms, this would likely exacerbate existing differences in market depth and liquidity. US stock markets already benefit from higher market depth and liquidity, owing to higher integration, a larger pool of institutional investors and a more dynamic tech sector.[122] If US listings of large EU firms were to continue to increase, this would accelerate this positive US feedback loop and deprive EU capital markets of further growth opportunities. For example, in 2022 EU-domiciled firms made up over 12% of US-listed foreign firms (comparing Chart C, panel a) with Chart A, panel a), making the EU the largest segment of foreign companies listed on US exchanges, i.e. Nasdaq and NYSE (Chart A, panel b).

In recent years EU public policy on stock listing has focused on reducing the regulatory costs of listing, in particular with a view to making it more attractive for smaller companies. This was reflected in initiatives such as the creation of small and medium-sized enterprise (SME) growth markets under MiFID II[123], which were promoted further in 2019[124], and the 2022 proposal

122 Martin, K. and Asgari, N., "Why Europe's stock markets are failing to challenge the US", *Financial Times*, 25 April 2023.

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

124 Regulation (EU) 2019/2115 of the European Parliament and of the Council of 27 November 2019 amending Directive 2014/65/EU and Regulations (EU) No 596/2014 and (EU) 2017/1129 as regards the promotion of the use of SME growth markets, OJ L 320, 11.12.2019, p. 1.

for an EU Listing Act[125], which aims to alleviate the administrative burden of listing.[126] These policy measures are aimed mainly at facilitating the listing of smaller companies and at enabling them to diversify and supplement their sources of financing.

This calls for reflection on policy measures that would make listing on EU stock markets more attractive, also for larger companies that may otherwise choose to list elsewhere. For larger companies, making it easier to list in the EU may not be as effective as making it more attractive to list in the EU – and for dual-listed companies, making investing in their EU stock more attractive – primarily by deepening the depth and liquidity of EU stock markets. The fragmentation of the EU stock exchange landscape is a concern in this regard, as there is evidence that larger and more efficient stock markets generate more IPO activity and liquidity.[127] This could lead to a negative feedback loop whereby the lack of public listings leads to further delistings, while the opposite dynamic materialises in the United States and potentially other jurisdictions, as noted above. The attractiveness of listing in the EU could thus benefit from further consolidation of EU stock exchanges, as well as measures to support the build-up of EU-based institutional investors, such as asset managers and pension funds. Tax incentives, both for corporations by reducing the debt-equity bias and for retail investors investing in equity, could also contribute to deepening EU public equity markets.[128]

4.3.2 Mobilising funding and increasing demand

There are three lines of action that have the potential to be mutually reinforcing and through which the large existing (unproductive) savings in Europe could be unlocked or mobilised for financing the euro area financial economy: (i) “unfreezing” a share of unproductive deposits held by euro area households, (ii) developing bond and equity markets to make them more attractive for issuers and investors to tap into, and (iii) enhancing the attractiveness of euro area financial markets for foreign investors.

Mobilising household deposits

Euro area households keep the predominant part of their savings in the form of deposits. Since the start of EMU, euro area households have on average kept one-third of their financial assets in the form of currency and deposits. In relative terms, the share of currency and deposits in household financial assets reached its

125 See “Capital Markets Union: new proposals on clearing, corporate insolvency and company listing to make EU capital markets more attractive”, *press release*, European Commission, 7 December 2022.

126 However, there is some evidence that size and profitability are key factors in a company’s decision to list, with the impact of regulatory costs being less relevant. For further details, see Bessler et al., “Why do firms down-list or exit from securities markets? Evidence from the German Stock Exchange”, *Review of Managerial Science*, Vol. 17, No 4, May 2023, pp. 1175-1211. A higher number of listed companies on a single stock exchange would also limit the impact of rules capping the weight of individual firms in indices, which may, in turn, contribute to delisting decisions in some cases.

127 See Wright, W. and Friis Hamre, E., “The problem with European stock markets”, *New Financial*, March 2021.

128 See the European Commission’s Proposal for a Council Directive on laying down rules on a debt-equity bias reduction allowance and on limiting the deductibility of interest for corporate income tax purposes, COM/2022/216 final, 11 May 2022.

highest point in autumn 2022, when euro area inflation peaked (**Chart 22, panel a**). Since 1999, households' pension entitlements have also grown in relative size, rising from 8% to 12% of financial assets.

Euro area households could allocate their savings more efficiently within the banking union and participate more actively as retail investors in capital markets. Euro area households prefer to hold financial assets in the form of insurance products, unlisted equity and investment funds to supplement their pension entitlements. Since 1999, euro area households have on average held one-fifth of their financial assets in the form of equity instruments, of which three-quarters has been held in unlisted and other equity instruments. Insurance products form the second most important instrument in household financial assets. For most of the 2010s, insurance products accounted for one-fifth of financial assets, but since 2020 their share has declined to relative levels close to those seen in the early 2000s (**Chart 22, panel b**). Investment fund holdings have constituted around one tenth of household financial assets over the same period. The role of debt securities in euro area household financial assets has become steadily less important since the start of EMU.[129]

Improving financial literacy and encouraging euro area households to participate more actively in capital markets are two key elements for mobilising these households' deposits. Financial literacy enables citizens to make sound financial decisions in the face of increasingly complex products. The July 2023 Eurobarometer found that 18% of the population surveyed had a low literacy score. Financial literacy correlates with financial inclusion and is a key driver for greater use of financial services, an effect that is stronger in countries with a well-developed financial infrastructure.[130] In addition, an increase in financial literacy is associated with higher private risk sharing via the credit channel.[131] Another key means of fostering retail participation in EU capital markets would be to ensure the availability of suitable cross-European investment and savings products, which could help promote a more effective and more active investment culture.

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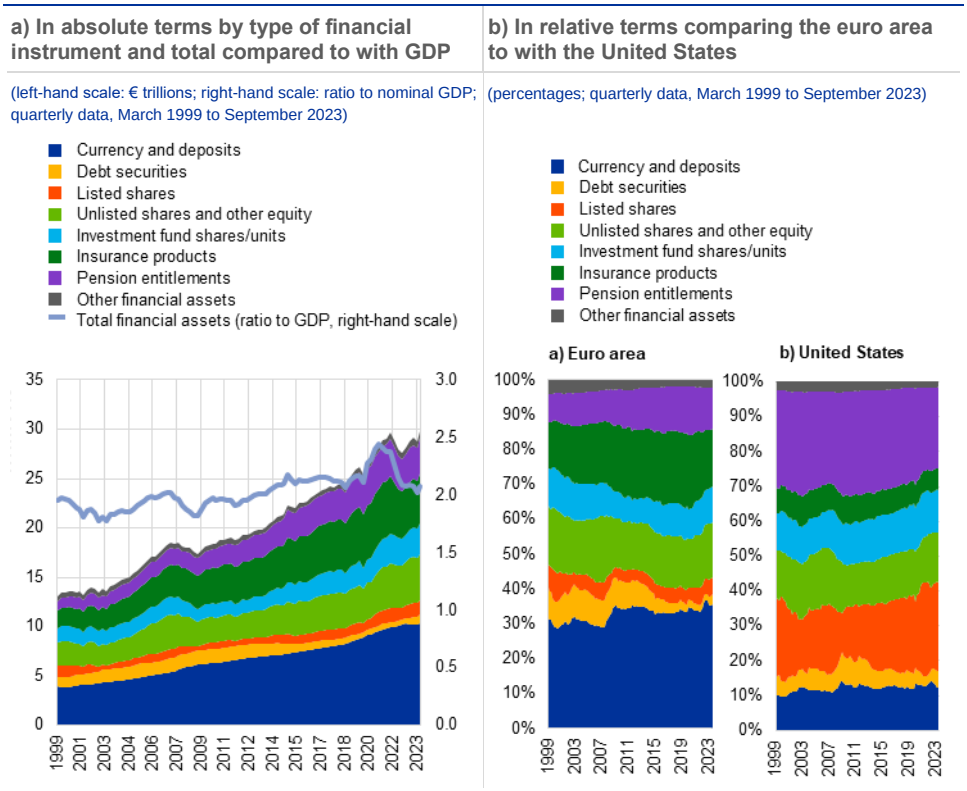
129 Comparable statistics for the United States show that, on average since 1999, US households have held pension entitlements amounting to one-quarter and listed shares representing close to one-fifth of their financial assets. Similarly to euro area households, they have kept approximately 14% in unlisted equity instruments. US households have only held around 12% in currency and deposits and 7.4% in insurance products.
As of September 2023, the financial assets of US households amounted to five times nominal GDP, larger by a factor of two than the corresponding ratio for euro area households.

130 See Heo, W., Lee, J.M. and Rabbani, A.G., "Mediation Effect of Financial Education between Financial Stress and Use of Financial Technology", *Journal of Family and Economic Issues*, Vol. 42, pp. 413-428, 2021.

131 See Special Feature A entitled "Financial integration and risk sharing in a monetary union", *Financial integration in Europe*, ECB, Frankfurt am Main, 2016; and *Financial integration in Europe*, ECB, Frankfurt am Main, 2018.

Chart 22

Development of euro area household financial assets



Source: ECB.

Developing markets

Developing bond markets

Fostering the development of euro area bond markets in general and green bond markets in particular is essential to ensure the euro area economy can meet the financing challenges ahead. The euro area economy, which is mainly based on small and medium-sized enterprises (SMEs) and is predominantly debt-financed, needs deep and liquid debt markets that are attractive to a broad range of investors. It is therefore essential to develop (i) green bond markets – mainly to help non-financial corporate and government debt securities issuers meet their green financing needs; and (ii) covered bond and securitisation markets – to enable financial intermediaries to bundle pools of non-marketable loans into tradable asset-backed debt securities.

Euro area green bond markets remain large and active. At the global level, they accounted for 41% of all outstanding green bonds at the end of 2023, which exceeded the euro area share for conventional bonds (**Chart 23**). This is partly due to the more advanced state of EU regulation and reporting standards compared with other economic areas. The EUR-denominated green bond market, with a size

equivalent to €1.9 trillion, accounted for 12.5% of all outstanding bonds (i.e. both conventional and ESG bonds) at the end of 2023. The predominance of euro area issuance in the green bond market also contributes to a high share of EUR-denominated bonds and is a factor supporting the international demand for the euro. Green bond issuance slowed down slightly in the euro area in 2023. This seems to have been at least partly due to euro area-specific factors such as the sell-off in bond markets in the second half of the year and the lower "greenium" (i.e. the lower spread for issuing green bonds compared with conventional ones), which may have led some issuers to postpone their financing. Green bond issuance has rebounded year-to-date, with €53.6 billion issued (or 52.1% of global green bond issuance).

An increasing number of euro area issuers have set-up green bond frameworks, with government and supranational issuers being quite active. Issuers view the set-up of green bond frameworks as a relevant funding source irrespective of a declining greenium as a result of additional set-up and reporting costs. Investors are also progressively integrating sustainability considerations into their portfolios, resulting in more sustainability mandates and demand for green bonds. Currently, 11 EU governments have outstanding green bonds, with some also being active on sustainable and/or social governance frameworks. Among supranational issuers, the EU with its NGEU programme has become a prominent issuer, although the volumes remain below expectations so far, as some green projects have encountered delays.

Green bond standards have converged somewhat over time, and increased standardisation and transparency may support further growth of this market. The new European Green Bond Standard Regulation (EU GBS) was adopted in October 2023 and will apply from the end of 2024 as a voluntary standard. Many issuers, including non-European ones, are reportedly planning to adapt their frameworks to comply with the EU GBS and the EU Taxonomy, although there are still some implementation and reporting challenges which may slow down the process. The EU GBS is expected to contribute to greater harmonisation over time and to reducing the risk of "greenwashing".[132] This may contribute to furthering financial integration across the euro area and the capital markets union. For now, the International Capital Market Association's green bond principles and Climate Bonds Initiative's climate bond standard have steadily become broadly adopted as best market practice.

The development of sustainable finance products is seen to rely on more standardisation and clarity over reporting standards and transparency. This contributes to reducing investor concerns about "greenwashing" and the correct use of proceeds for financing the green transition. In this regard, the advancements in EU regulation, including the Corporate Sustainability Reporting Directive (CSRD)[133], which entered into force in January 2023 for large and listed companies in the 2024 financial year, and the EU GBS are seen as addressing some of these concerns and

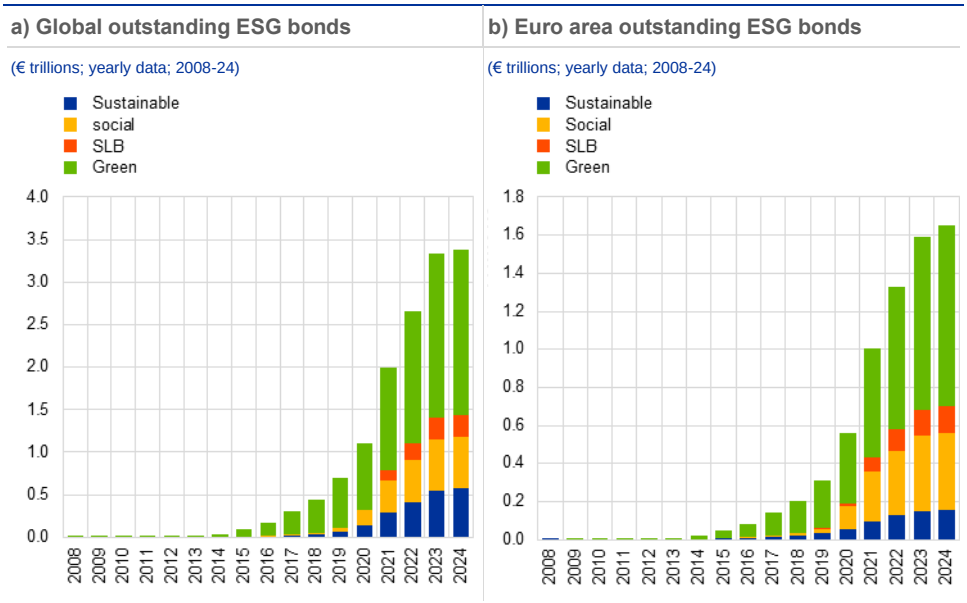
[132] See the Council of the EU press release of 24 October 2023.

[133] Directive (EU) 2022/2464 of the European Parliament and of the Council of 14 December 2022 amending Regulation (EU) No 537/2014, Directive 2004/109/EC, Directive 2006/43/EC and Directive 2013/34/EU, as regards corporate sustainability reporting (OJ L 322, 16.12.2022, p. 15).

contributing to the comparatively strong growth of sustainable bonds in the euro area.

Chart 23

Outstanding amounts of ESG securities



Sources: Bloomberg and ECB calculations.
Note: Outstanding amounts of ESG issuances in all currencies and represented in euro equivalents.

Developing equity markets

Against the background of the euro area economy's traditionally strong reliance on bank financing, developing European equity and risk capital markets would help diversify sources of funding for businesses. European equity and risk capital markets remain underdeveloped compared with other key global jurisdictions in general and the United States in particular (**Chart 24**). Their development reduces dependency on bank lending, making the financial system more resilient and better able to support economic activity, especially during times of stress in the banking sector.

European equity and risk capital markets also play a crucial role in providing financing for innovative and high-growth companies, particularly in sectors such as technology, biotech and renewable energy. By facilitating access to capital, these markets foster entrepreneurship, job creation and economic dynamism, contributing to long-term growth[134] and competitiveness.[135] Looking at

[134] See, for instance, "The role of financial markets and innovation in productivity and growth in Europe", *Occasional Paper Series*, No 72, ECB, Frankfurt am Main, September 2007; and Special Feature A entitled "Financial development, financial structure and growth: evidence from Europe", *Financial integration in Europe*, ECB, Frankfurt am Main, May 2018).

[135] See Box 1 entitled "Making euro area equity markets fit for green and digital innovation", *Financial Integration and Structure in the Euro Area*, ECB, Frankfurt am Main, April 2022; and "Capital markets union: the role of equity markets and sustainable finance", contribution by Luis de Guindos, Vice-President of the ECB, on the occasion of the publication of the ECB report on "Financial integration and structure in the euro area", Frankfurt, 3 March 2020.

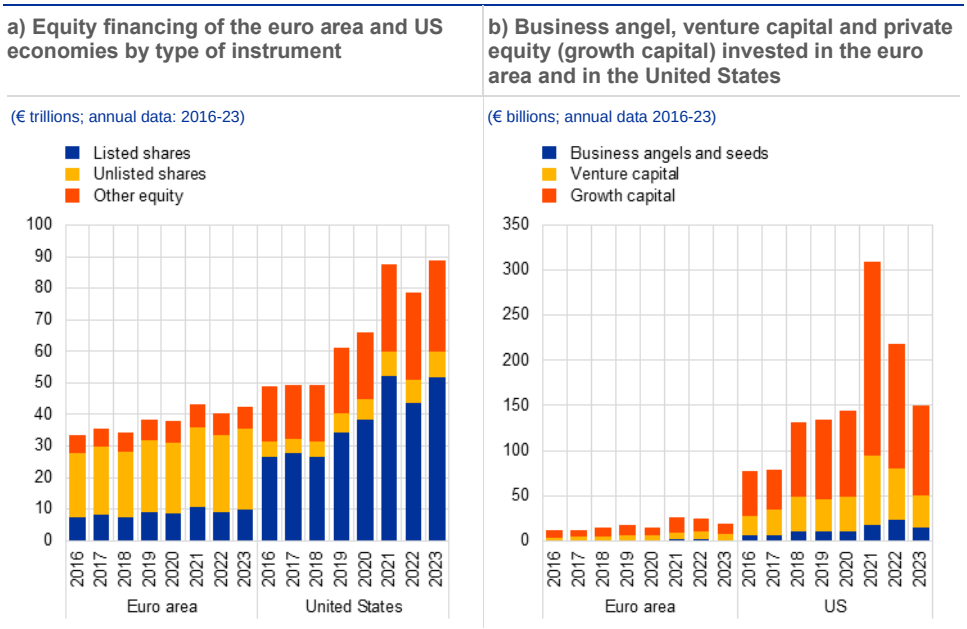
EU FinTech companies, **Box 8** finds that those in financial centres tend to have easier access to equity financing, which may help explain their choice of locations close to financial hubs.

Deep and liquid equity and risk capital markets also improve the allocation of capital by allowing investors to efficiently price and trade financial assets. This enhances market transparency, reduces information asymmetries and promotes fair competition, leading to a more efficient resource allocation and supporting overall financial stability.

Coordinated action by policymakers, regulators and market participants to create an environment that is more conducive for investment and innovation is essential. Remaining structural barriers and impediments to the development of European equity and risk capital markets include regulatory fragmentation, legal barriers, tax disparities and differences in market infrastructure across EU Member States. Strengthening European equity and risk capital markets should therefore be a central pillar of efforts to complete the capital markets union by removing remaining barriers to cross-border investment, harmonising regulatory frameworks and promoting the integration of national capital markets.

Chart 24

Equity financing requirements by type of equity: comparison between the euro area and the United States



Sources: Panel a: ECB and OECD; panel b: European Business Angel Network, Invest Europe, National Venture Capital Association, Center for Venture Research (University of New Hampshire).
Notes: Panel a: the chart is based on financial accounts data. Other equity refers to equity claims that are not securities listed on an exchange and are not unlisted securities, such as equity in incorporated partnerships, equity in limited liability companies whose owners are partners, capital invested in cooperative societies or investment by the government in the capital of public corporations whose capital is not divided into shares. Data for the United States are based on the global System of National Accounts (SNA) 2008. The European System of Accounts 2010 underlying the euro area data is broadly consistent with the SNA 2008, although in some cases it may be more detailed. Panel b: the data cover all euro area countries except Cyprus, Malta, Slovakia and Slovenia. Venture capital is a subset of private equity and refers to equity investments made for launch (seed), early development (start-up) or expansion (later stage venture). "Seed" is funding provided before the investee company has started mass production/distribution, with the aim of completing research or defining and designing the product, including market testing and creating prototypes. This funding is not used to start mass production/distribution. "Start-up" is funding provided to companies once the product or service is fully developed, to start mass production/distribution and cover initial marketing. Companies may be in the process of being set up or may have been in business for a shorter time, but have not sold their product commercially yet. The use of the capital would mostly be to cover capital expenditure and initial working capital. "Later stage venture" is financing provided for an operating company, which may or may not be profitable. This tends to be financing provided to companies already backed by VCs. For further details see www.investeurope.eu/research/. "Business angel" investments are (high-risk) investments made by early-stage private investors, typically in the form of seed financing for start-up businesses. Angel investments comprise both financial contributions and time, expertise and connections the investors provide in exchange for ownership equity.

Box 8

Rapid growth and strategic location: Analysing the rise of FinTechs in the EU

Prepared by Oscar Fast, Zakaria Gati, Urszula Kochanska, Claudia Lambert, Chloé Larkou, Hanni Schölermann, Evangelia Sfetsori, Thomas Teulery and Francesca Vinci.

The EU FinTech industry has grown significantly since the mid-2010s. Broadly speaking, financial technology companies (FinTechs) are firms that use technology to provide innovative financial services solutions.[136] The FinTech industry has been growing in the EU at a very rapid pace since 2016, with more than twice as many new FinTechs being established in the EU since then than in the previous 15 years (Chart A). While FinTechs are located across the EU, the map in Chart A

[136] While precise definitions differ, the Financial Stability Board has, for instance, defined FinTech as "technology-enabled innovation in financial services that could result in new business models, applications, processes or products with an associated material effect on the provision of financial services" – Financial Stability Board, FinTech and market structure in financial services: Market developments and potential financial stability implications, 4 February 2019.

shows that they tend to cluster in larger financial centres.[137] This box identifies the EU locations in which FinTechs have tended to establish themselves and concludes that, while there are other possible factors at play, geographical proximity to financial centres supports FinTech activity in a number of ways. These include easier access to equity financing, opportunities to tap into a diversified pool of fundings tailored to FinTechs' risk profiles and development stages and the availability of institutional support schemes.

Notwithstanding certain risks,[138] FinTechs can bring considerable benefits to both the financial sector and the broader economy, including consumers. FinTech firms can improve access to finance for businesses and households, which is vital for economic growth.[139] By introducing advanced technological solutions, FinTechs carry transformation risks but they can also enhance the quality and efficiency of financial services. In fact, many European banks maintain collaborations with FinTechs to enhance their service offerings.[140] This benefits FinTech customers by offering them a wider range of options and greater diversification of financial products and services, as well as lowering the costs associated with financial transactions and services, thereby enhancing competition.[141]

137 We define EU financial centres as cities (and their associated regions, based on the nomenclature of territorial units for statistics: level 2 (NUTS2)) that were classified as being among the global top 50 cities in the 33rd edition of the Global Financial Centres Index, published by the Z/Yen Partners in collaboration with the China Development Institute. The EU cities falling into this category are Amsterdam, Berlin, Brussels, Copenhagen, Dublin, Frankfurt, Hamburg, Helsinki, Luxembourg, Madrid, Milan, Munich, Paris, Stockholm and Stuttgart.

138 While this box highlights the manifold potential benefits of FinTech that have prompted support schemes, including those with public-sector involvement, any innovation, including FinTech, clearly also entails risks. For example, for FinTech, the risks may relate to consumer protection and privacy, regulatory arbitrage, operational risk linked, among others, to digitalisation and outsourcing, and potentially also risks to financial stability, if FinTechs eventually became significant in size and scale.

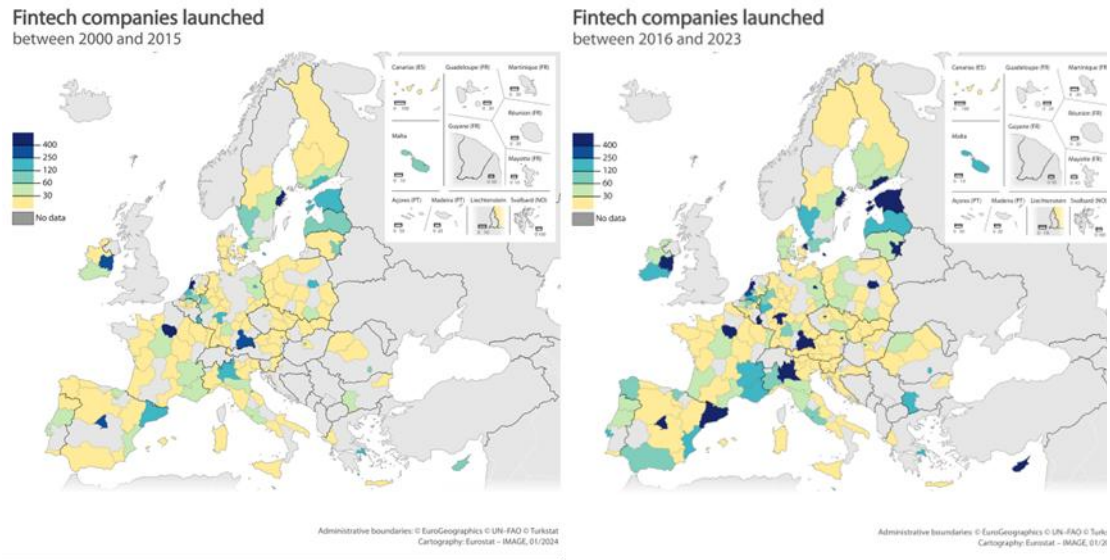
139 There are different strands of literature that document the benefits of FinTech. First, the literature that focuses on the potential of FinTech to transform banking business models (see Bertsch, C. and Rosenvinge, C. J., "Fintech credit: Online lending platforms in Sweden and beyond," *Economic Review*, Issue 2, Sveriges Riksbank, 2019, pp. 42-70; Buchak, G., Matvos, G., Piskorski, T. and Seru, A., "Fintech, regulatory arbitrage, and the rise of shadow banks", *Journal of Financial Economics*, Vol. 130, Issue 3, Elsevier, 2018, pp. 453-483). Second, the literature showing the benefits of FinTech in boosting the real economy; for example, FinTech lenders increased their lending to small businesses after the 2008 global financial crisis and played an important role in the recovery (see Gopal, M. and Schnabl, P., "The rise of finance companies and fintech lenders in small business lending", *The Review of Financial Studies*, Vol. 35, Issue 11, Oxford Academic, November 2022, pp. 4859-4901; Berg, T., Fuster, A. and Puri, M., "FinTech Lending", *Annual Review of Financial Economics*, Vol. 14, November 2022, pp. 187-207).

140 Beck, T. et al., "Will video kill the radio star? – Digitalisation and the future of banking", *Reports of the Advisory Scientific Committee*, European Systemic Risk Board, No 12, January 2022.

141 The literature highlighting the potential for innovation includes, for example, Chen, M. A., Wu, Q. and Yang, B., "How valuable is FinTech innovation?", *The Review of Financial Studies*, Vol. 32, Issue 5, Oxford Academic, May 2019, pp. 2062-2106.

Chart A

Where Fintech choose to locate in the EU



Sources: Crunchbase, ECB staff calculations.
Notes: The sample included all FinTech firms reported in the Crunchbase database with a head office in the EU, excluding companies that self-identified as crypto-asset providers or insurance technology (InsurTech) firms over the period from 2000 to 2023. The left-hand chart is based on a sample of 7,811 companies over the period from 2000 to 2015. The right-hand chart is based on a sample of 19,548 companies over the period from 2016 to 2023.

In the light of the significant potential benefits of FinTech for the economy and consumers in general, the rapid growth of the EU FinTech industry has been accompanied by significant policy efforts. As part of the broader capital markets union (CMU) agenda, the European Commission launched a FinTech Action Plan[142] in 2018 to foster a more competitive and innovative European financial sector and to enhance integration. Furthermore, the launch of the EU Digital Finance Platform[143] and the adoption of additional legislation, such as the proposed financial data access and payments package[144], are deemed by the European Commission to be instrumental in fostering an environment conducive to FinTech growth. This includes efforts to develop an EU open finance framework and the Regulation on European Crowdfunding Service Providers[145], both of which are aimed at bolstering the European FinTech ecosystem.[146]

These initiatives at the EU level are complemented by numerous actions at national and subnational level that are aimed at encouraging the establishment and growth of FinTechs. Of particular note in this regard is the emergence of institutional support schemes in the form of

142 See the European Commission communication of 8 March 2018 entitled "FinTech Action plan: For a more competitive and innovative European Financial sector" (COM(2018) 109 final).

143 "The EU Digital Finance Platform is a collaborative space bringing together innovative financial firms and national supervisors to support innovation in the EU's financial system. This platform offers practical tools designed to facilitate the scaling up of innovative financial firms across the EU. […] [It] features a Data Hub, cross-border services, a fintech mapping, an overview of the latest policy news, calls to action and events. […] [The] Data Hub will make available to participating firms specific sets of non-public, non-personal data, with a view to enable them to test innovative products and train AI/ML models"– see the page entitled "EU Digital Finance Platform" on the European Commission website.

144 For more information, see the European Commission Financial data access and payments package website.

145 Regulation (EU) 2020/1503 of the European Parliament and of the Council of 7 October 2020 on European crowdfunding service providers for business, and amending Regulation (EU) 2017/1129 and Directive (EU) 2019/1937 (OJ L 347, 20.10.2020, p. 1).

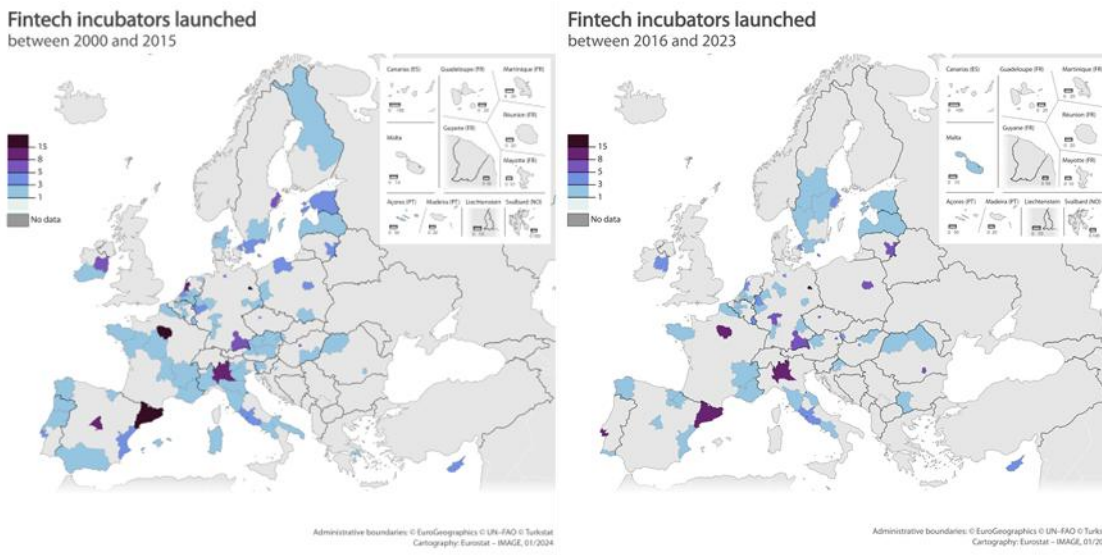
146 Other notable initiatives include the EBA include the EBA's FinTech Knowledge Hub established in 2018.

regulatory sandboxes and innovation hubs, as well as incubator and accelerator programmes, many of which are specifically designed for FinTechs. While such innovation hubs or sandboxes mainly provide a forum for exchange and advice, incubators and accelerators may also involve financial support to participating businesses.[147]

FinTech incubators have been launched across EU regions since the early 2000s, and increasingly so since the mid-2010s (Chart B). In line with the general trend in this segment, FinTech incubators are predominantly concentrated in financial centres such as Berlin, Milan, and Paris. However, the effectiveness of such incubators is hard to assess owing to the absence of centralised and verified information on their activities. Despite this, the available data show that many European FinTechs have received funding directly from incubators, although typically only small amounts.[148] Furthermore, the more extensive support provided by both incubators and accelerators not only assists with initial funding but also potentially enhances the visibility and credibility of FinTechs, facilitating their access to additional funding from third-party sources.[149]

Chart B

The FinTech incubator landscape in the EU



147 *Innovation hubs* are schemes through which entities can interact with competent authorities and seek "guidance on the conformity of innovative financial products, services, business models or delivery mechanisms with licensing, registration and/or regulatory requirements" (see EBA, EIOPA and ESMA, Report – FinTech: Regulatory sandboxes and innovation hubs, 9 January 2019), whereas *regulatory sandboxes* are schemes in which participating businesses can test within a controlled environment innovative services, products or business models, subject to monitoring by the competent authority. By contrast, *incubators* or *accelerators* tend to be private-led initiatives, possibly with government support, and provide a much wider range of services to participating entities, ranging from infrastructure over contacts to financing. The terms incubators and accelerators are often used interchangeably, although incubators tend to be geared towards early-stage start-up firms while accelerators tend to focus on later stage firms. For more details on the functioning of innovation facilitators, innovation hubs and sandboxes, see EBA, EIOPA and ESMA, Report – Update on the functioning of innovation facilitators – innovation hubs and regulatory sandboxes, 11 December 2023.

148 FinTech incubators were identified based on the sectoral categories used in the Crunchbase database. In addition, Incubators matched as FinTech investors in the Bureau Van Dijk Orbis sample were also taken into consideration. Of the 425 FinTech incubators in EU countries (excluding those with a cryptographic focus) identified in the Crunchbase database, 144 incubators participated in at least one funding round for one of the FinTechs in the sample for this analysis.

149 For an overview on the role of incubators and accelerators for FinTech financing, see Griol-Barres, I. and Morant-Martinez, O., "The Role of Incubators and Accelerators in Entrepreneurial Fundraising", in Sendra-Pons, P., Garzon, D. and Revilla-Camacho, MÁ. (eds), *New Frontiers in Entrepreneurial Fundraising. Contributions to Finance and Accounting*, Springer International Publishing, 2023.

Sources: Crunchbase, ECB staff calculations.
Notes: A sample of 941 incubators in EU countries was compiled. Of this sample, 426 were further identified as FinTech incubators (excluding those that are crypto-focused) and are displayed on the maps above based on their launch date. The sample does not provide a comprehensive snapshot of FinTech incubators in the EU. The left-hand chart is based on a sample of 248 incubators over the period from 2000 to 2015. The right-hand chart is based on sample of 178 incubators over the period from 2016 to 2023.

FinTechs are not spread homogenously across the EU, but tend to cluster in financial centres. 53% of all the EU FinTechs in the sample are located in a financial centre (Chart A). This is consistent with evidence suggesting that countries with more developed financial centres experience higher relative rates of FinTech formation.[150] Additionally, research shows that FinTechs are geographically clustered and that the location of new FinTech startups is affected by the size of these clusters and the presence of incubators.[151] Larger clusters attract more new FinTech startups, and incubators are shown to amplify this effect.[152]

The analysis suggests that one of the reasons for the clustering of FinTechs close to financial centres may be easier access to equity finance. FinTechs are known to rely on equity funding153 given their high level of intangibles and greater risk compared with established firms and business lines, and given their ambition to grow.[154] A desire to avoid debt in their early stages and the benefits of having investors as strategic partners are also likely to play a role. To check whether the choice of location may indeed correlate with differences in access to equity financing, we constructed a novel dataset of EU FinTechs[155] and assessed the changes in their average equity and debt financing (i.e. their funding mix) over time. We found that EU FinTechs do indeed rely heavily on equity funding and that those in the sample that were located close to financial centres generally had a higher share of equity financing than those that were not (Chart C). The underlying data further suggest that this difference has grown over time.

150 See Laidroo, L. and Avarmaa, M., "The role of location in FinTech formation", *Entrepreneurship & Regional Development*, Vol. 32, Issue 7-8, 2020, pp. 555-572, in which the authors measure FinTech formation rates relative to the size of the labour force.

151 See, for example, Gazel, M. and Schwienbacher, A., "Entrepreneurial fintech clusters", *Small Business Economics*, Vol. 57, Springer International Publishing, 26 March 2021, pp. 883-903.

152 Ibid.

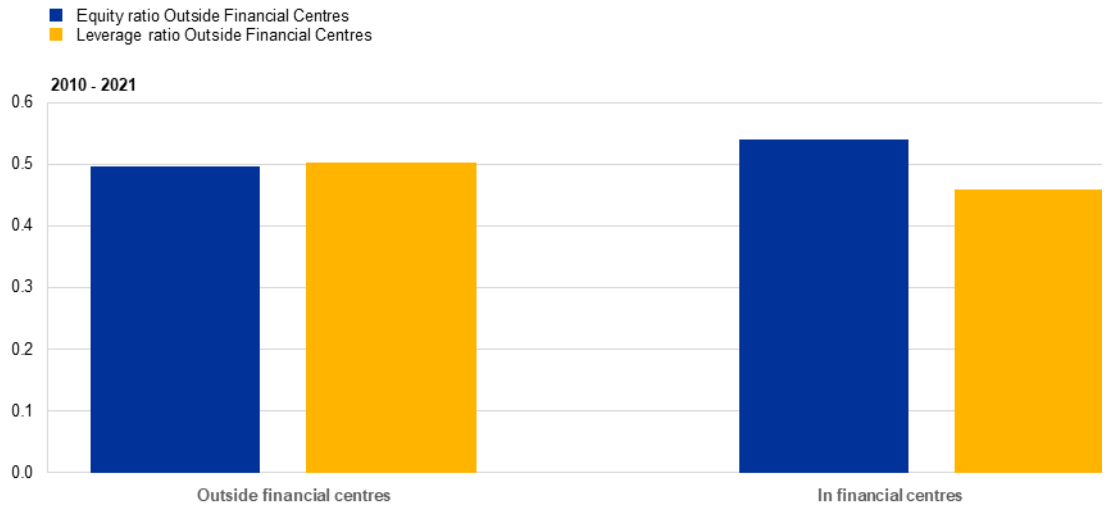
153 The literature on the financing of FinTechs provides a mixed picture, depending, among others, on the stage of development, asset structure and type of FinTech activity. For example, Cornelli et al., "Regulatory Sandboxes and Fintech Funding: Evidence from the UK", *Review of Finance*, Vol. 28, Issue 1, January 2024, pp. 203–233, show that FinTechs benefit from regulatory sandboxes in accessing venture capital financing in the early stages of their development. Looking at the types of financing used in the three years following incorporation, the literature finds that unregulated FinTech start-ups are more likely to be financed with long-term debt and that FinTechs that receive equity financing receive less long-term debt funding – see Giaretta, E. and Chesini, G., "The determinants of debt financing: The case of fintech start-ups", *Journal of Innovation and Knowledge*, Vol. 6, Issue 4, Science Direct, October-December 2021, pp. 268-279.

154 For a review of the literature on FinTech financing channels and conditions, see Bollaert, H., Lopez-de-Silanes, F. and Schwienbacher, A., "Fintech and access to finance", *Journal of Corporate Finance*, Vol. 68, Elsevier, June 2021, pp. 101941. The funding gap is highlighted in Wilson, N., Wright, M. and Kacer, M., "The equity gap and knowledge-based firms", *Journal of Corporate Finance*, Vol. 50, Elsevier, June 2018, pp. 626-649. More specifically, seed funding is scarce, translating into large funding gaps for startups and later-stage ventures (ibid). In addition, the traditional equity and debt funding channels have proven to have substantial challenges, leaving small firms with insufficient finance (Lopez-de-Silanes, F., McCahery, J., Schoenmaker, D. and Stanisic, D., "Estimating the Financing Gap of Small and Medium-Sized Enterprises", *Journal of Corporate Finance Research*, Vol. 12, No. 2, July 2018, pp. 7-130).

155 A sample of FinTechs was identified through data made available by the Crunchbase platform. Data from the Bureau Van Dijk Orbis database – a global dataset containing company information – was used to obtain firm-by-firm annual balance sheet information for those FinTechs, excluding those entities classified as banks or non-bank financial intermediaries. This sample was further refined by excluding information and communication technology (ICT) service providers and traditional financial service providers. Given that there are no official statistics on the size of the EU FinTech sector and no harmonised definition, the actual proportion of the total EU FinTech universe captured in the sample could not be ascertained nor could it be determined the extent to which the sample is representative of the EU FinTech sector as a whole.

Chart C

Leverage and equity ratios for FinTechs domiciled in financial centres and non-financial centres



Sources: Bureau Van Dijk Orbis, Crunchbase, ECB staff calculations.
Notes: The analysis covered EU-based FinTechs that offer solutions in the areas of payments, digital banking, credit and capital raising, investment, advisory and asset management, or that provide technology solutions to financial and non-financial firms. FinTechs providing services that foster the development of a FinTech-enabling environment (i.e. insurance technology (InsurTech), regulatory technology (RegTech) companies) also fell within the scope of this analysis. Crypto-asset providers, BigTechs offering financial services and banking institutions developing technology solutions were not covered by the analysis. This chart shows the FinTechs captured in both the Crunchbase and Bureau van Dijk Orbis databases for which the balance sheet data required for the analysis was available. Consequently, this chart does not represent a full population sample of EU FinTechs. The equity ratio is measured as the ratio of total equity over total assets. The leverage ratio is measured as total debt over total assets. The ratios given are averages. Financial centre denotes a city qualifying as one of the top 50 global financial centres according to the Global Financial Center Index.

Regression analysis further suggests that FinTechs in a financial centre may generally be subject to less scrutiny by equity investors than those located at a greater physical distance from financial hubs. Pooled ordinary least squares (OLS) regressions were performed on the unbalanced panel dataset, further dividing the sample between FinTechs located in financial centres and those that were not. In the sample, a firm's performance, measured as the return on assets (RoA), only played a significant role in FinTech equity and leverage financing for companies located outside financial centres (Table A). This suggests that FinTechs closer to financial centres generally have easier access to equity funding, possibly owing to the synergies that come from being located in larger clusters, such as a concentration of investors and a reduction in the risk of failure.[156] The results suggest that FinTechs outside financial centres need to rely more on their performance as a signalling device to potential funding providers. Moreover, the academic literature suggests that the risk of failure is significantly lower for FinTech startups that have been developed in an incubator, and incubators tend to be located disproportionately in financial centres.[157]

[156] See, for example, Gazel, M. and Schwienbacher, A., "Entrepreneurial fintech clusters", *Small Business Economics*, Vol. 57, Springer International Publishing, 26 March 2021, pp. 883-903.

[157] The analysis was aimed at checking whether FinTechs close to financial centres were similar in type to those located further away and therefore whether the funding differed for firms with similar prospects.

Table A

Impact of past performance on FinTech funding mix depending on location

(estimates)

	Financial centres: equity ratio	Financial centres: leverage ratio	Non-financial centres: equity ratio	Non-financial centres: leverage ratio
RoA(t-1)	0.000511 (0.000545)	-0.000471 (0.000545)	0.00175*** (0.000568)	-0.00175*** (0.000568)
Overall R2	0.0987	0.106	0.101	0.101
Number of observations	556	549	558	558

Sources: Bureau Van Dijk Orbis, Crunchbase, ECB staff calculations.
Notes: RoA stands for return on assets. R2 stands for R squared. The estimates result from ordinary least squares (OLS) regressions run for firms located in financial centres and non-financial centres across the sample of firms with matched Crunchbase and Bureau van Dijk Orbis data. The dependent variables were the equity and leverage ratios (expressed in percentage points), while independent variables included RoA (income based and in percentage points), total assets (in real terms and log scale), firm age and cash ratio (cash and cash equivalents divided by current liabilities), as well as the GDP growth in the previous year for the country concerned. The estimation also included firm and year-based fixed effects. Sample: 2010-2021 for the Member States of the EU. Standard errors in parenthesis. * p<0.10, ** p<0.05, *** p<0.001.

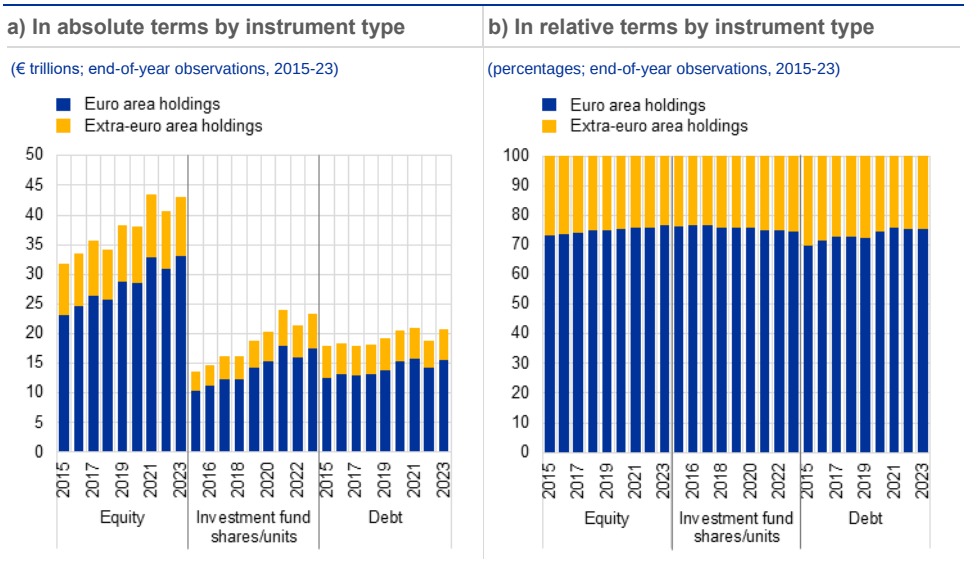
Overall, the analysis highlights the importance of financial centres for FinTechs and points to the need for further examination of the role and effectiveness of institutional support schemes. The findings underline the importance of completing the CMU agenda, in particular as regards policy efforts to grow European equity markets, in terms of both liquidity and depth. Institutional support schemes could complement this agenda by further bolstering targeted financing for innovation, in particular by facilitating, inter alia, FinTech access to financing at the early stages of their development and later developing a sustainable business model.

Attracting foreign investors

Foreign investors play a significant role in the euro area financial system and financing of the euro area economy. Extra-euro area investors have on average held around one-third of outstanding euro area listed shares (33.3%), debt securities (36.2%) and investment funds (32.4%) since 2015 (**Chart 25**).

Chart 25

Investor base of euro area issued securities



Sources: ECB and ECB calculations.

Foreign investors bring capital into the euro area financial markets, thereby contributing to market liquidity and increasing funding availability. The capital provided can support economic growth. Foreign investors consequently contribute to the international financial integration of euro area financial markets with global markets by linking European markets to international capital flows, enhancing market efficiency, improving the efficiency of price discovery and creating risk sharing opportunities. The presence of foreign investors also fosters competition within the euro area financial sector. Moreover, foreign investors bring with them advanced technology, expertise, and best practices supporting productivity and innovation within the euro area financial industry.

The presence of foreign investment also carries challenges and risks[158]. These include potential market volatility, regulatory concerns, and the possibility of capital flight during periods of uncertainty.

Framework conditions that promote a competitive and vibrant economic environment offering attractive investment opportunities will provide an incentive for foreign investors to participate in financing the EU economy.

158 See Special Feature A entitled "Dissecting foreign investments in euro area bond markets during the sovereign debt crisis", *The international role of the euro*, ECB, Frankfurt am Main, July 2014 and Beck, R., Georgiadis G. and Gräb, J., "The geography of the great rebalancing in euro area bond markets during the sovereign debt crisis", *Journal of Empirical Finance*, Vol. 38, Part A, 2016.

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