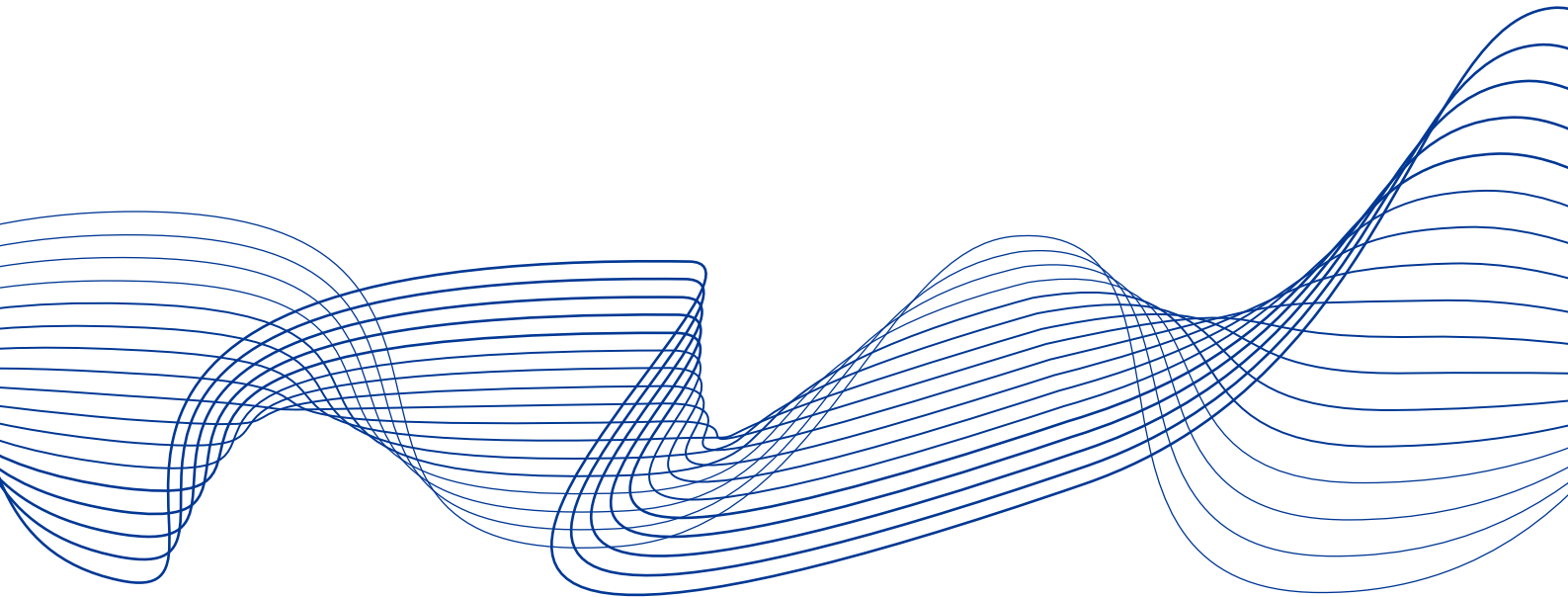


NBFI Monitor

No 9 / June 2024

EU Non-bank Financial
Intermediation Risk Monitor 2024



ESRB

European Systemic Risk Board

European System of Financial Supervision

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Executive summary

This report considers the main risks and vulnerabilities associated with investment funds and other financial institutions (OFIs), as well as crypto-assets and associated intermediaries, in 2023. The size of the monitoring universe increased in 2023, mainly as a result of valuation effects. Total assets of EU investment funds and OFIs increased to €44.8 trillion and accounted for 41% of the EU financial sector. The crypto-asset market grew strongly in 2023, supported by the expected launch of Bitcoin exchange-traded products (ETPs) in the United States. The outstanding value of the crypto-asset market rose to €1.6 trillion globally. In 2023 risks to the financial stability of the EU financial system coalesced around the impact of higher interest rates. As the full effect of tighter financing conditions may not yet have fully materialised, these risks also remain relevant looking ahead (Figure 1). Slow growth coupled with tighter financing conditions could amplify credit risk. This may lead to losses and put a further strain on intermediaries performing liquidity transformation, especially those with direct exposures to interest rate-sensitive sectors such as real estate, or those reliant on leverage. Higher interest rates and stretched asset valuations may also increase the risk of disorderly market corrections amplified by a reduction in market liquidity.

Cyclical risks can be amplified by structural vulnerabilities in the monitoring universe.

Excessive use of leverage can amplify liquidity and market risk and transmit and magnify shocks to the financial system. This edition of the report emphasises that high leverage should not only be associated with alternative investment funds, but that it can also build up in some undertakings for collective investment in transferable securities (UCITS) that pursue hedge fund-like strategies. Unlike most UCITS, such funds are not subject to direct limits on leverage, but instead indirect limits based on value-at-risk (VaR) models. Hence, those funds could obtain higher levels of leverage than other UCITS subject to direct leverage limits. This edition of the report also focuses on interconnectedness, which can amplify and propagate risks throughout the financial system. Measures of direct and indirect linkages between investment funds, OFIs and the banking sector remained stable in 2023. However, cross-exposures within the investment fund sector (i.e. investment funds holding units in other investment funds) have risen in recent years, creating long intermediation chains and increasing complexity in the financial system. Investment funds and OFIs have a large footprint in many financial markets, and there is a high degree of portfolio overlap between institutional investors. These concentrations can contribute to price pressure and liquidity conditions in times of stress.

Crypto-assets and associated intermediaries provide financial intermediation and can be exposed to the same vulnerabilities and financial risks as the traditional financial sector, while remaining less advanced in terms of regulatory coverage. Use of leverage, reliance on collateral and the high degree of interconnectedness within the crypto ecosystem could magnify shocks to crypto markets. In addition, even if the size of the market may be too small to pose systemic risks, the introduction of “spot Bitcoin ETPs” is likely to increase interlinkages between crypto and traditional markets and amplify potential spillover effects.

This report includes three special features that complement the assessment of risks and vulnerabilities. The first special feature focuses on the ownership structure of management

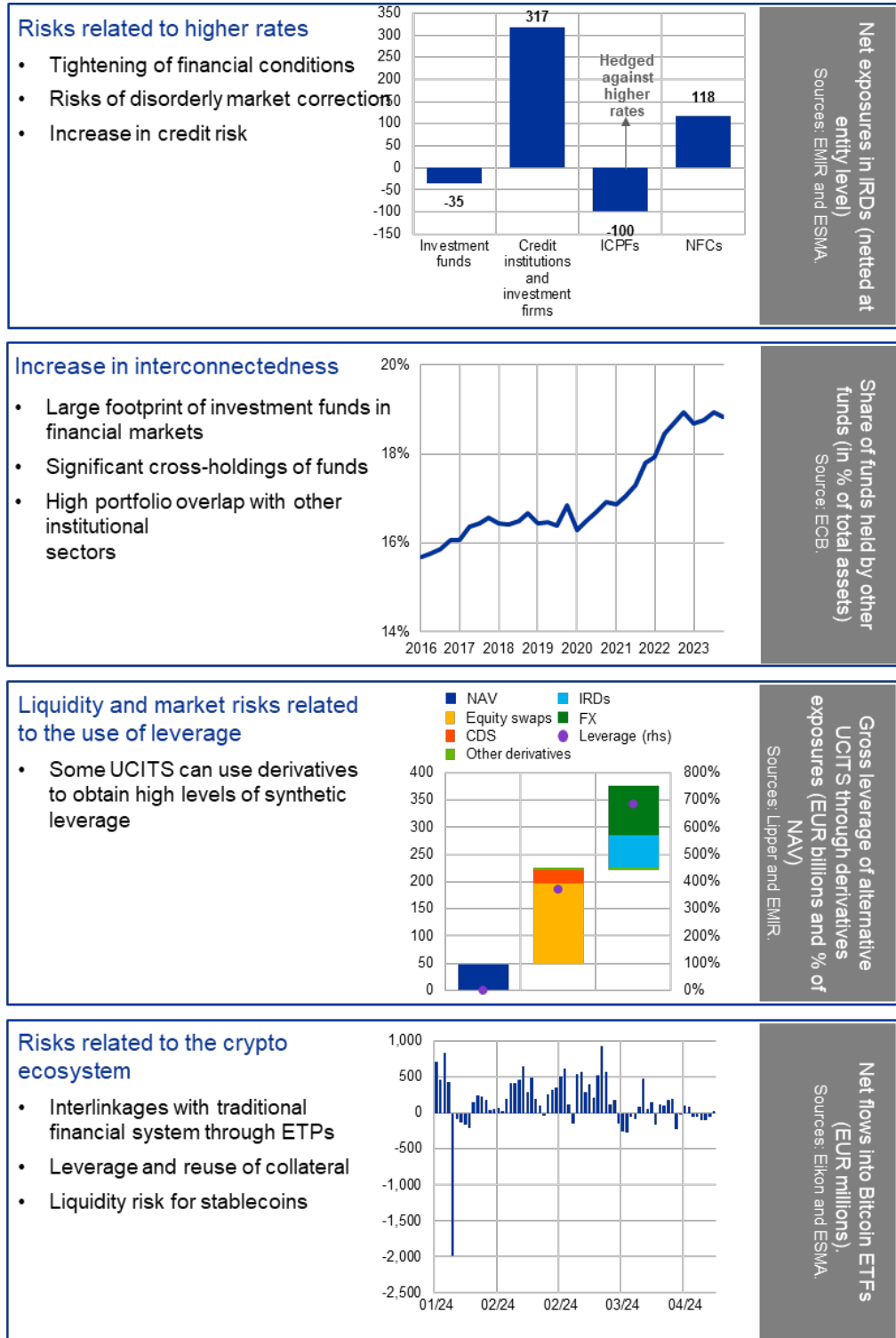


companies of EU-domiciled investment funds. It highlights that most EU fund managers belong to banking groups, unlike in the United States, where most asset managers are independent. These ownership ties can be relevant from a financial stability perspective, as they can create reputational risk or step-in risk. The second special feature focuses on private finance. It provides an overview of the European market and discusses several vulnerabilities related to leverage, interconnectedness and valuation uncertainty. It concludes that while private finance does not seem to pose an immediate concern from a systemic risk perspective, a continuation of the rapid growth observed in recent years could result in the sector becoming systemically relevant. The third special feature explores the international linkages of EU-domiciled money market funds (MMFs). It concludes that the global role played by EU-domiciled MMFs denominated in USD and GBP and the regulatory reforms occurring outside of the EU call for a comprehensive assessment of the EU regulatory framework for MMFs. Given the global nature of MMFs, less stringent prudential regulation of EU-domiciled MMFs compared with those operating in the United States and the United Kingdom might pose risks to financial stability, as EU MMFs might be less resilient and more susceptible to transmitting shocks to global markets.



Figure 1

Summary of main risks and vulnerabilities in non-bank financial intermediation



Source: ESRB.



1 Overview

The NBFi Monitor 2024 discusses the main systemic risks and vulnerabilities associated with investment funds and OFIs. The report covers the main developments in 2023¹ and considers a range of risks and vulnerabilities associated with financial intermediation outside the banking system, focusing on those related to liquidity and maturity transformation, use of leverage and interconnectedness. The report covers all investment funds and OFIs. Insurance companies, pension funds and central counterparties (CCPs) are not included in the entity-based monitoring of the report per se due to the differing risk profiles of their main activities.² As investment funds and OFIs participate in a range of financial markets – including derivatives, securities financing and securitisation – entity-based monitoring is complemented by activity-based monitoring to provide a holistic assessment of financial stability risks.

The NBFi Monitor 2024 also provides an assessment of risk in the crypto ecosystem.

Although the crypto ecosystem is exposed to certain unique risks, the business models of a number of crypto-asset intermediaries resemble those of regulated financial institutions.³ These businesses tend to offer services such as crypto-asset trading, investing, lending and borrowing. Accordingly, they engage in essentially the same activities as traditional financial actors, i.e. credit intermediation, liquidity and maturity transformation in addition to using leverage, while remaining less advanced in terms of regulatory coverage. Crypto-assets and associated intermediaries are covered in the report insofar as the type of financial intermediation they provide is exposed to similar risks and vulnerabilities to those faced by traditional non-bank intermediaries such as investment funds and OFIs. Data on the crypto ecosystem that are provided in the report should be interpreted with caution, as they are gathered for the most part from commercial sources. In addition, estimates are available only at the global level, and not at EU level, due to data gaps.

The report is structured as follows: The remainder of Section 2 presents the most important changes in main aggregates of the monitoring universe, discusses its key risks and structural vulnerabilities and assesses its engagement in certain risky activities. It also provides a brief overview of recent policy developments that are relevant from a financial stability perspective. Section 3 presents special features that complement the risk identification. Section 3.1 provides an overview of the ownership structure of investment fund management companies and its potential implications for financial stability. Section 3.2 discusses risks and vulnerabilities associated with private finance. Section 3.3 sheds further light on the global interlinkages of EU-domiciled MMFs. Sections 4 and 5 explore the risk assessment in greater detail, focusing on how the key risks identified in Section 2 might affect, or be amplified by, the monitoring universe of the report. Section 6 complements this by shedding more light on systemic risks related to derivative markets, securities financing transactions and securitisation. The annexes provide more detailed information on statistical classifications for investment funds and OFIs according to the European System of

¹ The report may also refer to less recent information due to data availability. It may also cover events from early 2024 relevant from a risk monitoring standpoint.

² Key risks and developments in the EU insurance and occupational pensions sectors are examined in the EIOPA's Financial Stability Reports. See, for instance, EIOPA (2023), "**Financial Stability Report**", December.

³ See special feature in [EU Non-bank Financial Intermediation Risk Monitor 2023](#).



National and Regional Accounts (ESA)⁴, as well as a description of business models included in the monitoring universe of the report and a statistical overview.

1.1 Developments in main aggregates

Uncertainty and downside risks are weighing on the economic outlook amid an increase in geopolitical tensions and an ongoing tightening of financial conditions. While inflation is on a downward path, near-term inflation expectations remain elevated, which may contribute to more persistent wage and price pressures. Tighter financial conditions contributed to the stagnation of EU economic activity in 2023, with real GDP growth amounting to 0.4% in 2023 and projected growth amounting to 1.0% in 2024 and 1.6% in 2025⁵. Such conditions may weigh on economic activity and credit for a longer period than initially forecast, which could increase credit risk amid high private and public sector indebtedness.

The size of the monitoring universe increased in the first half of 2023, mainly reflecting positive valuation effects. Total assets of EU investment funds and OFIs increased to €44.8 trillion at the end of 2023 compared with €42.7 trillion at the end of 2022, reaching again their level at the end of 2021 (Chart 1, panel a). The increase in investment fund assets under management (AuM) was mainly driven by valuation gains rather than inflows during 2023 (Chart A5). The increase in assets of the EU OFI sector was related to valuation effects. Overall, assets of investment funds and OFIs accounted for 41% of European financial sector assets at the end of 2023, compared with 40% in 2022 (Chart A3). The combined market value of crypto-assets peaked globally at close to €2.6 trillion in November 2021, contracted to €736 billion by the end of 2022 and rebounded to €1.5 trillion (Chart 1, panel b) by December 2023⁶. The recent uptick was related to the expectation that Bitcoin ETPs would soon be authorised in the United States. In January 2024 the U.S. Securities and Exchange Commission (SEC) approved the first Bitcoin ETP (Box 1).

⁴ For more information, see [European System of Accounts 2010 \(ESA 2010\)](#).

⁵ See European Commission (2024), "[European Economic Forecast](#)", Spring, and IMF (2023), "[World Economic Outlook](#)", October.

⁶ Data on the crypto ecosystem that are provided in the report should be interpreted with caution, as they are gathered for the most part from commercial sources. In addition, estimates are available only at the global level, and not at EU level, due to data gaps.

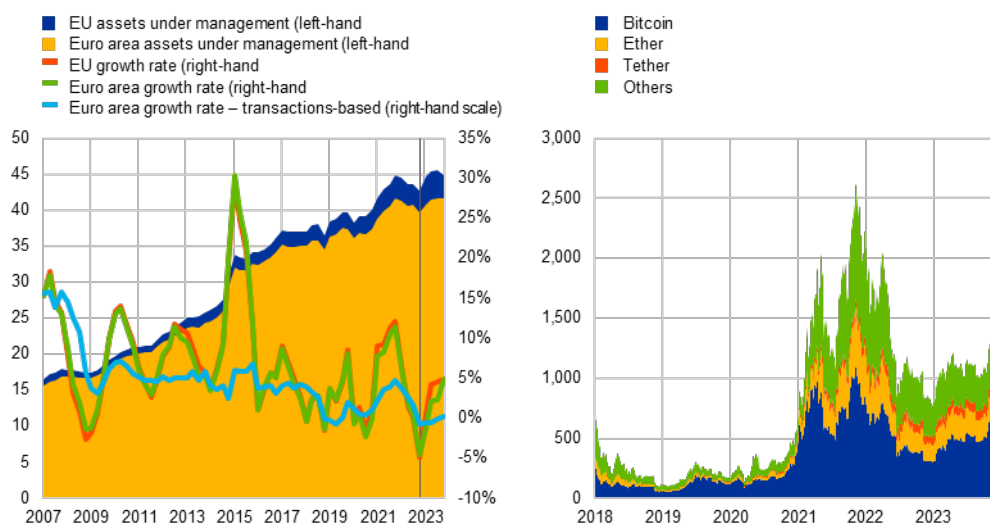


Chart 1

The size of the monitoring universe expanded in 2023

a) Assets under management in EU and euro area investment funds and other financial institutions b) Crypto-asset market value

(left-hand scale: EUR trillions; right-hand scale: annual growth rates in percentages)



Sources: ECB and ESRB calculations, CoinMarketCap and ESMA.

Notes: In panel a), the red and green lines indicate annual growth rates based on changes in outstanding amounts. The blue line indicates the annual euro area growth rate based on transactions, i.e. excluding the impact of exchange rate variations or other revaluations and statistical reclassifications. In panel b), “Others” contains all other crypto-assets that are listed on the [CoinMarketCap website](#).

Box 1

Approval of spot Bitcoin ETPs in the United States

On 10 January 2024 the U.S. Securities and Exchange Commission (SEC) approved the listing and trading of 11 spot Bitcoin exchange-traded products (ETPs).⁷ These are commonly referred to as “spot Bitcoin exchange-traded funds (ETFs)”, although they do not formally qualify as such⁸. The SEC had previously rejected applications from ETPs that hold Bitcoin directly, arguing that the underlying market was vulnerable to fraud and market manipulation. However, a court ruling in 2023 compelled a change in the SEC’s stance.

In January 2024 these ETPs attracted small net inflows (Chart A). In their first two weeks of trading, combined net inflows were below €1 billion, equivalent to the first two days of trading of the first

⁷ See [Statement on the Approval of Spot Bitcoin Exchange-Traded Products](#), 10 January 2024.

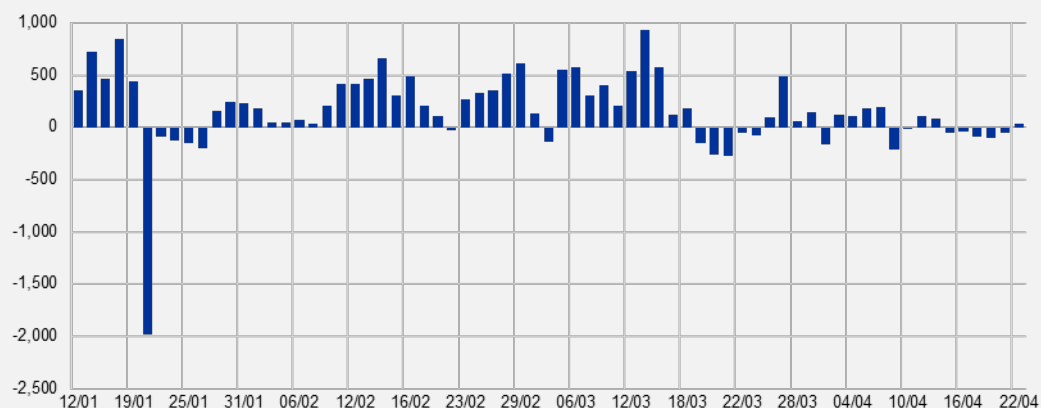
⁸ In the United States, ETPs which do not invest primarily in securities (such as those investing in physical commodities or derivatives contracts) are not considered ETFs and do not register under the Investment Company Act, but do register under the Securities Act. Futures Bitcoin ETFs already existed in the United States. They were structured in a way that allowed them to be registered as investment companies under the Investment Company Act – the funds owned subsidiaries, which in turn invested in Bitcoin futures.



futures Bitcoin ETF launched in 2021. Two ETPs accounted for around one-third of the net inflows each. Overall, since the launch of the ETPs, Bitcoin has surged by 30%, approaching past peaks observed in November 2021.

Chart A
Net flows of US spot Bitcoin ETPs

(EUR millions)



Sources: ESMA and EIKON.

Although their size remains small (total net asset value (NAV) of €45 billion at the end of April 2024, i.e. less than 1% of the ETF and ETP market as a whole⁹), these ETPs require monitoring. They hold the potential to accelerate crypto adoption as an easy and cost-effective way for mainstream investors to buy and sell crypto-assets. Some of the ETPs' sponsors are among the top asset managers globally and have a large customer base.

By making it easier for both retail and institutional investors to build exposure to crypto-assets, these ETPs are likely to increase interlinkages between crypto and traditional markets. This could in turn exacerbate the risks of negative spillover effects from crypto to traditional markets. Several firms have already indicated that they intend to launch variations of these ETPs, including riskier versions such as leveraged Bitcoin ETPs, which could increase the magnitude of such negative spillovers.

Some ETPs with underlying crypto are already available in the EU, but they remain relatively small in size (around €10 billion). Currently, there are no known EU ETFs that provide direct exposure to crypto-assets. However, the SEC's approval could spark renewed investor interest in crypto-assets and entice financial institutions to launch similar products in the EU. It should be noted that undertakings for collective investment in transferable securities (UCITS) are not allowed to invest directly in crypto-assets, meaning that these ETFs would need to be alternative investment funds in the EU.

⁹ See [ETFGI press release](#). Assets invested in the global ETF and ETP industry reached USD 11.6 trillion at the end of 2023 and USD 12.7 trillion at the end of March 2024, according to ETFGI.

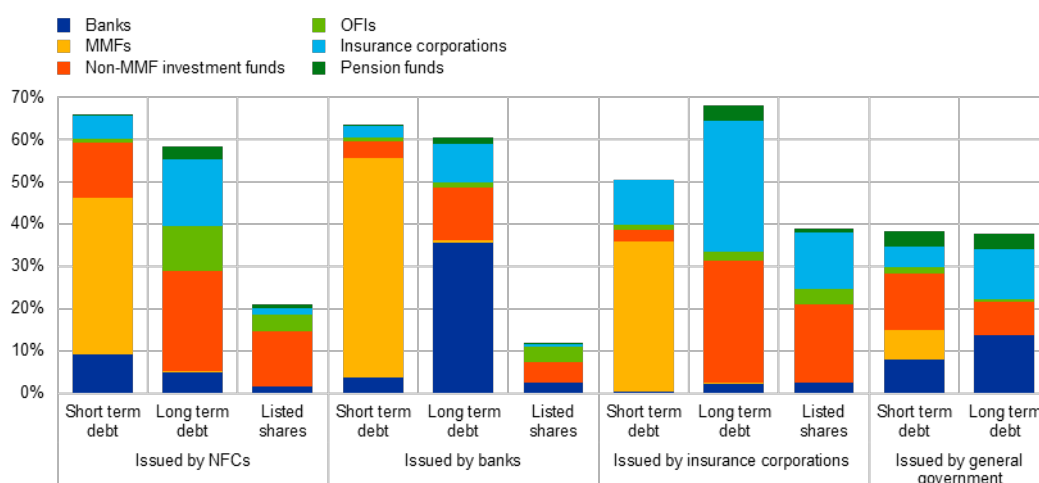


Investment funds have a large footprint in many markets for financial instruments (Chart 2).

Of all euro area institutional investors, investment funds were the most important holders of long-term debt instruments and listed shares issued by euro area non-financial corporations (NFCs) in 2023, as well as listed shares issued by euro area banks and euro area insurance companies. Their share in the market for long-term debt instruments issued by euro area banks and insurers was also sizeable, though only second largest after the share of banks and insurance companies. Euro area MMFs held a large proportion of all euro area private short-term debt instruments. The sizeable market footprint highlights the important role played by investment funds in the provision of funding to the real economy and the financial sector. At the same time, it points to potential vulnerabilities, i.e. heightened market impact and contribution to negative price dynamics in stress events, as well as high interconnectedness within the financial sector.

Chart 2
Market footprint of euro area institutional investors in euro area financial instrument markets

(percentages)



Sources: ECB and ESRB calculations.

Notes: Data refer to financial instruments issued by euro area entities and held by euro area institutional investors. Data as of the fourth quarter of 2023.

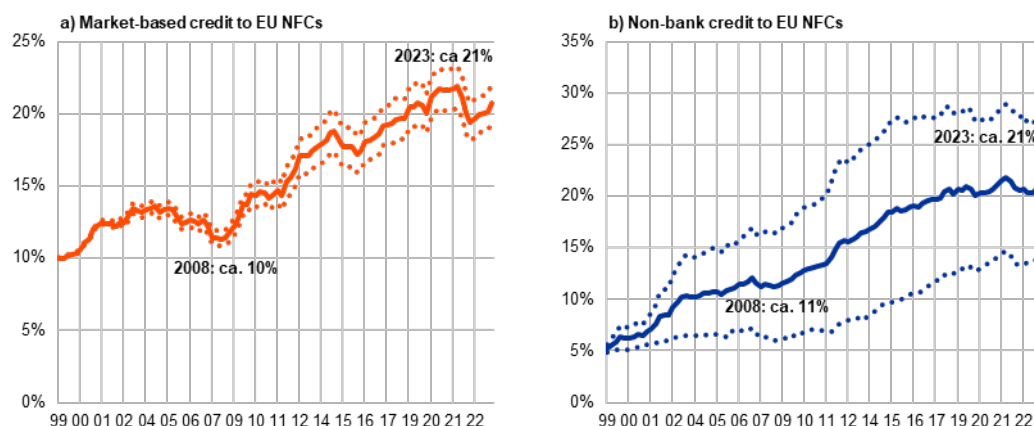
Investment funds and OFIs remained an important source of funding to EU NFCs. From a flow perspective, net financing raised by euro area NFCs declined in 2023 compared with 2022. Financing obtained through debt securities issuance was larger in 2023 (€36 billion) than in 2022 (€19 billion, Chart A1). Funding raised from NFCs through bank loans slowed down (€47 billion compared with €247 billion in 2022) but was larger in absolute terms than financing through debt securities. Market-based credit, i.e. intermediated via markets in the form of debt securities and non-retained securitised loans, rebounded to 21% of total external credit to NFCs (Chart 3, panel a). Credit provided by funds and OFIs to NFCs also increased to 21% (Chart 3, panel b). Both changes were driven by flow effects, as debt issuance grew while bank loans dropped. Both market-based and non-bank credit have roughly doubled since the global financial crisis.



Chart 3

After a steady increase over the last decade, market-based funding and non-bank credit to NFCs declined slightly due to flow and valuation effects

(percentages of NFC credit from financial institutions)



Sources: ECB and ESRB calculations.

Notes: Market-based credit reflects the share of market-based debt finance (debt securities and non-retained securitised loans) relative to the total external debt of euro area NFCs, irrespective of which sector provided the credit. Non-bank credit reflects the relative share of investment funds and OFIs in providing debt financing to euro area NFCs compared with credit provided by all financial institutions (the non-bank financial sector and banks), irrespective of whether that financing is provided in the form of loans or debt securities. The solid line reflects an average of the dotted lines, which include (dotted line at the top) or exclude (dotted line at the bottom) loans granted by a residual of OFIs. The methodology is similar to described in Box 2, “Financial Integration and Structure in the Euro Area”, ECB, April 2022, but insurance corporations and pension funds are excluded.

1.2 Overview of risks and vulnerabilities

Intermediaries included in the monitoring universe of the report are susceptible to risks related to the impact of higher interest rates, disorderly falls in asset prices and market liquidity strains. The recent rapid tightening of financial conditions could test the resilience of the EU non-bank financial sector. The simultaneous increase in interest rates across advanced

economies has resulted in a rise in funding costs for firms and governments, mark-to-market losses for investors holding longer-dated assets (Box 2) and further pressure on real estate markets.

Uncertainty around the pace and intensity of the transmission of tighter monetary policies to credit markets could weigh on credit risk and credit creation amid a muted economic outlook (Figure 2). In a context of stretched valuations across markets including real estate¹⁰, such uncertainty could result in episodes of stress with sharp declines in asset prices and liquidity pressures. Such stress events could be amplified by systemic liquidity risk, defined as the risk of simultaneous funding and market liquidity issues across multiple entities and markets. Structural changes in the provision of liquidity over the last decade and a further shift to collateralised funding have increased the interplay between valuations, funding and market liquidity. Recent events such as the GBP liability-

¹⁰ See [Warning of the European Systemic Risk Board of 22 September 2022 on vulnerabilities in the Union financial system](#) (ESRB/2022/7) 2022/C 423/01 (OJ C 423, 7. 11. 2022).



driven investment (LDI) stress event of September 2022¹¹ or the March-April 2023 banking sector stress provide evidence of such dynamics.

Box 2

Banking sector stress from March to April 2023 and impact on non-bank financial intermediation

In March 2023 some US regional banks came under strain. Solvency concerns related to losses on their bond portfolios triggered large deposit outflows and a drop in stock prices. In particular, concerns mounted for banks with large exposures (relative to capital) to long-dated bonds, as higher interest rates resulted in large mark-to-market losses. Some banks with concentrated depositor bases (such as Silicon Valley Bank and Signature Bank) failed, while others were acquired by larger banks. The stress resulted in large deposit outflows from regional banks and cash inflows into larger US banks and government money market funds (MMFs).

Banking sector stress spread beyond the United States with valuations of EU banks falling temporarily, although they were less exposed to interest rate risk and had a more diversified depositor base. Stress was particularly acute for Credit Suisse, which experienced large deposit outflows and outflows from its managed investment funds.

EU depositors reallocated their funds in a context of higher interest rates. In the first half of 2023 households and non-financial corporations shifted from overnight to term deposits, reflecting the higher interest rates they offered (Chart A). In some countries, households also reallocated their deposits towards government bonds offered to retail investors. By contrast, insurers and pension funds shifted from bank deposits to MMFs, albeit to a relatively small extent. This shift might have reflected the diversification benefits MMFs offer compared with banks, as MMFs invest in a range of short-term bank and non-bank financial claims.

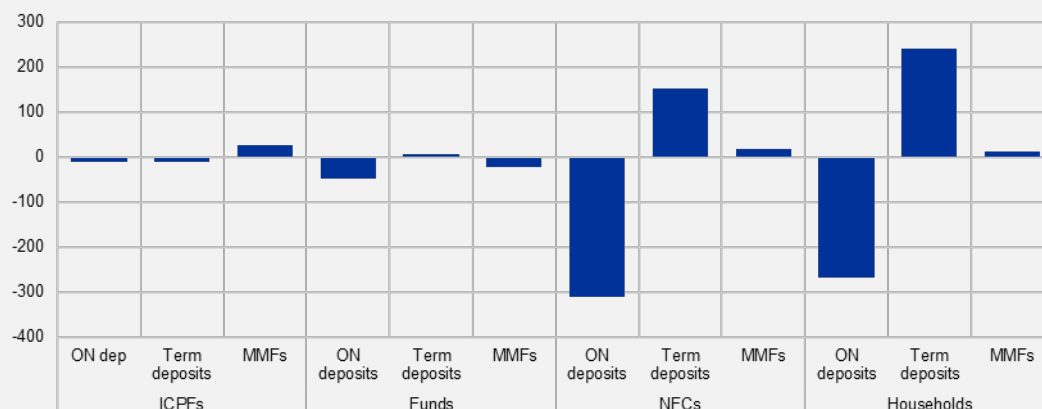
¹¹ For further details, see special feature in the [2023 EU NBFi Monitor](#).



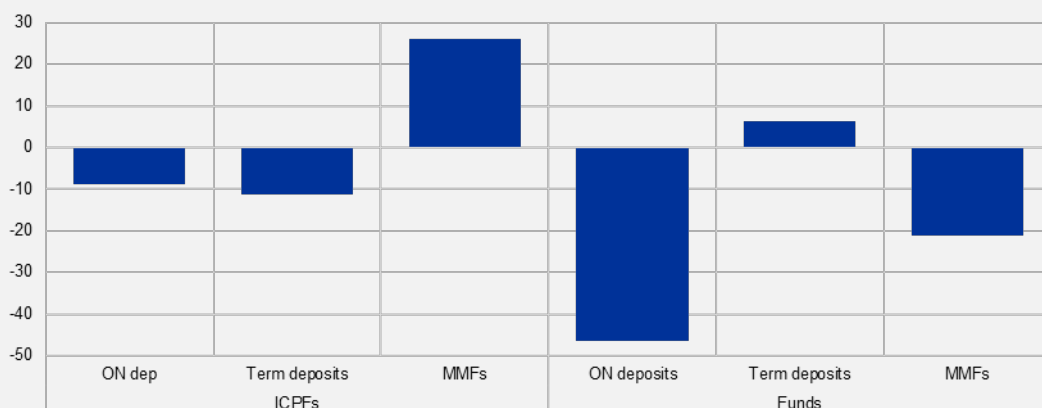
Chart A

While NFCs and households switched from overnight to term deposits, insurers and pension funds reallocated some of their deposits to MMFs

a) Cumulative net flows into bank deposits and MMFs in first half of 2023 (EUR billions)



b) Cumulative net flows for insurers, pension funds and investment funds (EUR billions)



Sources: ECB and ESRB calculations.

Note: "ICPFs" stands for insurance corporations and pension funds.

Cyclical risks can be amplified by structural vulnerabilities of non-bank financial intermediaries.

Liquidity mismatch, use of leverage and interconnectedness can contribute to systemic risk, amplifying and spreading shocks throughout the financial system. These vulnerabilities apply not only to investment funds and OFIs but also to crypto-assets and their associated intermediaries.

Problems related to data – gaps, poor quality and availability – hamper the ability of authorities to carry out their financial stability mandate.

Deficiencies in reporting frameworks – both regular and high-frequency in crisis situations – prevent more comprehensive risk assessment



in some parts of the monitoring universe and in turn make it difficult to properly address risks to financial stability. Importantly, several datasets used in the report – including the ECB’s statistics on investment fund balance sheets, financial vehicle corporations, balance sheet items and securities holdings by sector – do not provide full EU coverage. In addition, insufficient data-sharing arrangements between authorities with financial stability mandates hinder the cooperation and coordination of policy responses. Though data quality continues to improve, and important advancements have been made in recent years, further efforts are required. In particular, the recent revisions of the Alternative Investment Fund Managers Directive (AIFMD) and the UCITS Directive helped to rectify the deficiencies within the investment fund domain (see Section 2.4 on recent developments in the regulatory framework). However, the implementation of the new reporting requirements and data-sharing agreements at the EU level will have an extended timeline before achieving full functionality. For AIFMD, European Market Infrastructure Regulation (EMIR) and Securities Financing Transactions Regulation (SFTR) data, reporting quality still poses challenges. Additionally, in the alternative investment fund (AIF) sector, there is little visibility on the use of leverage by private equity funds since they do not report exposures at the portfolio company level. Different reporting frequencies for AIFs as well as the long time lag between collection and provision of the data further complicate the monitoring of risks. Important data gaps also remain in the OFI domain, especially for captive financial institutions (CFIs) and OFI residuals and since data collection for financial corporations engaged in lending at euro area level was discontinued. As regards crypto-assets, the lack of regulatory data makes it difficult to assess their size and interlinkages with the traditional financial sector, and related risks. As data on the crypto ecosystem are currently gathered from commercial sources, estimates are uncertain at best and available at the global level only.

Figure 2
Risks and vulnerabilities in EU non-bank financial intermediation

The move from the low interest rate environment and muted growth prospects could test the resilience of the EU non-bank financial sector			
Cyclical risks	Impact of higher rates Uncertainty regarding how quickly and intensely the global tightening of financial conditions will affect corporates, sovereigns and financial institutions	Disorderly falls in asset prices Asset price falls due to tighter financial conditions, rising credit risk, muted growth prospects and geopolitical risk	Systemic liquidity Liquidity strains in some market segments alongside collateral shortages, potentially leading to price volatility spikes
	Structural vulnerabilities in the EU non-bank financial sector		
Structural vulnerabilities	Liquidity mismatch Misalignment between terms of investor withdrawal and the possibility of liquidating assets without large price discounts	Use of leverage Leverage potentially amplifying selling pressure following market declines (e.g. via margin calls, collateral, covenants and deleveraging); margin and collateral calls generating liquidity strains	Interconnectedness Interconnectedness and the risk of contagion across sectors and within the non-bank financial sector, including domestic and cross-border linkages
	Data quality and gaps Deficiencies in data and poor reporting quality preventing a more comprehensive risk analysis		

Source: ESRB.



1.2.1 Risks

One of the main risks in 2023 centred around uncertainty about the impact of a rapid transition from a low interest rate environment to higher rates. Nominal interest rates increased sharply in 2022 and 2023, although real interest rates remained low. Investment funds and OFIs have so far managed the transition to higher rates without encountering any significant crisis episodes, but as the effect of tighter financing conditions has not yet fully materialised, risks remain. A weakened economy combined with a high interest rate environment could escalate credit risk, as it could put further strain on borrowers faced with tighter financial conditions. Investment funds directly exposed to interest rate-sensitive sectors such as real estate, or relying on debt and leverage such as private equity and debt, could be particularly vulnerable. Financial institutions and NFCs are also exposed to interest rate risk through derivatives. When solely derivative exposures are considered, banks and NFCs are hedged against higher rates while insurance corporations and pension funds (ICPFs) would face losses on their derivative positions if rates were to increase further (Box 3). While the adjustment to the high interest rate environment might put pressure on financial intermediaries, a longer-term higher interest rate environment might bring benefits to financial stability, disincentivising the search for yield and excessive risk-taking.

Box 3

Exposures to EUR interest rate derivatives

As of October 2023 gross notional exposures of EU counterparties to EUR interest rate swaps amounted to €18 trillion¹². Banks and investment firms accounted for 72% of exposures, followed by NFCs (12%), insurance corporations and pension funds (ICPFs) and investment funds (9% each). In terms of maturity, investment funds used mainly short-term interest rate derivatives (IRDs) (one year or less accounted for 40% of exposures), banks and non-financial corporations (NFCs) used medium-term IRDs (swaps with a maturity of five years or less accounted for 50% of exposures) and ICPFs mainly used long-term swaps (ten years and above accounted for 50% of exposures), in line with their business model.

Interest rate derivative (IRD) data can be used to assess whether counterparties are hedged against higher rates (they pay a fixed rate and receive a floating rate) or are exposed to higher rates (they pay a floating rate and receive a fixed rate).¹³ At the aggregate level, banks and NFCs had net positions that hedged them against higher rates (€317 billion and 118 billion respectively; Chart A, panel a), investment funds had flat positions and ICPFs had positions that exposed them to higher rates (€100 billion), as an increase in rates would result in mark-to-market losses on IRD positions for insurance companies and pension funds.

Net exposure by maturity buckets indicate that banks are exposed to higher rates below one year (net positions are negative), in line with expectations of lower short-term rates in 2024, and are hedged against higher rates for longer maturities. NFCs are hedged against higher rates across the

¹² This figure refers to IRDs in EUR, excluding positions with CCPs (€58 trillion) and intragroup positions (€35 trillion). Inflation swaps and IRDs for which the maturity was missing are also excluded (around €2 trillion).

¹³ While notional amounts give an indication of the hedge, the economic hedging is measured by sensitivity metrics such as DV01, which corresponds to the change in market value of the position for a one basis point change in interest rates. The calculation of sensitivity measures is complex and requires instrument-by-instrument computations and was not performed for this analysis.



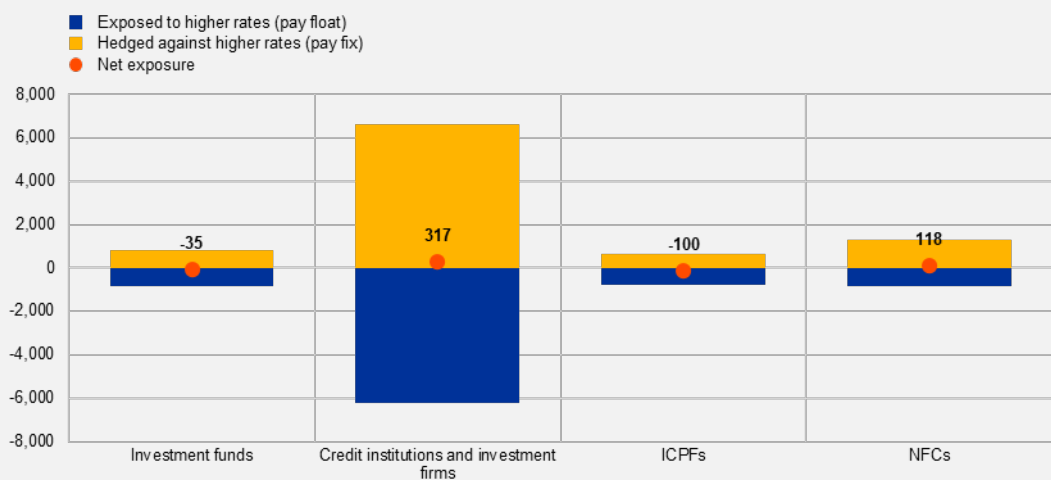
curve, while ICPFs are hedged against higher rates at the short end of the curve (below five years) and are exposed to higher rates across longer maturities (Chart A, panel b).

Overall, the analysis shows that if rates were to change, NFCs and banks would have to pay margins if rates decline and ICPFs would have to post margins if rates increase, especially on the long end of the yield curve.

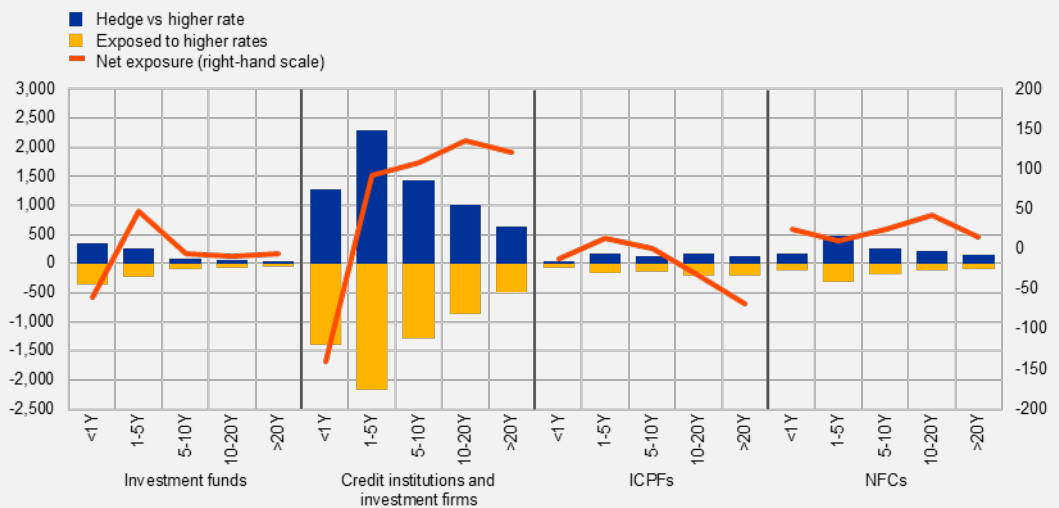
Chart A

Banks and NFCs are hedged against higher rates, while ICPFs are exposed to higher rates

a) Gross notional exposures to IRDs
(EUR billions)



b) Notional exposures by counterparty types and maturity buckets
(EUR billions)



Sources: EMIR and ESMA.

Notes: "ICPFs" stands for insurance corporations and pension funds. Data as of October 2023. For net IRD exposures, positions are netted at entity level.



Downside valuation risks remain high. Stretched valuations in some market segments along with higher returns on safe assets could dampen risk-taking and lead to disorderly falls in riskier asset prices. Market segments in which valuations are less frequent due to the structural illiquidity of the assets could see an abrupt shift in valuations that currently may not be internalised by investors. The outlook remains particularly challenging for the commercial real estate (CRE) market, with a sharp slowdown in property market activity amid increased borrowing costs. A potential escalation of geopolitical tensions and political uncertainty could also drive higher asset price volatility.

Systemic liquidity risks have increased. The interplay between market and funding liquidity can amplify shocks to the financial system (Box 4). Recent episodes of stress (LDI episode in the United Kingdom in 2022, banking stress of March 2023) were characterised by very high volatility in sovereign bond markets, which can trigger collateral requests on sovereign bonds used as collateral for funding purposes. Funding liquidity risks can be magnified by lower market liquidity, as liquidity providers reduce their activity amid high uncertainty and forced sales reduce the absorption capacity of the market, triggering further downward pressure on asset prices.

Box 4

Systemic liquidity risk

Systemic liquidity risk can be defined as the risk of simultaneous liquidity difficulties at multiple financial institutions affecting key markets.¹⁴ This covers funding liquidity (the ease of borrowing conditions) – and market liquidity (the ability to execute large trades rapidly, at low cost and with little market impact).

Over the last decade, structural changes to the financial system have resulted in more intertwined links between funding and market liquidity, for instance via the repo market. Tighter regulatory frameworks and changes in business models have reduced liquidity transformation by banks and their use of leverage. At the same time, the rise of non-banks, including open-ended funds offering daily liquidity to investors, has resulted in more liquidity transformation being performed outside of the banking sector. Changes to market structures have also led to a larger role played by non-banks in providing liquidity to financial markets (including proprietary trading firms on electronic markets). The move from bilateral to central clearing and from unsecured to more secured funding has reduced counterparty risk. However, it has also reinforced the link between market and liquidity risk by translating price volatility into margin calls and collateral requests.

Recent episodes of liquidity stress such as the coronavirus (COVID-19) stress in March 2020 or the UK mini-budget event of September 2022¹⁵ have shown how market disruptions can spread and amplify liquidity risks across institutions and asset classes. This is an area the European Systemic Risk Board is monitoring. Building on analysis by the European Central Bank¹⁶, further work to provide an operational framework to assess systemic liquidity is warranted. The development of a

¹⁴ See ECB (2018), “**Systemic liquidity concept, measurements and macroprudential instruments**”.

¹⁵ For further details on this event, see the special feature in the **2023 NBF I Monitor**.

¹⁶ See ECB (2023), “**Gauging the interplay between market and funding liquidity**”.



set of indicators that can be calculated across EU jurisdictions to assess systemic liquidity risk across entities and markets could help improve the monitoring of systemic liquidity risk.

1.2.2 Vulnerabilities

Liquidity mismatch remains an important structural vulnerability in non-bank financial intermediation. Investment funds continue to undertake a high level of liquidity and maturity transformation despite the recent decline. Most EU-domiciled investment funds are open-ended (92% in terms of net assets) and can offer frequent redemption opportunities. The degree of liquidity mismatch varies and depends on specific redemption terms and conditions, including liquidity management tools (LMTs). Some open-ended funds invest in less liquid instruments, and – especially in times of stress when faced with large investor redemptions – can engage in procyclical selling, exacerbating price movements in underlying markets. As returns on safe assets have increased in a high interest rate environment, investors might be less willing to take on additional liquidity risk and might be more inclined to shift their allocation to more liquid investment products.

Excessive leverage in the financial system is a key vulnerability. Leverage amplifies existing risks such as liquidity or market risks. The use of derivatives to obtain synthetic leverage or reliance on the repo market to obtain financing can trigger margin or collateral requests when there are adverse price movements in the underlying securities. In such cases, the crystallisation of market risk will result in higher losses due to higher exposure to market volatility and additional liquidity requests via margin or collateral demands. In turn, the need to deleverage positions could result in fire sales and put further downward pressure on prices. While higher funding costs might deter the use of leverage, it is unclear whether higher rates have resulted in a reduction of leverage at the aggregate level to date.¹⁷ Additionally, the use of leverage increases counterparty exposures and interconnectedness. While high leverage is typically associated with AIFs, it can also build up in some UCITS funds pursuing hedge fund-like strategies (Box 5).

Box 5

The use of synthetic leverage by undertakings for collective investment in transferable securities

Undertakings for collective investment in transferable securities (UCITS) funds are also subject to leverage restrictions. They can borrow only on a temporary basis, and the amount of on-balance-sheet leverage is limited to 10% of their total assets. UCITS funds that rely on the commitment approach to calculate their leverage are also subject to direct synthetic leverage restrictions. Under this approach, UCITS calculate their global exposure by converting derivatives positions into the market value of equivalent positions in the underlying asset. Netting and hedging arrangements can be used to offset positions. The sum of the net derivatives positions and leverage obtained through

¹⁷ ESMA reports that leverage at the end of 2022 was generally lower across AIFs, including hedge funds, but increased slightly for real estate funds. For further details, see ESMA (2024), “EU Alternative Investment Funds 2023”, Market Report.



securities financing transactions is limited to 100% of net asset value (NAV), restricting synthetic leverage to 200% of NAV.

UCITS implementing complex investment strategies can, however, use the value-at-risk (VaR) approach.¹⁸ The VaR approach can be relative or absolute. Under the relative VaR approach, the one-month VaR of a fund at a 99% confidence level must be equal to or less than 200% of the VaR of a reference benchmark. Under the absolute VaR approach, the VaR is limited to 20% of the NAV of the fund. The relative VaR approach can be used when there is a leverage-free benchmark reflecting the investment strategy that the UCITS is pursuing. In this case, the benchmark serves as the basis for a reference portfolio for the relative VaR approach. For UCITS that do not define a benchmark, the absolute VaR approach is recommended.

The VaR approach measures the maximum potential loss due to market risk. Thus, it does not directly limit leverage as it also reflects the riskiness of the assets the fund invests in. For example, if a fund invests in assets that exhibit little price volatility, the VaR will be low and the fund will be able to increase its exposures (and its VaR) until the leverage constraint becomes binding. In some cases, the leverage of a fund using the VaR approach can be much higher than if leverage limits under the commitment approach are used.

Chart A shows how a fund using the absolute VaR approach could obtain high levels of leverage by investing in a low-volatility portfolio and then use derivatives (for example, total return swaps) to magnify its returns. Although there are some nuances between measuring leverage according to the commitment approach under the UCITS Directive and Alternative Investment Fund Managers Directive (AIFMD), some UCITS might reach similar levels of leverage as “substantially leveraged” AIFs. For alternative investment funds, leverage is considered to be employed on a substantial basis if it exceeds 300% of their NAV. Substantially leveraged AIFs are subject to enhanced reporting requirements and the AIFMD Article 25 monitoring framework.¹⁹

¹⁸ UCITS use the VaR approach when (i) they engage in complex investment strategies that represent more than a negligible part of their investment policy, (ii) they have more than a negligible exposure to exotic derivatives, or (iii) the commitment approach does not adequately capture the market risk of the portfolio. See [CESR’s Guidelines on Risk Measurement and the Calculation of Global Exposure and Counterparty Risk for UCITS](#).

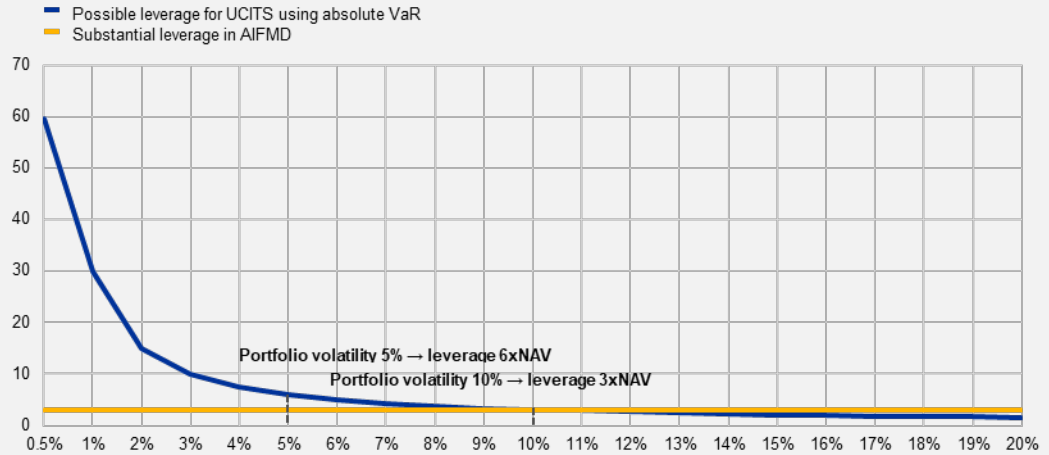
¹⁹ See ESMA (2020), “[Guidelines on Article 25 of Directive 2011/61/EU](#)”, December, and ESMA (2023), “[Assessing risks posed by leveraged AIFs in the EU](#),” January.



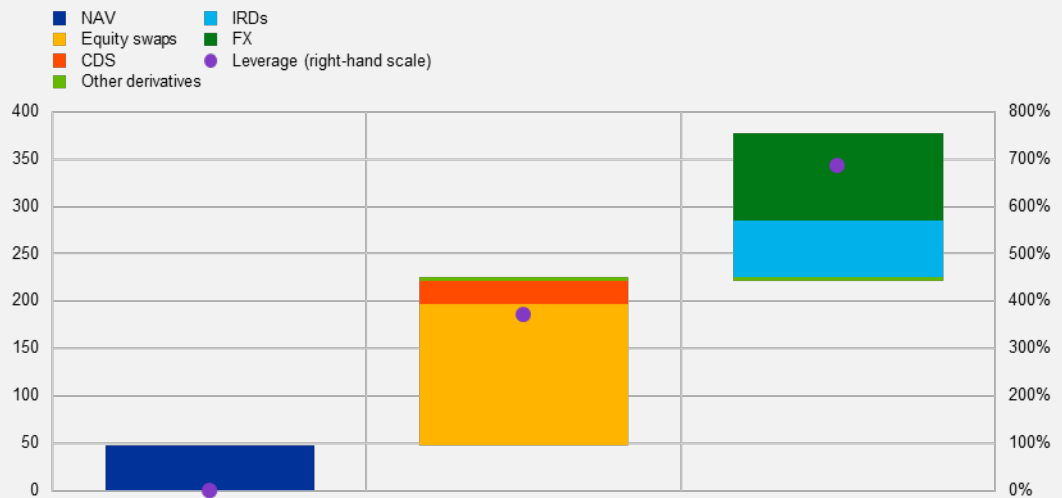
Chart A

Leverage for UCITS using complex investment strategies

a) Maximum leverage as a function of asset volatility (NAV multiple)



b) Net asset value, derivative exposures and gross leverage for a sample of UCITS funds (exposures in EUR billions and leverage as a % of NAV)



Sources: Lipper, EMIR and ESRB calculations.

Notes: In the illustrative analysis in panel a), the distribution of portfolio returns is modelled by a log-normal distribution. The VaR of the portfolio is calculated for a range of asset volatility parameters using Monte Carlo simulations to derive the implied leverage of the fund (e.g. the maximum leverage to reach the 20% VaR limit). If the volatility of the portfolio is 5%, the maximum leverage that a UCITS could use under the absolute VaR approach equals 600% of NAV. For a portfolio volatility of 10%, the maximum leverage would be 300% of NAV. In panel b), data for 39 alternative UCITS are shown. Funds using the absolute VaR approach account for at least 80% of exposures. Data on derivatives refer to notional exposures. Data as of the end of 2023.

Some UCITS using the VaR approach implement hedge fund-like strategies (long/short, absolute returns, etc.). According to commercial data, the NAV of such “alternative UCITS” amounted to



around €300 billion at the end of 2022, compared with €113 billion for AIF hedge funds for the same period.²⁰ Such funds are mainly domiciled in Luxembourg and Ireland.

In Luxembourg, where the national competent authority publishes data on the use of VaR, around one-third of VaR UCITS reported an expected leverage of at least 250%.²¹ The average realised leverage for UCITS using the absolute VaR approach has been around 200% of NAV since 2016, substantially higher than for other UCITS.²² The average realised leverage for UCITS hedge funds was above 300% of NAV. Some alternative UCITS indicate in their prospectuses expected leverage levels as high as 600% of NAV and up to a maximum of 1,900%, expressed as the sum of the notional values of the derivatives used (without considering any netting or hedging effects). Given the risks associated with leverage, further work is needed on the use of leverage by alternative UCITS.²³

Exposures within the NBFi sector remain high, with the potential to spread shocks. On the liability side, other non-bank financial institutions such as insurance companies and non-residents are the main investors in euro area investment funds despite some heterogeneity across countries (Chart 4, panel a). This implies that shocks affecting investment funds can be transmitted to other parts of the system, such as by transmitting portfolio losses or potential liquidity strains. In addition, a large part of the EU investment fund sector has a global dimension, with a sizeable market footprint, and a large portion of fund shares are held by non-EU investors (see special feature on the global dimension of MMFs in Section 2.3). Banks, on the other hand, played only a minor role as holders of investment fund shares, accounting for 1% of investors in MMFs and 2% in non-MMF investment funds. Portfolio overlap can be another source of interconnectedness and potential spillovers. Common holdings between investment funds, OFIs and other institutional investors can transmit shocks across the financial system and lead to indirect financial contagion. When debt portfolios are considered, investment funds and pension funds exhibit the largest overlaps (Chart 4, panel b). When focusing only on short-term debt portfolios, the degree of overlap is high for MMFs, and it is most pronounced when juxtaposed with NFCs. Linkages between sectors can also take the form of ownership ties, as most of the largest asset management companies operating in the EU are owned by banks (see special feature in Section 2.1).

²⁰ UCITS were identified by selecting funds classified as “alternative strategies” in commercial databases.

²¹ According to CSSF data, the NAV of absolute VaR UCITS amounted to €545 billion at the end of 2022. See CSSF (2022), “[UCITS Risk Reporting Dashboard December 2022](#)”.

²² The realised and the expected leverage measures include derivatives used for hedging. The realised leverage level is based on the sum of the notionals method as defined by the [CESR’s Guidelines on Risk Measurement and the Calculation of Global Exposure and Counterparty Risk for UCITS](#). Where several levels of leverage are disclosed in the prospectus (for example, an expected and a maximum or a range with a minimum and a maximum), the expected leverage is the highest number. In Luxembourg, UCITS using the VaR approach with material expected leverage are subject to dedicated reporting, monitoring and prudential supervision. See Section 3.2 in CSSF (2022), “[UCITS Risk Reporting Dashboard December 2022](#)”.

²³ On the link between leverage and investors flows for UCITS using the VaR approach, see Molestina Vivar et al. (2023), “[Burned by leverage? Flows and fragility in bond mutual funds](#)”, *Journal of Empirical Finance*, Vol. 72, pp. 354-380.

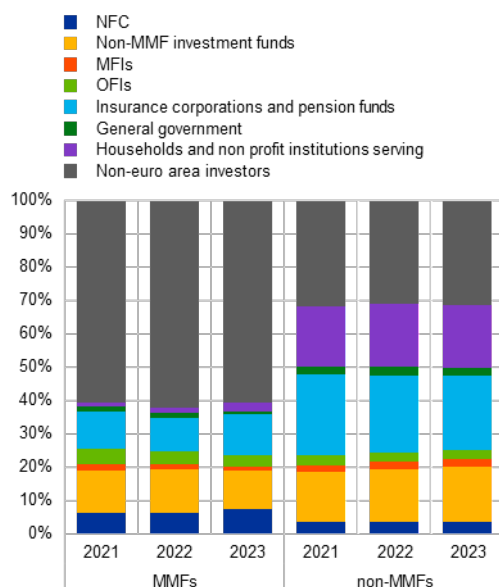


Chart 4

Exposures within the NBFi sector remain high

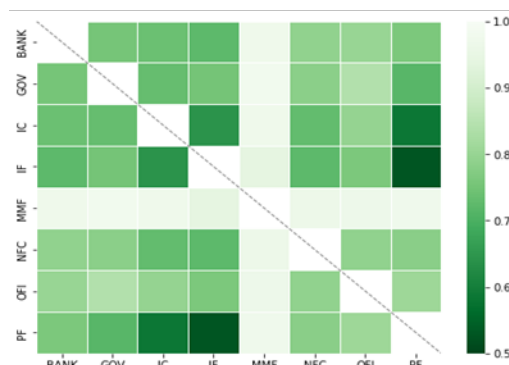
a) Investors in euro area investment funds

(percentages)



b) Overlap in debt instrument portfolios across euro area institutional sectors

(portfolio similarity indicator)



Sources: ECB and ESRB calculations.

Notes: In panel b), GOV stands for general government, IC for insurance companies, IF for investment funds, MMF for money market funds, NFC for non-financial corporations, OFI for other financial institutions and PF for pension funds. The portfolio similarity indicator compares the portfolio weights (at individual ISIN levels) between institutional sectors. The indicator equals zero if the compared portfolios are identical (similar exposures to individual ISINs) and one if there are no common elements in them. Shades within this range quantify the degree of similarity. The chart is symmetric. Only short and long debt instrument portfolios are considered. Data as of the fourth quarter of 2023.

Fund cross-exposures have risen in recent years, creating long intermediation chains and increasing complexity in the financial system.

Investment fund holdings of shares in other collective undertakings amounted to 19% of their total assets in 2023 (Chart 5, panel a). AIFs – for which cross-fund holdings played a more important role than for UCITS – were mostly exposed to collective investment undertakings other than MMFs and ETFs (Chart 5, panel b). A large proportion of such exposures were to funds managed by the same asset manager. In addition, a look-through analysis based on AIFMD data suggests that institutional investors in AIFs – including investment funds – have sizeable exposures to other collective investment undertakings via AIFs. Such interlinkages contribute to long intermediation chains that could increase financial fragility by transmitting losses and potentially amplifying fire sales. Since investment funds appear to be more prone to runs than any other type of investor²⁴, fund cross-exposures warrant further monitoring.

²⁴ See Allaire, N., Breckenfelder, J. and Hoerova, M. (2023), "Fund fragility: the role of investor base", Working Paper Series, No 2874, ECB; Fricke, D. and Wilke, H. (2023), "Connected funds", Review of Financial Studies, Vol. 36, Issue 11, pp. 4546-4587; Fricke, D., Jank, S. and Wilke, H. (2022), "Who creates and who bears flow externalities in mutual funds?", Discussion Papers, No 41, Deutsche Bundesbank.



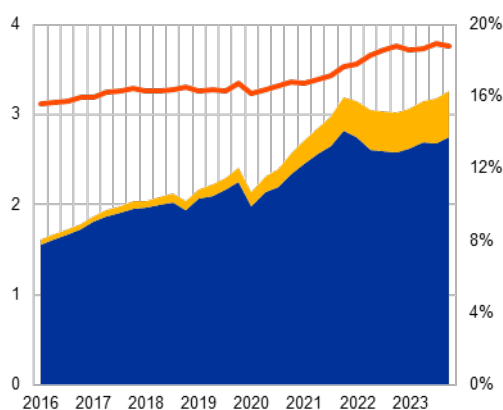
Chart 5

Fund cross-exposures have risen in recent years

a) EU investment funds: holdings of other CIUs and share of total assets

(EUR trillions and percentages)

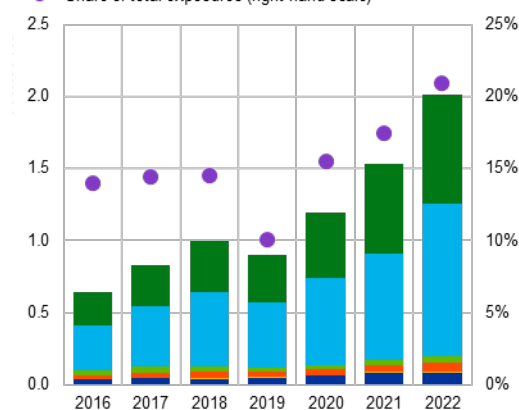
- CIU shares held by open-ended funds (left-hand scale)
- CIU shares held by closed-ended funds (left-hand scale)
- Share of total assets - all funds (right-hand scale)



b) EU – domiciled AIF gross exposures to CIUs and share of total exposures

(EUR trillions and percentages)

- ETF not operated/managed by the AIFM (left-hand scale)
- ETF operated/managed by the AIFM (left-hand scale)
- MMF not operated/managed by the AIFM (left-hand scale)
- MMF operated/managed by the AIFM (left-hand scale)
- Other CIU not operated/managed by the AIFM (left-hand scale)
- Other CIU operated/managed by the AIFM (left-hand scale)
- Share of total exposures (right-hand scale)



Sources: ECB IVF, AIFMD and ESRB calculations.

Notes: In panel a), CIU stands for collective investment undertakings. Data for the euro area, Czech Republic, Hungary, Poland and Romania. The latest observation is for the fourth quarter of 2023.

Direct and indirect linkages between investment funds, OFIs and the banking sector

remained stable in 2023. Wholesale funding provided by euro area investment funds and OFIs accounted for around 9% of total liabilities in the euro area banking sector (Chart A8). This funding increased by 7% in 2023, driven mainly by the rise in value of bank debt securities held by investment funds and MMFs, and reached almost €3 trillion at the end of 2023 (Chart A8). Deposits from investment funds and OFIs amounted to around 6% of bank liabilities (Chart A9, panel b). Those from investment funds accounted for 1% of overall bank liabilities, but in some countries this share was markedly higher. More material linkages could lead to potential spillover effects if investment funds were to withdraw deposits in times of stress and may require monitoring. While the role of euro area investment funds and OFIs in the provision of bank funding was rather moderate in 2023, their footprint in the market of debt instruments issued by euro area banks was larger – they held 14% of long-term debt and 57% of short-term debt issued by euro area banks (Chart 2). In addition, euro area investment funds and OFIs held 8% of the total value of euro area bank shares. Potential fire sales of instruments issued by banks could result in increased financing costs, difficulties in raising market funding or even liquidity strains. Bank exposures to investment funds and OFIs on the asset side remained fairly stable – loans issued to investment funds and OFIs combined with their equity and debt instruments held by banks stood at 7% of banks’ total assets (Chart A9, panel a). Indirect linkages between sectors may also take the form of ownership



ties, as most of the largest asset management companies operating in the EU are owned by banks (see Section 3.1 on the ownership of EU asset managers).

Similar risks related to liquidity transformation, leverage and interconnectedness are also present in the crypto-asset space. Some crypto intermediaries also engage in liquidity transformation, and stablecoins in particular promise a stable value to investors. For instance, large investor withdrawals could force stablecoin issuers to liquidate the reserves backing the coins. Such sales could test liquidity in markets for assets underlying the reserves of stablecoins. Shocks can spread through collateral chains, commingled accounts and cross-exposures between different crypto-asset intermediaries.

1.3 Engagement in certain risky activities

The monitoring framework considers how investment funds, OFIs and parts of the crypto ecosystem are involved in certain risky activities and how these activities might have an impact on financial stability. Tables 1 and 2 provide an overview of such risky activities carried out by the entities, crypto-assets and associated intermediaries considered in this report, including liquidity and maturity transformation, use of leverage and credit intermediation, along with their interconnectedness with the banking sector. The level of engagement in these activities does not necessarily translate to a measure of risk. The assessment of the level of engagement is informed by descriptive statistics and market intelligence but is ultimately judgement-based. It is reviewed and updated on an annual basis and incorporates improved data availability and regulatory developments. A more detailed analysis is presented in Sections 4 and 5, followed by activity-based monitoring, which is covered in Section 6.

There was no change in the assessment of investment funds and OFIs from 2022 to 2023.

Hedge funds and financial vehicle corporations (FVCs), as well as security and derivative dealers (SDDs), have a pronounced engagement in the risky activities considered in this report (Table 1). Bond funds, private debt funds and MMFs, as well as special-purpose entities (SPEs) and financial corporations engaged in lending (FCLs), have a medium engagement. The engagement of equity funds, mixed funds (investing in equities and bonds), private equity funds and ETFs is low on average.



Table 1

Mapping of activities to entity types – investment funds and OFIs

	Investment funds											OFIs				
	MMFs			Bond funds		Mixed funds	Equity funds	Hedge funds	RE funds	ETFs	PE funds ⁴	PD funds	FVCs	SPEs	SDDs	FCLs
	CNAV	VNAV	LVNAV	Corporate	Sovereign											
Market size																
EA AuM (EUR trillions)	0.2	0.6	0.8	3.5	3.5	5.3	0.4	1.0	1.7	0.7	n.a.	2.3	n.a.	n.a.	n.a.	
Annual growth (%)	19	-7	8	9	4.4	12.7	-8.5	-0.3	25.4	9	n.a.	3	n.a.	n.a.	n.a.	
Summary assessment																
Engagement	●	●	●	●	●	●	○	●	●	●	●	●	●	●	●	●
Risk transformation activities																
Credit intermediation	●	●	●	●	●	●	○	●	○	○	●	●	●	●	○	●
Maturity transformation	●	●	●	●	●	●	○	●	●	●	○	○	●	●	●	●
Liquidity transformation	●	●	●	●	●	●	○	●	●	○	○	○	●	●	●	●
Leverage ²	○	○	○	●	●	●	○	●	●	○	●	●	●	●	●	●
Market activities¹																
SFTs	●	●	●	●	●	●	●	●	○	●	○	○	○	○	○	○
Derivatives	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○
Reuse of collateral	●	●	●	●	●	●	●	●	●	○	○	○	○	○	○	○
Interconnectedness																
Interconnectedness ³	●	●	●	○	○	○	○	○	○	○	○	○	○	○	○	○

Source: ESRB.

Notes: The table summarises the assessment of engagement, where the colours of the circles reflect the intensity of the possible institutional engagement in the relevant areas of activity, according to the coding specified in the notes below. The colouring is judgement-based and informed by market intelligence and quantitative evidence. Owing to data limitations and a lack of consistent data, the assessment does not distinguish between consolidated and non-consolidated entities. The geographical coverage of the table refers to entities domiciled in the EU. MMFs stands for money market funds, CNAV for constant net asset value, VNAV for variable net asset value, LVNAV for low-volatility net asset value, FVCs for financial vehicle corporations (non-retained securitisations), SPEs for special-purpose entities, SDDs for security and derivative dealers and FCLs for financial corporations engaged in lending. Data on the size and annual growth of EU PD funds, SPEs and SDDs and FCLs are no longer available (n.a.).

- 1) Market activities through which risk transformation can be undertaken by investment funds and OFIs can take various forms. The list focuses on those market activities deemed to be most susceptible to risks.
 - 2) Leverage refers to financial leverage and not to leverage that is created synthetically through the use of derivatives.
 - 3) Direct and indirect interconnectedness with the banking system based on asset and liability data and staff assessment.
 - 4) While credit intermediation and leverage at the fund level may be low, private equity funds can facilitate credit and leverage in the financial system by engaging in leveraged buyout transactions.
- Colour coding: ●=pronounced engagement; ●=medium engagement; ●=low engagement; ○=unlikely or insignificant engagement

The assessment of crypto-assets and associated intermediaries highlights their engagement in liquidity transformation, leverage and reuse of collateral (Table 2). The



majority of stablecoins are pegged to fiat currencies and backed by fiat-denominated collateral. They share similarities with MMFs as they offer liquidity on demand while investing in short-term instruments with differing degrees of liquidity. Centralised finance covers crypto exchanges and other platforms which typically offer leverage through derivatives or margin lending and provide other types of investment or lending services that often involve collateral and subsequent collateral reuse (which are considered securities financing transaction (SFT) activities). Decentralised finance (DeFi) relies on autonomous protocols, where crypto-assets are locked in “liquidity pools” and are used to trade against, or are lent to, other entities via collateralised borrowing. The reuse of collateral is a key characteristic of DeFi due to its inherent composability (i.e. the capacity to combine several different protocols). For the three segments of the crypto-asset market covered here, interconnectedness within the crypto ecosystem is high whereas linkages with the traditional financial system are low at present.

Table 2
Mapping of activities to crypto-assets and associated intermediaries

	Stablecoins	CeFi	DeFi
Market size			
Global size (EUR billions)	118.5	150	50
Annual growth (%)	-9.1	+50	+25
Summary assessment			
Engagement	●	●	●
Risk transformation activities			
Credit intermediation	●	●	●
Maturity transformation	●	●	●
Liquidity transformation	●	●	●
Leverage	○	●	●
Market activities¹			
SFTs	○	●	●
Derivatives	○	●	●
Reuse of collateral	○	●	●
Interconnectedness			
Interconnectedness ²	●	●	○

Source: ESRB.

Notes: The table summarises the assessment of engagement, where the colours of the circles reflect the intensity of the possible institutional engagement in the relevant areas of activity, according to the coding specified in the notes below. The colouring is judgement-based and informed by market intelligence and quantitative evidence. Owing to data limitations and a lack of consistent data, the assessment does not distinguish between consolidated and non-consolidated entities. Due to data gaps, the geographical coverage of the table does not refer to the EU level but to the global level instead. Caveats on the availability and quality of data are important, particularly as the majority of data are gathered from commercial sources. Furthermore, there are concerns over the validity of market value figures and trading volumes. Data pertaining to size refer to the market value for stablecoins, the amounts of reserves on crypto exchanges (including assets under custody) for CeFi and total value locked for DeFi at the end of 2023.

1) Market activities through which risk transformation can be undertaken in the crypto-asset universe can take various forms. The list focuses on those market activities deemed to be most susceptible to risks.

2) Direct and indirect interconnectedness with the traditional financial system based on asset and liability data and staff assessment.

Colour coding: ●=pronounced engagement; ●=medium engagement; ●=low engagement; ○=unlikely or insignificant engagement



1.4 Recent developments in the EU policy framework

In 2023 there were several policy and regulatory developments related to the universe of entities covered in this report with potential implications for financial stability. This section provides a brief summary of some of the main developments, including regulatory reforms regarding investment funds and MMFs, crypto-assets and DeFi. It outlines also the initiatives undertaken at the global level (Box 6).

Work on amending the AIFMD and UCITS Directive continued in 2023. In July 2023 the European Parliament and the Council reached a provisional agreement on the review of the UCITS Directive and AIFMD²⁵, and in November the confirmation of the final compromise text with a view to agreement was published²⁶. Several amendments will enhance the regulatory and supervisory framework for investment funds from a financial stability perspective. These new provisions include, in particular, the increased availability and consistent use of LMTs by fund managers, which the ESRB had called for²⁷, the introduction of common rules on lending activities by AIFs and harmonised reporting requirements for UCITS funds.

The new set of rules makes a range of LMTs available for managers of open-ended funds (both UCITS and AIFs) across the EU, which could mitigate the impact of liquidity mismatches during stress periods. These tools include suspension of redemptions and subscriptions, redemption gates, extension of notice periods, redemption fees, swing pricing, dual pricing, antidilution levies, redemptions in kind and side pockets. Apart from having authority to suspend redemptions and activate side pockets in exceptional circumstances, fund managers – including MMF managers – will be required to have additional LMTs in place that are suited to their fund's investment strategy, liquidity profile and redemption policy. The European Securities and Markets Authority (ESMA) will develop draft regulatory technical standards and guidelines to ensure the coherent application of the LMTs. The revised directives also include additional conditions under which authorities could request asset managers to suspend redemptions: in the interest of investors, in exceptional circumstances, where there are reasonable and balanced investor protection or financial stability risks, and after consulting the manager.

The revised AIFMD establishes uniform regulations for loan-originating AIFs within the EU.

The rules aim to promote sector growth and investor protection but could also help to reduce associated vulnerabilities and potential risks to financial stability. To address the risk related to maturity and liquidity transformation, such AIFs will be required to adopt a closed-ended structure unless some specific requirements are met. To help mitigate the risk of interconnectedness, they

²⁵ See Directorate-General for Financial Stability, Financial Services and Capital Markets Union (2023), "**Commission welcomes political agreement on enhanced regulatory framework for investment funds**", news article, European Commission, 20 July; and Council of the EU (2023), "**Capital market union: provisional agreement reached on alternative investment fund managers directive and plain-vanilla EU investment funds**", press release, 20 July.

²⁶ See **Confirmation of the final compromise text with a view to agreement- Directive of the European Parliament and of the Council amending Directives 2011/61/EU and 2009/65/EC as regards delegation arrangements, liquidity risk management, supervisory reporting, provision of depositary and custody services and loan origination by alternative investment funds (AIFMD)**, November 2023, 2021/0376 (COD) and **Directive (EU) 2024/927 of the European Parliament and of the Council of 13 March 2024 amending Directives 2011/61/EU and 2009/65/EC as regards delegation arrangements, liquidity risk management, supervisory reporting, the provision of depositary and custody services and loan origination by alternative investment funds**.

²⁷ See the ESRB's letters to the co-legislators on this topic: "**Letter to the European Parliament on the AIFMD Review**", 23 March 2022; and "**Letter to the Council Working Party on the AIFMD Review**", 23 March 2022.



will be subject to exposure limits of 20% of capital when the borrower is a financial institution. Moreover, they will be bound by specific leverage constraints – fund exposure calculated according to the commitment method should not exceed 175% of NAV for open-ended AIFs and 300% of NAV for closed-ended AIFs. They will also be prohibited from originating loans with the objective of selling them as an investment strategy. With this in mind and to maintain the credit quality of loans, they will need to retain 5% of the notional value of each loan transferred to third parties. Additionally, loan-originating AIFs will be required to have effective policies, procedures and processes to assess credit risk and administer and monitor their credit portfolio.

The revised directives address data deficiencies in the investment fund sector and will allow for more comprehensive risk monitoring and analysis. To this end, a harmonised reporting obligation under the UCITS Directive will be introduced. ESMA will also be tasked with amending regulatory reporting templates for AIF managers. In addition, ESMA will draw up a report alongside other European Supervisory Authorities and the ECB with the aim of making the reporting framework for asset managers more efficient. The report will focus on reducing areas of duplication and inconsistency in reporting frameworks and on standardising and efficiently sharing and using data already reported at EU or national level.

In 2023 no review of the MMF Regulation was proposed, although the ESRB and ESMA had suggested reforms to strengthen their resilience, resulting in the uneven implementation of Financial Stability Board (FSB) policy proposals across jurisdictions.²⁸ In July 2023 the European Commission published a report on the functioning of the Money Market Fund Regulation (MMFR)²⁹. The Commission concluded that “the MMF Regulation has enhanced financial stability and overall successfully passed the test of the recent market stress episodes” and did not propose a revision of the legislation at this stage. By contrast, the United States has already introduced new requirements for MMFs, while the United Kingdom launched a consultation in December 2023; in both jurisdictions liquidity requirements for MMFs have been or are planned to be substantially increased³⁰ (see also special feature on the international dimension of the EU MMF industry). Nevertheless, the report of the European Commission identified several areas that should be further assessed with a view to strengthening MMF resilience, including decoupling the potential activation of LMTs from regulatory liquidity thresholds, which is similar to what the SEC has implemented and the United Kingdom is proposing. The FSB noted in its review of MMF reforms the uneven implementation across jurisdictions of its 2021 policy proposals.³¹

After the LDI stress event in 2022³², supervisory authorities in Ireland and Luxembourg worked on increasing LDI fund resilience. National competent authorities (NCAs) in Ireland and Luxembourg have subsequently requested LDI managers to maintain an appropriate level of

²⁸ See [Recommendation of the European Systemic Risk Board of 2 December 2021 on reform of money market funds \(ESRB/2021/9\)](#) and [ESMA opinion on the review of the Money Market Fund Regulation](#).

²⁹ See news article [“Commission adopts report on the functioning of the Money Market Funds Regulation \(MMF\)”](#) and [Report from the Commission to the European Parliament and the Council on the adequacy of Regulation \(EU\) 2017/1131 of the European Parliament and of the Council on money market funds from a prudential and economic point of view](#).

³⁰ For the United States, see SEC (2023) [“SEC Adopts Money Market Fund Reforms and Amendments to Form PF Reporting Requirements for Large Liquidity Fund Advisers”](#), press release, 12 July; for the United Kingdom, see FCA (2023), [“Updating the regime for Money Market Funds”](#), *Consultation Papers*, No 23/28, December.

³¹ See FSB (2024), [“Thematic Review on Money Market Funds Reforms”](#), Peer Review, 27 February.

³² See [NFI Monitor 2023](#).



resilience, including by having sufficient liquid assets to be able to endure a yield increase of 300 to 400 basis points before their NAV becomes negative.³³ This initiative was supported by ESMA.³⁴ In addition, the Financial Policy Committee (FPC) in the United Kingdom set out recommendations on steady-state minimum levels of resilience for LDI funds, including a yield buffer recommendation.³⁵ In November 2023 the Central Bank of Ireland and Commission de Surveillance du Secteur Financier published aligned consultations to codify and, in certain cases, augment the yield buffer under Article 25(3) of the AIFMD on LDI funds.³⁶ The consultation period ended in January 2024. Both NCAs published the final set of macroprudential measures applicable to GBP LDI funds in April 2024.³⁷

In September 2023 the European Commission adopted the draft technical standards to be used by credit institutions when reporting their exposures to “shadow banking entities”, as required by the Capital Requirements Regulation (CRR)³⁸. Regulatory technical standards have been developed by the European Banking Authority (EBA) and set out criteria for the identification of shadow banking entities, for the harmonisation and comparability of exposures reported by credit institutions. The standards will also provide additional information to supervisors to assess potential risks related to linkages between banks and certain non-banking financial intermediaries.

In the crypto space, the Markets in Crypto-Assets Regulation (MiCAR) entered into force in June 2023 but will not enter into application until June 2024 (for issuers of asset-referenced tokens (ARTs) and electronic money tokens (EMTs)) and December 2024 (for crypto-asset service providers (CASPs)).³⁹ MiCAR establishes uniform rules for the issuing, offering to the public and admission to trading of crypto-assets, and the provision of services in relation to crypto-assets. It will enhance safeguards for holders of crypto-assets and clients of CASPs, financial stability and the integrity of crypto-asset markets that are not currently regulated by existing EU financial services legislation. Requirements set out in MiCAR are complemented by an extensive set of Level 2 and Level 3 measures developed by the EBA (ARTs and EMTs) and ESMA (other MiCAR-scope crypto, and CASPs). The full MiCAR regime will not be applicable until July 2026 for jurisdictions that apply the transitional period provided by the text for CASPs. Also, while MiCAR represents a fundamental development in the regulation of crypto-assets in the EU, it does not cover the entire crypto market and will be thoroughly reviewed over time, as crypto markets continue to rapidly evolve. For example, MiCAR does not directly address the risks arising from DeFi or lending activities in relation to crypto-assets. The EBA and ESMA are required to prepare

³³ See [CSSF](#) and [Central Bank of Ireland](#) communications.

³⁴ See [ESMA](#) communications.

³⁵ See [FPC assessment of required resilience for systemic risk](#).

³⁶ See [CSSF](#) and [Central Bank of Ireland](#) consultations.

³⁷ See [CSSF](#) and [Central Bank of Ireland](#) communications.

³⁸ See [Regulation \(EU\) No 575/2013 of the European Parliament and of the Council of 26 June 2013 on prudential requirements for credit institutions and investment firms and amending Regulation \(EU\) No 648/2012](#); Directorate-General for Financial Stability, Financial Services and Capital Markets Union (2023), “[Commission adopts reporting rules on banks’ exposure to shadow banking](#)”, news article, European Commission, 6 September; EBA (2022), “[Draft Regulatory Technical Standards on criteria for the identification of shadow banking entities under Article 394\(4\) of Regulation \(EU\) No 575/2013](#)”, final report, May.

³⁹ See [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](#). The regulation includes a substantial number of Level 2 and Level 3 measures that must be developed before the entry into application of the new regime (within a 12-to-18-month deadline depending on the mandate).



thematic advice for the European Council on some of these points in the course of 2024.⁴⁰ In addition, under MiCAR, the EBA is entrusted with supervising significant ARTs and EMTs, as determined by the EBA based on the criteria specified in MiCAR. The EBA's supervision tasks apply from the end of 2024.

Box 6

The Financial Stability Board's work on non-bank financial intermediation, crypto-assets and decentralised finance

In 2023 the Financial Stability Board (FSB) published two progress reports related to non-bank financial intermediation (NBFi). The report published in January described the progress made on the implementation of the G20 Non-Bank Financial Intermediation Reforms⁴¹ in (i) mitigating spillovers between banks and the NBFi sector, (ii) reducing the susceptibility of MMFs to runs, (iii) aligning incentives associated with securitisation, (iv) dampening financial stability risks and pro-cyclical incentives associated with securities financing transactions, and (v) mitigating systemic risks posed by other non-bank entities and activities. The progress report published in September⁴² concluded that the resilience of NBFi depends on the availability of liquidity and its effective intermediation in times of stress. With this in mind, the report focused on two key amplifiers of liquidity stress and related policies being developed by the FSB: (i) structural liquidity mismatch in open-ended investment funds and (ii) margining practices.

In December 2023 the FSB published its revised policy recommendations to address structural vulnerabilities from liquidity mismatch in open-ended funds.⁴³ The recommendations set specific expectations regarding the redemption terms offered by open-ended funds, depending on the categorisation of their assets. While funds investing mainly in liquid assets can use daily dealing, funds investing a large proportion of assets in illiquid assets should redeem at lower frequencies and/or require long notice or settlement periods. For funds investing mainly in less liquid assets, offering daily dealing to fund investors without notice or settlement periods may remain appropriate, subject to the implementation of anti-dilution LMTs. To support the FSB recommendations, the International Organization of Securities Commissions (IOSCO) published its guidance on anti-dilution LMTs.⁴⁴ The guideline aims to promote greater use and greater consistency in the use of anti-dilution LMTs to mitigate material investor dilution and potential first-mover advantage.

The FSB finalised its global regulatory framework for crypto-asset activities to promote the comprehensiveness and international consistency of regulatory and supervisory approaches in July 2023.⁴⁵ The proposed framework consists of two sets of recommendations, namely (i) high-level

⁴⁰ See Articles 140 and 142 MiCAR.

⁴¹ See FSB (2023), "[Implementation of G20 Non-Bank Financial Intermediation Reforms Progress report](#)", January.

⁴² See FSB (2023), "[Enhancing the Resilience of Non-Bank Financial Intermediation Progress report](#)", September.

⁴³ See FSB (2023), "[Revised Policy Recommendations to Address Structural Vulnerabilities from Liquidity Mismatch in Open-Ended Funds](#)", December.

⁴⁴ See IOSCO (2023), "[Anti-dilution Liquidity Management Tools – Guidance for Effective Implementation of the Recommendations for Liquidity Risk Management for Collective Investment Schemes Final Report](#)", December.

⁴⁵ See FSB (2023), "[FSB Global Regulatory Framework for Crypto-Asset Activities](#)", July; FSB (2023), "[High-level Recommendations for the Regulation, Supervision and Oversight of Crypto-Asset Activities and Markets](#)", July; and FSB (2023), "[High-level Recommendations for the Regulation, Supervision and Oversight of Global Stablecoin Arrangements](#)", July.



recommendations for the regulation, supervision and oversight of crypto-asset activities and markets; and (ii) revised high-level recommendations for the regulation, supervision and oversight of “global stablecoin” arrangements. The recommendations do not comprehensively cover all specific risk categories related to crypto-asset activities but focus on addressing risks to financial stability. At the same time, they support responsible innovations that technological change might bring. Central bank digital currencies (CBDCs) are not subject to these recommendations. On a related topic, the FSB also published a report on multi-function crypto-asset intermediaries⁴⁶, noting that the risks they pose to global financial stability appear small at present but ultimately depend on how the crypto-asset sector develops and the effective implementation of relevant crypto-asset regulations globally.

IOSCO published two sets of policy recommendations for crypto and digital asset markets and decentralised finance (DeFi) in November and December 2023 respectively.⁴⁷ The recommendations are designed to support greater consistency with respect to regulatory frameworks and oversight in IOSCO member jurisdictions, in order to address concerns related to market integrity and investor protection arising from crypto-asset activities and DeFi.

The FSB also assessed the financial stability risks of DeFi.⁴⁸ It concluded that DeFi does not differ substantially from traditional finance in the functions it performs or the vulnerabilities to which it is exposed, such as operational fragilities, liquidity and maturity mismatches, leverage and interconnectedness. The extent to which these vulnerabilities can lead to financial stability concerns largely depends on the interlinkages and transmission channels between DeFi, traditional finance and the real economy. To date, these interlinkages are small. However, if the DeFi ecosystem were to grow considerably, then the scope for spillovers would increase.

⁴⁶ See FSB (2023), “**FSB assesses risks of multi-function crypto-asset intermediaries**”, press release, 28 November.

⁴⁷ IOSCO (2023), “**Policy Recommendations for Crypto and Digital Asset Markets**”, November.

⁴⁸ FSB (2023), “**The Financial Stability Risks of Decentralised Finance**”, February.



2 Special features

2.1 Asset manager ownership structure in the EU

This special feature looks into investment fund managers' affiliation with different financial institutions through ownership ties. The EU fund sector is characterised by a very high degree of asset manager ownership by banking or insurance groups compared with the United States, where most asset managers are independent. As such interlinkages may have financial stability implications, this special feature explores the ownership structure of the EU investment fund sector.

Implications for financial stability associated with ownership ties could manifest as external support or step-in risk. They could materialise if one of affiliated institution provides support to another beyond or in the absence of contractual obligations, such as if the latter experiences financial stress (e.g. large redemption pressures in investment funds). Direct support can consist of direct lending, investment in financial instruments issued by the entity needing support, the purchase of illiquid or distressed assets and the provision of guarantees. For instance, parent banks may buy shares (acting as an external “investor of last resort”) of their affiliated funds during periods of stress, attenuating investors' first-mover advantage. Conversely, investment funds may also support parent companies by increasing their holdings of instruments issued by the parent company in times of stress⁴⁹ or other instruments the parent company might want to dispose of.⁵⁰

Financial institutions may decide to provide such support to avoid reputational effects for the group. Reputational damage can occur if the group brand is associated with distressed or failing entities, with potential spillovers to the affiliated (initially stable) entities. Nevertheless, such support can put a strain on the balance sheet of the entity providing it.

Adverse shocks to parent companies can also spill over to the asset management side, regardless of direct portfolio exposures, when the affiliated bank faces stress⁵¹. Such dynamics were observed in funds managed by Credit Suisse in spring 2023, with outflows likely driven by investors concerned about the stability of the bank, even though fund assets are ring-fenced in the event of insolvency of the asset manager or the parent company (Chart 6, panel a). Another factor potentially contributing to outflows is the discretionary nature of the support – the uncertainty regarding both the availability and duration of the support can incentivise investor withdrawals.

Risks related to external support and step-in risks are addressed in regulatory frameworks for banks and MMFs. The Basel Committee on Banking Supervision adopted guidelines to enhance the framework for identifying and managing step-in risk and alleviate potential spillovers to

⁴⁹ Gil-Bazo, J., Hoffmann, P. and Mayordomo, S. (2019), “**Mutual funding**”, *The Review of Financial Studies*, Vol. 33, Issue 10, pp. 4883-4915; Golez, B. and Marin, J.M. (2015), “**Price support by bank-affiliated mutual funds**”, *Journal of Financial Economics*, Vol. 115, Issue 3, pp. 614–638.

⁵⁰ Bagattini, G., Fecht, F. and Weber, P. (2019), “**The fire-sale channels of universal banks in the European sovereign debt crisis**”, *Discussion Papers*, No 43, Deutsche Bundesbank.

⁵¹ Bagattini, G., Fecht, F. and Maddaloni, A. (2020), “**Liquidity support and distress resilience in bank-affiliated mutual funds**”, *Working Paper Series*, No 2799, ECB.



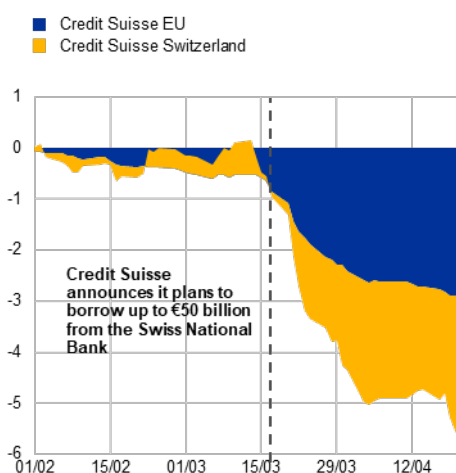
the banking sector.⁵² For MMFs, sponsors are prohibited from providing external support with the intent or effect of guaranteeing liquidity or stabilising the share price. This provision was introduced to avoid contagion effects between MMFs and bank sponsors, as seen in 2007-08⁵³. MMFs may still enter into transactions with affiliated or related parties provided certain conditions are met, such as if the transactions are not carried out at an inflated price where they are executed at arm's length conditions.⁵⁴

Chart 6

Most EU asset managers belong to banking groups, whereas most US asset managers are independent

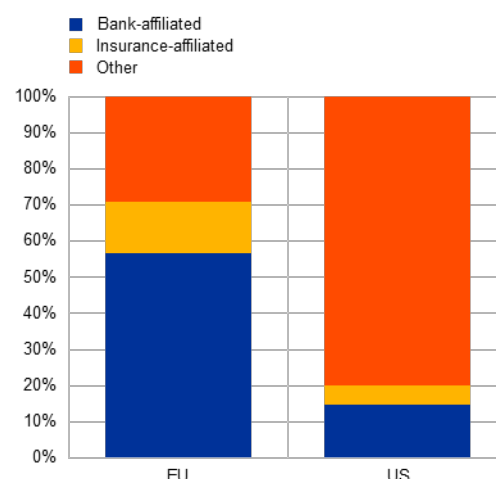
a) Cumulative flows in EU and Swiss funds managed or marketed by Credit Suisse

(percentage of assets)



b) Affiliation of the largest EU and US fund managers

(percentage of assets)



Sources: Morningstar, ESMA, Thomson Reuters Lipper, Orbis – Bureau van Dijk and ESRB calculations.

Notes: In panel b), data refer to the top 50 fund managers covering 72% of the aggregate fund value of EU-domiciled funds and the top 25 fund managers covering 85% of the aggregate fund value of United States-domiciled funds. Fund managers are classified as bank-affiliated or insurance-affiliated where the fund manager is a subsidiary of the bank/insurer (excluding cases where the bank/insurance activities are a subordinate business of the group or where the holding company also holds banks/insurers) or has a bank/insurer as a majority shareholder; the remaining fund managers are classified as others. Data as of the second quarter of 2023.

The EU asset management sector is mainly bank-affiliated, whereas in the United States independent firms dominate (Chart 6, panel b). Around 60% of EU fund assets are managed by bank-owned asset managers, although the largest EU asset manager is independent (i.e. has no affiliation with a bank or insurance company). Overall, independent fund managers that are not affiliated with banks or insurers are responsible for the management of 29% of aggregate fund

⁵² See BCBS (2017), "Identification and management of step-in risk", October.

⁵³ Bengtsson, E. (2013), "Shadow banking and financial stability: European money market funds in the global financial crisis", *Journal of International Money and Finance*, Vol. 32, pp. 579-594; McCabe, P. (2010), "The Cross Section of Money Market Fund Risks and Financial Crises", *Finance and Economics Discussion Series*, No 2010-51, Federal Reserve Board.

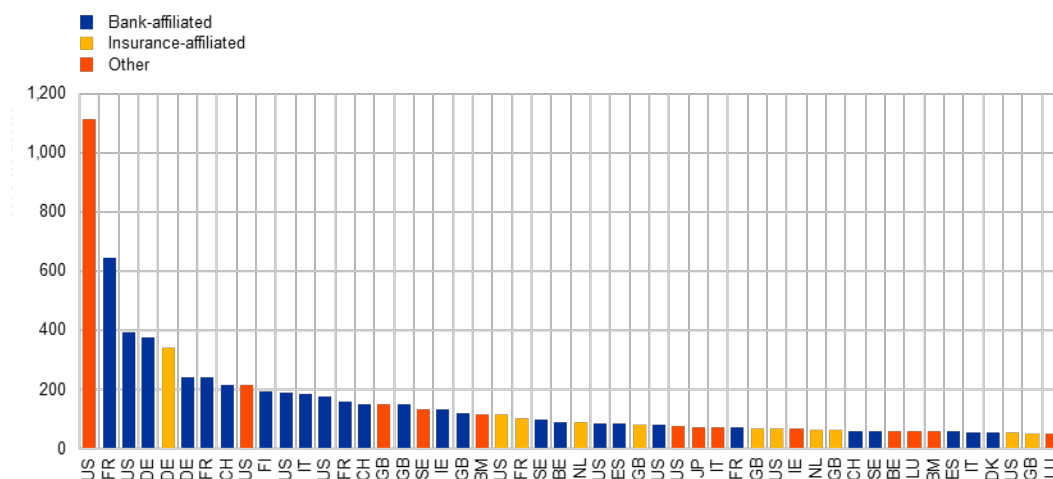
⁵⁴ See ESMA (2020), "Actions to mitigate the impact of COVID-19 on the EU financial markets – External support within the meaning of Article 35 of the MMF Regulation", public statement, 9 July.



assets, while the share of asset managers affiliated to an insurance company amounts to 14%⁵⁵. The large representation of the banking sector is in contrast with the structure in the United States, where most assets are managed by independent asset managers. Among the top 25 managers of United States-domiciled funds, those not affiliated with banks or insurers account for 80% of the NAV, while bank-affiliated and insurer-affiliated managers account for 15% and 5% respectively⁵⁶. In the EU, ownership linkages with banks are even more pronounced for EU-domiciled MMFs: among the largest 25 managers, 70% of fund assets are managed by bank-affiliated asset managers.⁵⁷ In addition, a large share of EU-domiciled investment funds are managed by non-EU-domiciled entities, reflecting the global nature of the investment fund industry, with US managers representing 33% of fund assets (Chart 7). Overall, the differences in distribution channels may play an important role in explaining differences between the EU and the United States. In the EU, funds are mainly marketed to investors through bank branches or through insurers via life insurance contracts. In the United States, funds are mostly sold through fund platforms with less reliance on banks or insurance companies.

Chart 7
Aggregate fund value of the top 50 asset management companies in the EU

(EUR billions)



Sources: Thomson Reuters Lipper, Orbis – Bureau van Dijk and ESRB calculations.
Notes: The top 50 fund managers cover 72% of the aggregate fund value of EU-domiciled funds. Fund managers are classified as bank-affiliated or insurance-affiliated when the fund manager is a subsidiary of the bank/insurer (excluding cases where the bank/insurance activities are a subordinate business of the group or where the holding company also holds banks/insurers) or has a bank/insurer as a majority shareholder; the remaining fund managers are classified as others. Data for fund manager parent companies as of the second quarter of 2023.

⁵⁵ The largest 50 managers of EU-domiciled investment funds manage €7.8 trillion in assets, which corresponds to 72% of the total sector. Analysis based on a larger sample of asset managers – the top 100 managing €9.2 trillion or 85% of the total – confirms strong linkages with the banking sector: bank-affiliated managers are responsible for the management of 55% of the fund assets, insurance-affiliated managers for 15% and independent managers for 30%.

⁵⁶ The largest 25 managers of United States-domiciled investment funds manage €25.1 trillion in assets, which corresponds to 85% of the total sector.

⁵⁷ MMF management is more concentrated towards the largest asset managers compared with other investment funds: the top 25 managers account for 92% of total MMF assets.

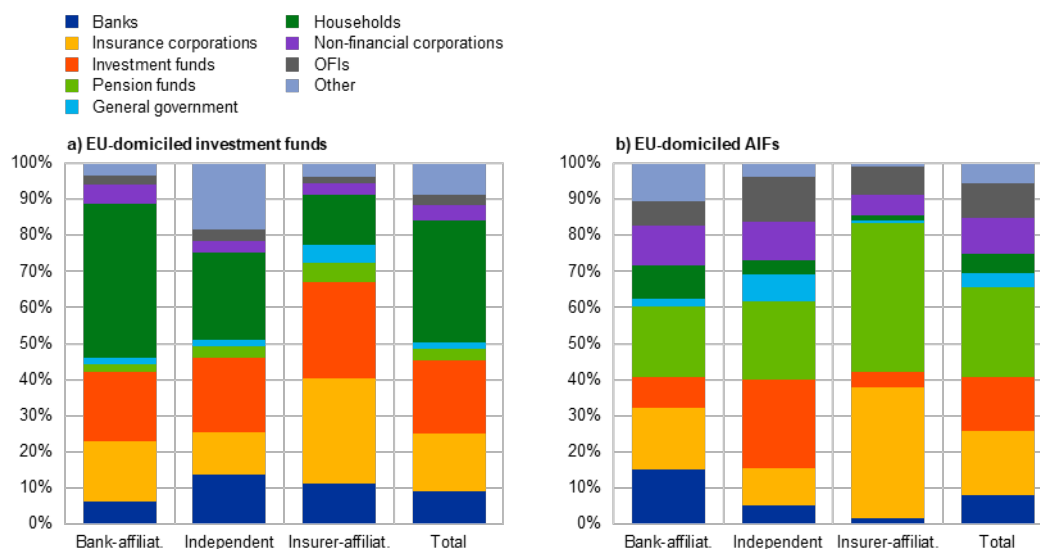


Manager affiliation can affect the funds' investor base and, in turn, influence who ultimately bears the risks to which the fund is exposed.

Insurance corporations tend to invest more in insurer-affiliated funds compared with independent or bank-affiliated ones (Chart 8). Insurers use funds as investment vehicles for several reasons, including efficient access to diversified portfolios, tax advantages and supervisory and accounting incentives.⁵⁸ Additionally, some of their holdings represent funds marketed through unit-linked life insurance, where the risk associated with fund investments is borne by policyholders. Similarly, pension funds tend to hold a larger proportion of AIFs with managers affiliated to insurers rather than other fund types. By contrast, there is no clear similar link between funds that have a bank-affiliated manager and banks as investors in funds. At the same time, funds with bank-affiliated managers display the highest share of households as investors, which could reflect banks' well-established distribution networks. In addition, among investors in independent AIFs (where managers are not affiliated with banks or insurers), other collective investment undertakings account for the largest share, pointing to relevant interlinkages within the investment fund sector.

Chart 8
Investor base distribution by manager affiliation

(percentages)



Sources: Thomson Reuters Lipper, Orbis – Bureau van Dijk, SHSS, AIFMD and ESRB calculations.

Notes: Calculations in panel a) are based on a sample of investment funds (both UCITS and AIFs), including ETFs with a NAV amounting to €7 trillion (47% of the fund sector's NAV); and in panel b) on a sample of AIFs with a NAV amounting to €5.8 trillion (87% of the NAV of EU-domiciled AIFs) for which information on manager affiliation was available. Funds' asset manager ownership type was retrieved from Orbis. Data as of the second quarter of 2023 (panel a) and the fourth quarter of 2022 (panel b).

Further analysis of the implications of the ownership structure of the EU asset management industry is warranted. Beyond the relationship between ownership and investor base, further analysis of potential direct linkages between affiliated fund managers and banks or insurers as

⁵⁸ See the special feature on interlinkages between AIFs and the insurance sector in the ESRB **EU Non-bank Financial Intermediation Risk Monitor 2022**.



counterparties to derivatives and securities financing transactions could be pursued. In addition, the use of “internal funds” – funds set up specifically to cater for funds within the same manager – could be further studied. Finally, the concentration within the fund management sector could also be researched, as the market footprint of some asset management companies could be substantial.

2.2 Financial stability risks related to private finance

This special feature discusses recent developments in private finance and their implications for financial stability, focusing on the EU perspective. Private finance can be broadly

understood as provision of debt and/or equity finance from non-banks rather than banks or public markets. It plays an important role in the economy by providing alternative or complementary financing to companies or investment projects with high financing needs that might not meet the criteria or “risk appetite” for financing from other sources. Such funding can be provided by or via (alternative) investment funds and encompass several asset classes: private equity, venture capital, private debt and real assets (including real estate, infrastructure and natural resources). These asset classes share several common characteristics: they can be considered illiquid, they lack a public market and they can pose challenges in valuation. Additional vulnerabilities can be related to high levels of leverage and might become more prominent in view of the current economic outlook. Given important links with other parts of the financial system and the real economy, these vulnerabilities need to be closely monitored. However, such monitoring is hampered because data are either lacking or not comparable. Transparency concerning private finance therefore needs to be enhanced.

2.2.1 Market overview

The rapid growth of private finance in the past few years has attracted the attention of regulators and policymakers.⁵⁹ Global AuM of private markets were estimated at €10.3 trillion at the end of 2022⁶⁰, with North America being the largest market for all asset classes. European AuM were estimated at €2.4 trillion and represented around 23% of the total (Chart 9, panel a). Private equity, led by buyout strategies, and private credit, led by direct lending strategies, were the largest components of European private finance (Chart 9, panel b). Both global and European AuM have increased more than threefold in the last ten years. This expansion can be attributed to favourable regulatory frameworks (also relative to tighter banking regulation introduced after the global financial crisis) and sustained institutional demand and the search for yield in a low interest rate environment.

⁵⁹ See, for instance, FSB (2023), “**Global Monitoring Report on Non-Bank Financial Intermediation**”; Banque de France (2023), “**Assessment of risks to the French financial system**”; IMF (2023), “**Nonbank Financial Intermediaries: Vulnerabilities amid Tighter Financial Conditions**”, Chapter 2, Global Financial Stability Report, April; Federal Reserve System (2023), “**Financial Stability Report**”, May; Bank of England (2023), “**Financial Stability Report**”, December; Bank of England (2024), “**Financial Policy Summary, 2024 Q1**”; and IMF (2024), “**The Rise and Risks of Private Credit**”, Chapter 2, Global Financial Stability Report, May.

⁶⁰ Discrepancies in data between publications may be attributed to the reliance on diverse commercial data providers. The lack of a precise, widely accepted definition of private finance and its components, as well as variations in methodologies, sources and data collection practices among these providers can contribute to disparities in reported information. For instance, **IOSCO** points to private market assets under management reaching USD 12.8 trillion in June 2022.



Chart 9

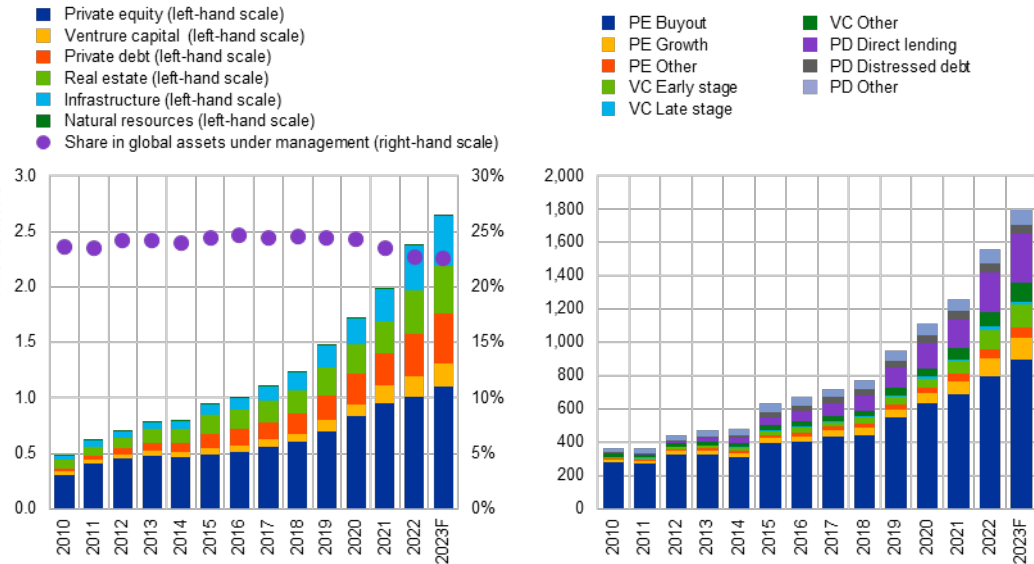
Rapid growth in private finance in the past few years

a) Europe-focused assets under management by asset type

b) Europe-focused assets under management in private equity, venture capital and private debt by sub-category

(EUR trillions)

(EUR billions)



Sources: Preqin and ESRB calculations.

Notes: Regional focus refers to the geographical focus of the investment vehicle. Forecast for 2023 assets under management. In panel b), PE stands for private equity, VC for venture capital and PD for private debt.

Institutional investors are typically the main investors in private assets. In 2022 direct exposures of EU-domiciled AIFs to private assets amounted to €2.4 trillion and were concentrated in unlisted equity and real estate (Chart 10, panel a). Investment funds (both UCITS and AIFs) can also be exposed to private finance indirectly through shares in other investment funds. Although an accurate approximation is hindered by data gaps, such holdings may be large. Exposures of EU ICPFs, including exposures via investment funds, were much smaller in nominal terms than those of AIFs (Chart 10, panel b). Nevertheless, they have been growing in relative terms and accounted for 13% and 19% of total exposures of ICPFs respectively.

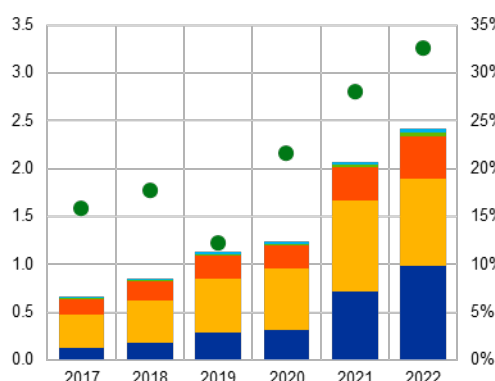


Chart 10

Growth in exposures to private finance of EU institutional investors

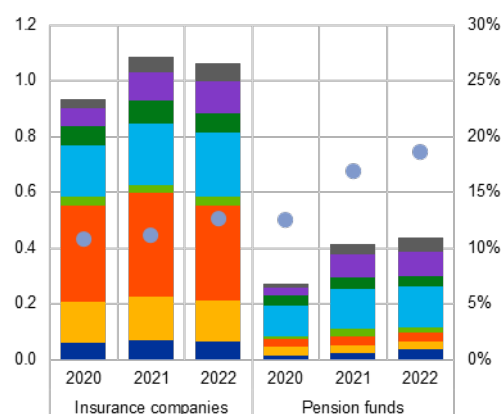
a) EU-domiciled alternative investment fund exposures to private assets

(EUR trillions)



b) EEA-domiciled insurance company and pension fund exposures to private assets

(EUR trillions)



Sources: AIFMD, EIOPA and ESRB calculations.

Notes: Long exposures for AIFs. Data on insurance companies and pension funds are based on balance sheet items and exposures.

Private equity: exposures to illiquid assets are mitigated by funds' closed-ended structure

EU-domiciled private equity AIFs are largely closed-ended and use little leverage, but typical risk indicators need to be interpreted with caution.

Net assets of EU-domiciled private equity AIFs have grown strongly in recent years and reached €950 billion in 2022. Funds domiciled in Luxembourg and France accounted for 85% of the total. Leverage at fund level was small on aggregate (Chart 11, panel a), but private equity AIFs do not report the leverage of the company they own, which can be large.⁶¹ Investments were concentrated in the European Economic Area (EEA), while unlisted equity and shares in other investment funds were the largest exposures (Chart 11, panel b). Only 3% of private equity funds were open-ended. Among them, the redemption frequency was typically monthly or quarterly (Chart 12, panel a). Other investment funds were the largest investors in EU-domiciled private equity funds (Chart 12, panel b). This contrasts with global developments, where long-term institutional investors like pension funds and

⁶¹ These exposures are not captured by the current reporting framework for AIFs, which exempts private equity funds from the look-through approach used for other AIFs. Analysis based on AIFMD and Orbis data covering a sample of 89 private equity AIFs and their portfolio companies shows that the median value for leverage at the portfolio company level, measured as total liabilities to equity capital, amounts to around 200%, with an interquartile range between approximately 130% and 350%.



insurance companies are the main investors in private equity funds globally. The large share of investment funds in the private equity AIF investor base shows large intersectoral interlinkages.⁶²

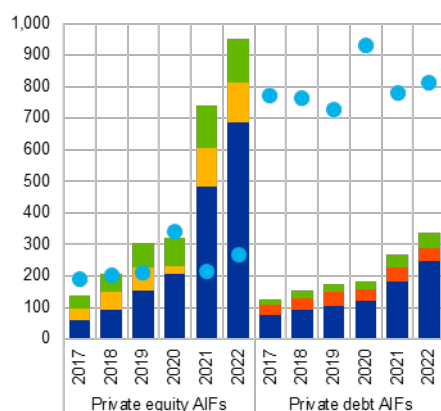
Chart 11

Private equity AIFs were mostly domiciled in Luxembourg, and private debt AIFs in Luxembourg and Ireland

a) EU-domiciled private equity and private debt AIFs: net asset value by country of domicile and leverage ratio

(EUR billions and percentages)

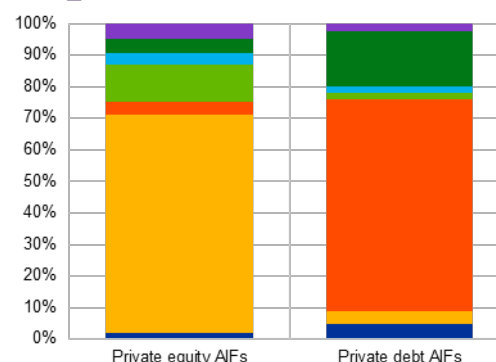
■ Luxembourg (left-hand scale)
 ■ France (left-hand scale)
 ■ Ireland (left-hand scale)
 ■ Other EU (left-hand scale)
 ● AUM/NAV (right-hand scale)



b) EU-domiciled AIFs with large loan exposures: gross exposures

(percentages)

■ Cash and cash equivalents
 ■ Unlisted equities
 ■ Loans
 ■ Investment fund shares
 ■ Non-IG corporate bonds
 ■ Derivatives
 ■ Other assets



Sources: AIFMD and ESRB calculations.

Notes: Data for EU-domiciled AIFs. AIFs with large loan exposures are calculated as AIFs where loans accounted for more than 50% of the fund's long exposures (AIFMD definition). In panel b), observations are for the end of 2022.

Private debt funds: strong growth and concentration in few countries

In recent years, net assets of private debt AIFs have grown more than twofold but remain smaller than private equity AIFs. Since private debt funds are not a defined category under the AIFMD, a sample of AIFs with large exposures to loans has been used as a proxy.⁶³ In 2022 the NAV of this proxy amounted to €337 billion and represented 5% of the total size of EU-domiciled

⁶² According to Invest Europe, in recent years, funds of funds (private equity funds that primarily take equity positions in other funds) were the second largest capital providers to private equity funds, after pension funds. In 2022 they provided 11% of new funds raised, compared with 15% in 2021.

⁶³ Analysis in the following paragraph is centred on those AIFs where loans accounted for more than 50% of the fund's long exposures. This approximation is based on the definition of "loan-originating AIF" provided in the recently reviewed AIFMD. According to the AIFMD, "loan-originating AIF" means an AIF (i) whose investment strategy is mainly to originate loans or (ii) where the notional value of the AIF's originated loans represents at least 50% of its net asset value. See **Confirmation of the final compromise text with a view to agreement**. A potential limitation associated with this approximation of private debt funds is the inability to distinguish between the activities of loan origination and loan participation in AIFMD data on exposures. Thus, both activities are considered together. Most of the AIFs in the sample reported an investment strategy categorised as "other" (79%), followed by "real estate" (10%).



AIFs.⁶⁴ Luxembourg and Ireland were the two main domiciles of such funds. The leverage ratio of private debt AIFs was higher than for private equity AIFs (Chart 11, panel a). Reflecting the construction of the sample, the main exposure of these AIFs was to loans (Chart 11, panel b). Compared with private equity funds, more of these private debt funds had an open-ended structure and allowed more frequent investor redemptions than private equity funds. For example, 58% allowed monthly or more frequent investor redemptions compared with 40% for private equity funds (Chart 12, panel a). These differences may reflect the fact that the former receive inflows of liquidity from repayment and amortisation of loans. The main investors in AIFs with large loan exposures were other collective investment undertakings, followed by insurance corporations, pension plans/funds and OFIs (Chart 12, panel b).

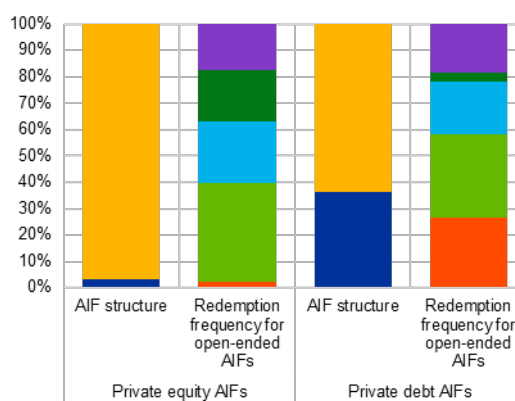
Chart 12

Private equity and private debt AIFs were mostly closed-ended and held by financial institutions

a) EU-domiciled private equity and private debt AIFs: fund structure and redemption frequency in open-ended funds

(percentages)

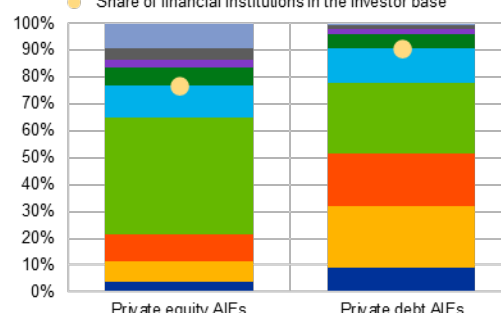
- Open-ended
- Closed-ended
- Less than monthly
- Monthly
- Quarterly
- Half-yearly and yearly
- Other



b) EU-domiciled private equity and private debt AIFs: investor structure

(percentages)

- Banks
- Insurance corporations
- Pension plans/funds
- Other collective investment undertakings
- Other financial institutions
- Non-financial corporations
- Households
- General government
- Other
- Share of financial institutions in the investor base



Sources: AIFMD and ESRB calculations.

Notes: Data for EU-domiciled AIFs. AIFs with large loan exposures are calculated as AIFs where loans accounted for more than 50% of the fund's long exposures (AIFMD definition). Data as of the end of 2022.

⁶⁴ According to the **KPMG/ALFI Private Debt Fund Survey (2023)**, Luxembourg's private debt fund assets under management grew from €268 billion in June 2022 to €404.4 billion in June 2023. This compares with €365 billion in assets under management for private debt funds domiciled in Luxembourg based on the proxy used in this report, which relies on AIFMD reporting data at the end of 2022.



2.2.2 Vulnerabilities in private finance

Although leverage may be small at the fund level, private finance strategies tend to use a large amount of debt along the financing chain. Leveraged buyouts (LBOs), where private equity funds use leverage in order to gain control of a company and maximise expected gains at the end of the investment, represented around 80% of private equity AuM in Europe in 2022. However, private equity funds do not directly hold the debt used in the LBO at the fund level. Instead, the funds hold a controlling stake in the holding structure that owes the debt. Funds use the target company profits to pay interest carried on this debt, transferring leverage risk to the company. Private debt funds specialise in lending to companies with high levels of leverage or credit risk, including to borrowers owned by private equity funds. The structure of the European leveraged loans market confirms high levels of debt, as most of the borrowers are private equity-sponsored (Chart 13). The lack of a look-through approach in the regulation of private equity funds complicates the assessment of leverage associated with private finance.⁶⁵

High leverage makes portfolio companies vulnerable to a deterioration in economic growth and to tighter financing conditions. Private finance strategies may be procyclical, with greater reliance on leverage and risk-taking in favourable times and vice versa in downturns.⁶⁶ In tighter financing conditions combined with a worsening economic outlook, lenders to portfolio companies, mainly banks via syndicated loans and private debt funds, are exposed to increasing credit risk. High levels of debt may increase over-indebtedness and fragility in the economy. As funds reduce their exits in the challenging market environment to limit unrealised capital losses⁶⁷, they may further increase leverage in the financing chain. Private equity funds could resort to NAV financing, i.e. loans whose collateral is the value of the funds' assets, to meet their investors' demand for outflows while postponing asset sales. It is difficult to assess the prevalence of such strategies in the EU due to large data gaps.

Valuation practices for private assets could contribute to unrealised or unexpected losses for investors. In contrast to public markets where continuous quotation and the publication of company fundamentals ensure transparency, investments in private assets require bespoke valuation. The choice of valuation method and retained assumptions remains at the asset manager's discretion.⁶⁸ At the same time, information asymmetries between fund managers and investors provide opportunities to employ aggressive accounting methods. In addition, low-frequency valuation can lead funds to report stable prices, contributing to valuation risk. In tight financing conditions, lags between valuation updates could result in delayed write-downs in the value of fund investments and the build-up of unrealised or unexpected losses for investors. These

⁶⁵ See Article 6.3 of [Com mission Delegated Regulation 231/2013 of 19 December 2012 supplementing Directive 2011/61/EU of the European Parliament and of the Council with regard to exemptions, general operating conditions, depositaries, leverage, transparency and supervision](#).

⁶⁶ See BIS (2021) "[The rise of private markets](#)", *Quarterly Review*, December; Morgan Stanley (2021), "[Market Timing in Private Investments](#)", January; Grillet Aubert, L. (2023), "[Private equity: overview and vulnerabilities](#)", AMF report, September; BIS (2023), "[Annual Economic Report](#)", June; and Cai, F. and Haque, S. (2024), "[Private Credit: Characteristics and Risks](#)", *FEDS Notes*, 23 February.

⁶⁷ In previous years private finance sector largely relied on secondaries, with sales to other private equity funds being the most common disinvestment strategy in EU private equity in the last five years. According to Invest Europe, such strategies represented 40% of total disinvestments in 2022.

⁶⁸ See also ESMA (2023), "[Final Report on the 2022 CSA on valuation](#)", May.



could generate spillover effects, for example if investors sell more liquid assets to compensate for the losses in private finance.

Participants in both public and private markets overlap, bridging banking and non-bank sectors. Banks play an intricate role in nearly all phases of an LBO and/or private credit transaction, primarily through the provision of leverage. Additionally, large institutional investors such as investment funds, pension funds and insurance companies are dominant investors in both private and public markets. Potential disruptions in private markets can spread to the banking sector and institutional investors, with potential ripple effects.

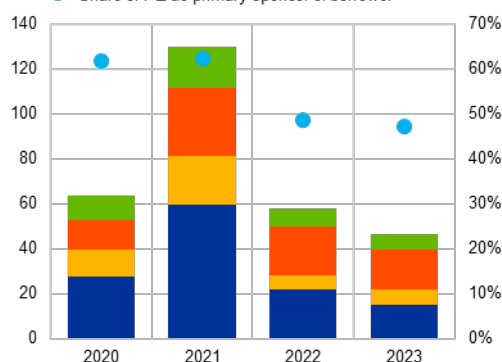
Chart 13

The structure of the leveraged loans market points to high levels of debt related to private equity

a) Annual deals in European leveraged loan market by borrower type

(EUR billions and percentages)

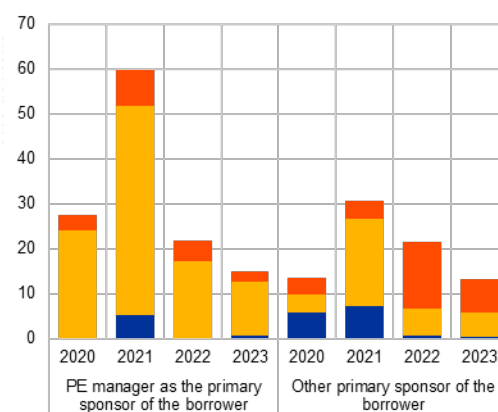
- EU PE manager as primary sponsor of borrower
- Non-EU PE manager as primary sponsor of borrower
- Other EU primary sponsor of borrower
- Other non-EU primary sponsor of borrower
- Share of PE as primary sponsor of borrower



b) Annual deals in European leveraged loan market by borrower type and rating

(EUR billions)

- BB+/-
- B +/-
- Below B and not rated



Sources: AIFMD, Pitchbook and ESRB calculations.

Notes: Data refer to leveraged loans syndicated in Europe. PE stands for private equity.

Liquidity mismatch does not appear concerning, as private equity and private debt funds are mainly closed-ended. For those with open-ended structures, the appropriate use of LMTs to align the liquidity profile of the underlying assets with redemption opportunities offered to investors (e.g. notice periods) could be another factor mitigating liquidity risk. Moreover, investors in private funds are mainly institutional investors, many of which have a long investment horizon. Nevertheless, liquidity risks cannot be downplayed completely, as funds may have difficulties in liquidating their assets when approaching the end of their lifespan and therefore postpone closures, locking



investors in for longer than anticipated.⁶⁹ Liquidity strains may also arise for leveraged funds if cash flows from fund assets do not match loan maturities and lead to rollover risk.

Dry powder, i.e. committed but not yet invested capital, can be used to manage liquidity needs in case of emergency. Stocks of dry powder make funds less dependent on new capital from investors as they can first run down these reserves. However, dry powder is also sometimes used as collateral for loans taken out by asset managers on behalf of private equity funds. In 2022 dry powder reached record highs in nominal terms, but it declined relative to AuM in relation to AuM compared with previous years, possibly reflecting elevated valuations eating into cash reserves.

The rise in private finance raises questions about the potential for macroprudential policy leakage. Potentially weaker borrowers and loan structures in private finance transactions (lower underwriting standards, weaker covenants and aggressive repayment assumptions) may foster the substitution of credit away from banks toward non-banks and increase financial fragility.⁷⁰ In addition, banks, potentially driven by softer regulation and the performance of the private finance sector, may be tempted to set up and finance private debt funds themselves, which could raise questions around regulatory arbitrage.

More transparency is needed to better understand how private finance could create and/or transmit risks to financial stability. Private finance does not seem to pose an immediate concern from a systemic risk perspective. Nevertheless, if the rapid growth in private finance observed in recent years were to continue, the sector could become systemically relevant. While facilitating diversification and risk-sharing across the financial system, it could also potentially contribute to over-indebtedness and financial imbalances. With this in mind, it is important to enable adequate information, including on the volume and quality of lending by non-banks, as well as more detailed data on interlinkages with the banking sector and institutional investors.

2.3 The international dimension of the EU money market fund industry

The EU is the second largest market for MMFs globally. The NAV of EU-domiciled MMFs amounted to €1.6 trillion as of 2023, making the EU the largest market globally after the United States (Chart 14, panel a). It is home to three of the top five jurisdictions in terms of MMF assets (France, Ireland and Luxembourg).⁷¹

The large share of MMFs denominated in non-EU currencies highlights the global dimension of EU-domiciled MMFs. Although EUR-denominated MMFs account for the single largest share of EU-domiciled MMF NAV by currency (42%), the majority of EU-domiciled MMFs are denominated

⁶⁹ See [AMF press release](#) from 23 February 2022.

⁷⁰ See also EBA (2022), "[Final Report on response to the non-bank lending request from the CfA on digital finance](#)", April.

⁷¹ Around 90% of EU MMFs are domiciled in three euro area countries (France, Ireland and Luxembourg), representing around 97% of EU MMF assets, hence euro area data are a good proxy for the EU MMF sector. The analysis draws upon a range of data sources encompassing various EU regions. This approach was adopted to ensure a comprehensive understanding of the EU market.



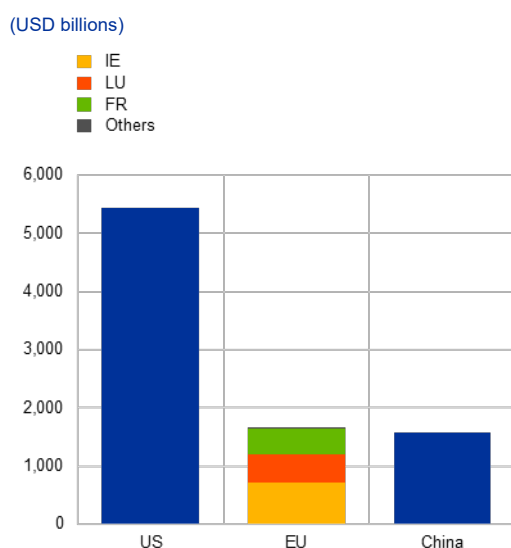
in other currencies. MMFs denominated in USD and GBP account for 37% and 20% of total NAV respectively, while other currencies play a minor role.

EU-domiciled MMFs are by far the largest segment of the global GBP-denominated MMF sector but account for a small share of the USD-denominated MMF sector. With an NAV of around GBP 280 billion in 2023, EU-domiciled GBP-denominated MMFs account for around 90% of the global GBP-denominated MMF sector, compared with GBP 27 billion for United Kingdom-domiciled MMFs⁷². By contrast, with an NAV of around USD 570 billion in 2023, EU-domiciled USD-denominated MMFs are estimated to account for around 10% of the USD-denominated MMF sector (Chart 14, panel b).

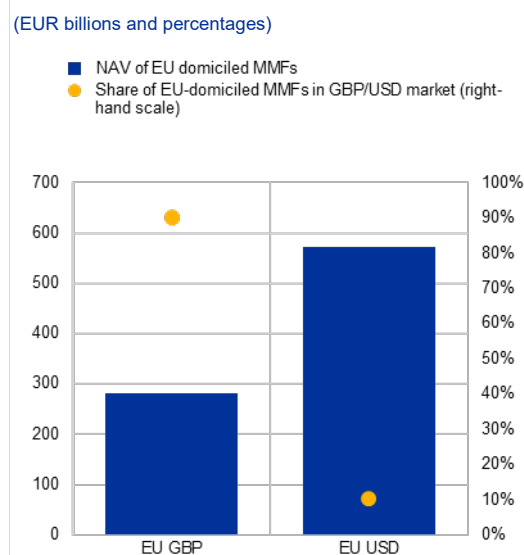
Chart 14

The EU-domiciled MMF sector is the second largest in the world with a large share denominated in currencies other than the euro

a) Net asset value of MMFs by fund domicile



b) Net asset value of EU-domiciled GBP- and USD-denominated MMFs as of the second quarter of 2023 and share of the global MMF sector



Sources: IIFA Worldwide regulated open-ended funds report for the second quarter of 2023, MMFR, Crane, Federal Reserve System and ESMA.

This special feature focuses on potential financial stability implications arising from the global dimension of EU MMFs. There are several aspects to the global dimension of EU-domiciled MMFs. First, they are held by investors outside of the EU. Second, they provide more funding to non-EU issuers and borrowers than EU entities. Third, they can have a large footprint in short-term funding markets outside of EUR, and in particular in GBP. This global dimension of EU-domiciled MMFs underscores the financial stability challenges related to (i) the different regulatory

⁷² These figures are estimates provided by the FCA; see FCA (2023), "Updating the regime for Money Market Funds", Consultation Papers, No 23/28, December.



reforms already finalised or being discussed outside of the EU, and (ii) options to provide support to MMFs and/or to the markets they operate in during times of stress.

2.3.1 The role of EU MMFs as liquidity management vehicles

Overall, investments by investors domiciled outside of the EU account for about half of the NAV of EU-domiciled MMFs. The share of foreign investors is even higher for EU-domiciled MMFs denominated in USD and GBP (78% and 93% respectively). This mainly reflects the fact that Ireland and Luxembourg, where many EU MMFs are domiciled, are two of the largest global asset management centres.⁷³ By contrast, French MMFs are mainly held by euro area investors and are exclusively denominated in EUR. At 27% (€445 billion), French investors account for the largest share of investors in EU-domiciled MMFs. This is closely followed by investors domiciled in the United Kingdom at 26% (€425 billion) and investors domiciled in the United States at 8% (€127 billion) (Chart 15).

Stress originating abroad can trigger redemptions from EU-domiciled MMFs, as seen in September 2022 in the gilt market. At the end of September 2022 UK gilt yields surged following the announcement of an expansionary budget by the UK Chancellor of the Exchequer, including through large, unfunded tax cuts. This surge caused acute liquidity stress for investors pursuing LDI strategies, including LDI funds denominated in GBP, which are mainly domiciled in the EU. As these investors faced liquidity strains, they redeemed from EU-domiciled GBP-denominated MMFs, resulting in further pressure on the MMFs and the short-term markets in which they invest.⁷⁴ This episode showed how shocks outside of the EU had a large impact on EU-domiciled funds (LDI funds and MMFs) even though their assets and liabilities are outside of the EU.

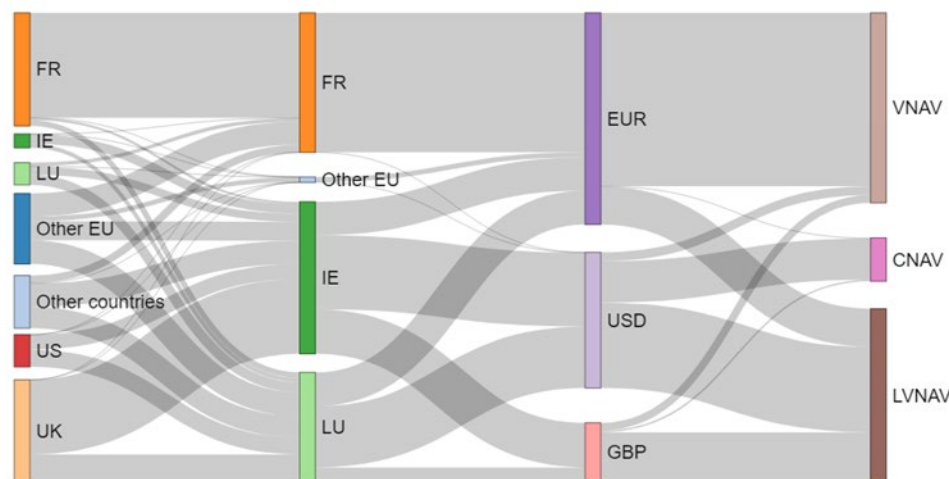
⁷³ For further information on the historical developments of MMFs in the EU, see Bouveret, A., Martin, A. and McCabe, P. (2022), "**Money Market Fund Vulnerabilities: A Global Perspective**", *Finance and Economics Discussion Series*, No 2022-012 Federal Reserve Board.

⁷⁴ For more information, see the special feature in the **2023 NBF I Monitor**.



Chart 15

MMF investors by country, region, currency and regulatory type



Sources: MMFR reporting and ESMA.

Notes: Data as of the end of 2023. The first column represents the domicile of MMF investors, the second columns represent the MMF domicile, the third column shows the MMF base currency, and the fourth column denotes the MMF type.

2.3.2 The key role of EU MMFs in short-term funding markets

EU-domiciled MMFs play a crucial role in providing short-term funding in different currencies to EU and non-EU entities as well as a key role in short-term funding markets more generally.

EU-domiciled MMFs provide funding in several currencies to EU issuers. EU-domiciled MMFs provide around €520 billion of funding in EUR to institutions domiciled in the euro area, along with around €230 billion in other currencies, mainly in USD and GBP (Chart 16, panel a). According to ECB data, short-term funding provided by EU-domiciled MMFs to euro area banks accounts for a small share of their funding in EUR and USD (8% of debt securities and 1% of deposits). However, almost 30% of GBP debt securities issued by euro area banks are held by EU MMFs (Chart 16, panel b), along with more than 5% of deposits (including repo). French banks receive the largest share of EUR funding from MMFs across EU countries, partially reflecting the important role played by French banks as issuers of short-term paper. In addition, among EU Member States that are not part of the euro area, Swedish banks are important recipients of funding from MMFs, mainly in USD.

EU MMFs provide more funding to non-euro area issuers, especially in USD and GBP, than to EU issuers. EU-domiciled MMFs provide around €820 billion to issuers outside of the euro area, mainly in USD and GBP. A large portion of USD funding goes to US and Canadian banks as well as Japanese and Australian banks, which tend to be large issuers in USD commercial paper (CP) and certificate of deposit (CD) markets.

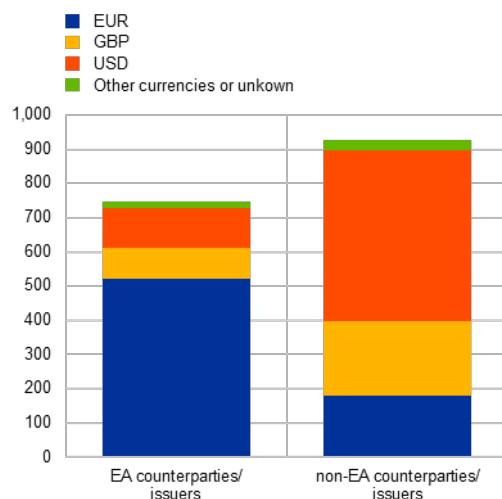


Chart 16

MMFs provide funding in multiple currencies to euro area and non-euro area entities

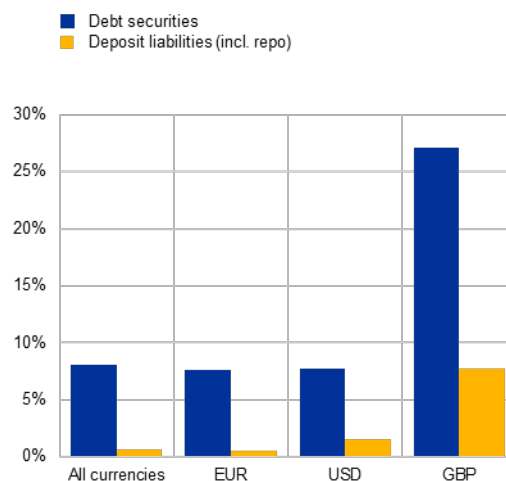
a) EU MMF assets split by currency and counterparty/issuer type

(EUR billions)



b) Share of EU MMFs in euro area bank funding in specific currencies

(percentages)



Sources: ECB BSI, ESMA and ESRB.

Notes: EA stands for euro area. In panel b), debt securities include both short-term and long-term instruments. Data as of the end of 2023.

EU-domiciled MMFs are key participants in unsecured short-term funding markets. They hold around 52% of short-term debt securities issued by euro area banks, 37% for euro area NFCs and 7% for euro area general government (Chart 2).

EU-domiciled GBP-denominated MMFs are particularly important for GBP short-term funding markets. First, they hold around 90% of GBP financial CP and CDs outstanding.⁷⁵ They also hold around 30% of debt securities issued in GBP by euro area banks, making them an important source of GBP funding. Regarding sovereign markets, the UK Financial Conduct Authority (FCA) estimates that EU-domiciled GBP-denominated MMFs hold 10 to 20% of UK Treasury bills outstanding.⁷⁶ Second, their deposits account for around 50% of the transaction volumes used to calculate the Sterling Overnight Index Average (SONIA), a key benchmark for GBP short-term funding markets and GBP interest rate derivatives (IRDs). EU-domiciled GBP-denominated MMFs are important lenders in the GBP repo market.

EU-domiciled USD-denominated MMFs also have a large footprint in USD short-term funding markets. Although they account for 10% of the USD-denominated MMF universe, they hold around 10 to 15% of USD unsecured short-term debt (CP and CDs) according to the FSB. Given low

⁷⁵ See FSB (2021), "Policy Proposals to Enhance Money Market Fund Resilience".

⁷⁶ See FCA (2023), "Updating the regime for Money Market Funds", Consultation Papers, No 23/28, December.



trading volumes on secondary markets, asset sales from EU-domiciled USD-denominated MMFs could negatively affect prices on those unsecured markets.

2.3.3 Challenges related to the global nature of the EU MMF industry

Regulatory reforms in the United States, United Kingdom and the EU are progressing at a different pace, reflecting distinct approaches in each jurisdiction (Table 3). In the United States, the SEC finalised rules in July 2023 covering a range of regulatory reforms for MMFs investing in private debt that are used by institutional investors (“institutional prime”).⁷⁷ Before the 2023 reforms, such funds were already required to maintain a floating NAV per share.⁷⁸ After the reforms, they will also be required to hold at least 25% of daily liquid assets (DLAs) and 50% of weekly liquid assets (WLAs), compared with 10% and 30% respectively prior to the reforms. Furthermore, the use of liquidity fees will no longer be linked to liquidity requirements. Instead, the use of liquidity fees by MMF managers will be required if daily net redemptions exceed 5% of net assets and liquidity in underlying short-term funding markets is costly. In addition, MMFs will not be permitted to impose temporary redemption gates, based on the SEC’s assessment that the potential triggering of such tools might exacerbate investor uncertainty and contribute to pre-emptive redemptions. In the United Kingdom, the FCA launched a consultation in December 2023 which to a large extent contemplates similar reforms for UK low-volatility net asset value (LVNAV) MMFs: an increase in DLA requirements from 10% to 15% and an increase in WLA requirements from 30% to 50%, as well as delinking the use of fees and gates from the breach of liquidity requirements. By contrast, the European Commission has not proposed a revision of the EU MMF Regulation.⁷⁹ It published a report⁸⁰ that identifies several areas which should be further assessed with a view to strengthening MMF resilience, including decoupling the potential activation of LMTs from regulatory liquidity thresholds. Once the revised AIFMD and UCITS Directive come into force, MMF managers will be required to select one appropriate LMT.

UK and US reforms will result in substantially higher liquidity requirements for MMFs compared with EU MMFs. Table 3 shows that for MMFs with a floating NAV (variable net asset value (VNAV) MMFs in the EU and United Kingdom, institutional prime MMFs in the United States), WLA requirements will be more than three times higher in the United Kingdom and the United States than in the EU (50% compared with 15%). Similarly, UK MMFs offering a stable NAV (LVNAV) and US MMFs offering a floating NAV will have weekly liquidity requirements 20 percentage points higher than EU LVNAV MMFs. Mismatch between the liquidity of assets –

⁷⁷ See SEC (2023), “**SEC Adopts Money Market Fund Reforms and Amendments to Form PF Reporting Requirements for Large Liquidity Fund Advisers**”, press release, 12 July.

⁷⁸ Reforms implemented in 2014 to reduce the probability of investor runs rendered institutional prime MMFs no longer able to use amortised cost to value their portfolio securities and employ pricing conventions allowing them to maintain a constant share price. Instead, institutional MMFs were mandated to maintain a floating NAV for sales and redemptions, determined by the current market value of the securities in their portfolios, rounded to the fourth decimal place.

⁷⁹ The ESRB issued a recommendation and ESMA issued an opinion to the European Commission containing proposed reforms of the EU MMF regulatory framework. See **Recommendation of the European Systemic Risk Board of 2 December 2021 on reform of money market funds (ESRB/2021/9)** and **ESMA opinion on the review of the Money Market Fund Regulation**.

⁸⁰ See **Report from the Commission to the European Parliament and the Council on the adequacy of Regulation (EU) 2017/1131 of the European Parliament and of the Council on money market funds from a prudential and economic point of view**, July 2023.



especially non-public debt holdings – and on-demand liquidity offered to investors remains a key vulnerability of MMFs. This vulnerability may be further amplified by a stable NAV (LVNAV) structure, as it can give rise to the first-mover advantage and incentivise pre-emptive runs in times of stress.

Table 3

Overview of regulatory reforms in the United Kingdom and United States compared with the EU

	EU (no reform)		UK (proposals)	US (finalised)
MMF type	VNAV	LVNAV	LVNAV and VNAV	Institutional prime MMFs
Liquidity requirements after reforms	7.5% DLAs 15% WLAs	10% DLAs 30% WLAs	15% DLAs 50% WLAs	25% DLAs 50% WLAs
Link between WLAs and fees and gates after reforms	No	Yes	No longer for LVNAV	No longer but mandatory liquidity fees when daily outflows>5%

Source: ESRB.

Notes: The table refers to requirements for EU and UK VNAV and LVNAV MMFs and to institutional prime MMFs in the United States. EU and UK VNAV MMFs and US institutional prime MMFs are required to employ a floating NAV, while EU and UK LVNAV MMFs are allowed to offer a stable NAV. While institutional prime MMFs in the United States differ from LVNAV MMFs in terms of fund structure, they exhibit similarities in terms of eligible assets and exposure to non-government assets, as well as having an investor base composed predominantly of institutional investors.

Given the global nature of the MMF industry, major differences in regulatory set-ups could trigger regulatory-driven cross-border flows.

EU-domiciled MMFs will be subject to lower liquidity requirements than those domiciled in the United States and – depending on actions taken by UK authorities following the FCA consultation – those domiciled in the United Kingdom. This could create regulatory arbitrage as investors might choose to invest in higher-yielding EU MMFs despite their potentially lower liquidity and resilience. Similar substitution was observed in 2016 after MMF regulatory reforms entered into force in the United States. As US institutional prime MMFs were forced to move from a stable to a floating NAV, EU USD MMFs offering a stable NAV recorded large inflows from investors outside the euro area, driven by the ability to offer a stable NAV to investors.⁸¹ These flows did not reverse following the entry into force of the EU MMF Regulation in 2018-19.

During stress periods, lower liquidity requirements for EU MMFs might make them more vulnerable to runs.

Different regulatory requirements between the EU, the United States and the United Kingdom could result in a fragmented global regulatory landscape with potential uncertainty during stress periods. Since almost all investors in EU-domiciled MMFs are institutional investors managing liquidity at a global level, different regulatory regimes might not be fully internalised by

⁸¹ See Fricke, D., Greppmair, S. and Paludkiewicz, K. (2024), “You can’t always get what you want (where you want it): Cross-border effects of the US money market fund reform”, *Journal of International Economics*, Vol. 147.



investors.⁸² In times of stress, investors might redeem from EU-domiciled MMFs and switch to non-EU-domiciled MMFs with higher liquidity requirements that do not link the breach of liquidity requirements to the use of fees and gates.

The lack of a level playing field could create a wedge between jurisdictions for MMFs in USD and GBP. If regulatory divergence persists, differences between EU and UK regulatory regimes might prevent MMF managers from marketing their funds to UK investors after the end of 2027.⁸³ EU-domiciled GBP-denominated and USD-denominated MMFs account for the largest part of the EU MMF sector (60% of NAV) and are mainly held by non-EU investors. A potential shift in the investor base towards MMFs domiciled in jurisdictions with tighter liquidity requirements could impede the ability of EU MMFs to provide funding in non-EUR currencies to euro area banks.

Designing a public backstop for EU MMFs in non-EU currencies is complex. During the COVID-19 pandemic, the Federal Reserve System and Bank of England implemented a range of support facilities. However, these facilities were only available to MMFs domiciled in the United States and United Kingdom respectively, implying that EU-domiciled GBP-denominated or USD-denominated MMFs could not access them. In the euro area, the ECB launched a purchase programme to counter the risks to the monetary policy transmission mechanism and the outlook for the euro area posed by the COVID-19 outbreak.⁸⁴ The programme only applied to instruments issued in EUR. For EU-domiciled GBP-denominated MMFs, these challenges are particularly relevant because they play a crucial role in GBP short-term funding markets. Reliance on public support in times of stress is suboptimal, as it gives rise to moral hazard. In addition, the intricacies associated with extending public support to different jurisdictions during periods of severe economic stress further underscores the need for robust prudential regulation. Strengthening the resilience of MMFs not only fortifies them against potential vulnerabilities but also minimises the need for central bank interventions in crisis situations, a prospect for which not all MMFs – given their global nature – may be eligible.

The global role played by the EU MMF sector and the ongoing regulatory reforms occurring outside of the EU call for a comprehensive assessment of the EU regulatory framework for MMFs. While major reforms are ongoing in the United Kingdom and the United States, the lack of reforms in the EU might create a gap between regulatory frameworks. Less stringent prudential regulation of EU-domiciled MMFs may affect financial stability, as funds may be more susceptible to transmitting shocks from one market to another. The global interconnectedness of MMFs could amplify the impact of financial crises and contribute to contagion. Discrepancies in the availability

⁸² In March 2020, for example, outflows from USD MMFs in the EU from non-EU investors were partly driven by concerns about the imposition of fees and gates as WLAs were close to 30%. While in the United States a breach of the 30% WLA requirement would require the MMF to consider fees and gates, in the EU a fund would need to breach the 30% WLA requirement and have daily outflows above 10% to consider fees and gates. For further information, see ESRB (2021), [“Issues note on systemic vulnerabilities of and preliminary policy considerations to reform money market funds”](#).

⁸³ In October 2023, the FPC noted that “As set out in the May 2022 discussion paper, UK authorities would need to be confident that MMFs that undertake liquidity transformation, primarily in sterling, face sufficiently robust regulatory requirements if they are to market to UK investors, and if risks to financial stability were to be addressed”. At the same time, it signalled that “For EU funds which are currently or were previously marketing under one of the Temporary Marketing Permissions Regime, there will be a transitional provision allowing them to continue to be established, managed or marketed in the UK until the end of 2027”. See Bank of England (2023), [“Financial Policy Summary and Record of the Financial Policy Committee meetings on 26 September and 5 October 2023”](#), October; and HM Treasury (2023), [“Money Market Funds Framework Policy Note”](#), December.

⁸⁴ See ECB (2020), [“ECB announces €750 billion Pandemic Emergency Purchase Programme \(PEPP\)”](#), press release 18 March.



and calibration of policy tools for MMFs as well as their potential for regulatory arbitrage and cross-border spillovers were also highlighted in the FSB's review of MMF reforms⁸⁵. Large cross-border funding and investment flows underscore the need for international cooperation in closing policy gaps to boost MMF resilience.

⁸⁵ See FSB (2024), "[Thematic Review on Money Market Funds Reforms](#)", Peer Review, 27 February.



3 Entity-based monitoring

The ESRB's entity-based monitoring covers investment funds, OFIs, crypto-assets and associated intermediaries. Thus, the monitoring universe for entity-based monitoring excludes, banks, ICPFs as well as CCPs with a banking licence. Section 1 considers current key risks for entities included in the monitoring universe. Tables 1 and 2 provide an overview of entities that are most relevant from a financial stability perspective and summarise their engagement in certain activities that pose, or potentially propagate, systemic risk. The subsequent sections explore this assessment in greater detail, focusing on how the key risks identified in Section 1 might affect, or be amplified by, certain entities included in the monitoring universe.

3.1 Investment funds

Main risks of investment funds

Credit risk	The credit quality of the investment fund bond portfolio has stabilised at low levels. The economic slowdown could result in credit losses for investors, triggering waves of redemptions and forced selling, which could weigh on other market participants.
Leverage	Some funds use derivatives to obtain synthetic leverage, amplifying market and liquidity risks.
Liquidity transformation	While cash buffers have increased, markets may be subject to bouts of illiquidity, rendering the quick disposal of assets to meet redemptions challenging.

Net assets of investment funds increased in 2023, mainly due to valuation effects and, to a lesser extent, inflows. Net assets rose by 3% and amounted to almost €16.7 trillion at the end of 2023 (Chart A10). Funds exposed to equities and mixed funds, after having increased in the first two quarters of 2023, started to decline. By contrast, assets of real estate investment funds and hedge funds stayed almost stable.

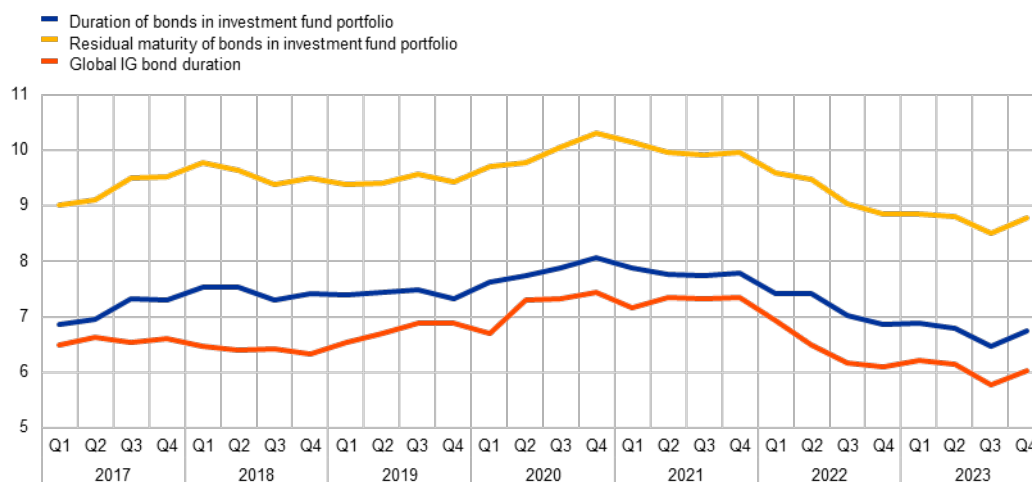
In 2023 risk metrics for investment funds declined or remained stable. Both liquidity and maturity transformation fell moderately overall (Chart A13). The credit quality of investment fund debt instrument holdings stabilised at relatively low levels, with bonds rated below BBB and not rated accounting for 50% of total holdings (Chart A17, panel a). The duration of bond holdings for investment funds further declined to around 6.7 years compared with eight years at the end of 2020 (Chart 17). This decline reflects a general reduction in the duration of outstanding bonds, as can be seen from the fall in the duration of global bond indices in a context of higher rates. By contrast, the average maturity for MMFs started to increase again, although it is still yet to reach pre-COVID-19 levels (Chart A19, panel a). Credit intermediation was almost stable during the period under analysis, while MMFs observed a slight decline in this period of high interest rates. At the same time, MMFs' holdings of assets issued by MFIs increased (Chart A16, panel b).



Chart 17

Duration and residual maturity of bonds held by euro area non-MMF investment funds and global index of investment-grade bond duration

(years)



Sources: SHSS, CSDB, Refinitiv Datastream, ESMA and ESRB calculations.

Notes: Duration and residual maturity are calculated for bonds held by euro area non-MMF investment funds. Duration and residual maturity are calculated as the weighted average, where the weight is the market value of the bond itself in the non-MMF investment fund portfolio. Extreme observations where duration was larger than residual maturity were removed from the sample.

The euro area sectoral composition of bond fund investor base has been stable over time. At the euro area level, institutional investors hold the majority of bond fund shares (Chart 18, panel a). Within these investors, investment funds, ICPFs represent an important share of bond fund investor base, illustrating the high interconnectedness between non-bank entities. Households also represent a sizeable share of bond fund investor base, with high cross-country heterogeneity.

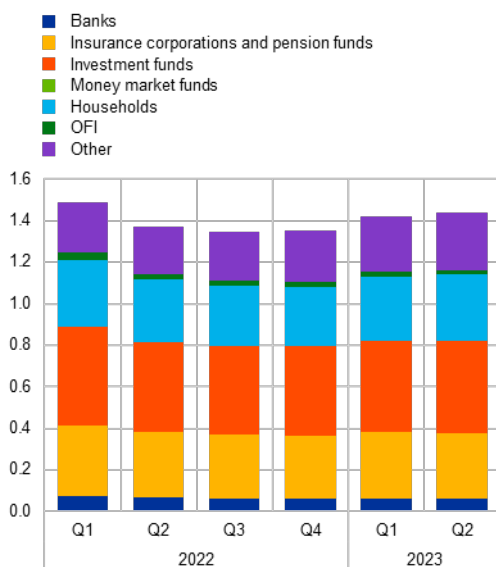


Chart 18

Sectoral investor base of bond fund shares in the euro area

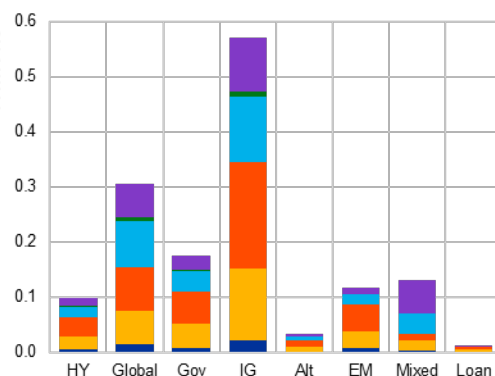
a) Sectoral breakdown of bond fund investors

(EUR trillions)



b) Sectoral investor base by underlying strategy

(EUR trillions)



Sources: SHSS and Lipper.

Notes: In panel a), the underlying data only include bond fund shares present both in Lipper and SHSS data. Only shares for which at least 50% of their investors are located in the euro area were included. In panel b), columns signal underlying strategy. HY stands for high-yield, Gov for government, IG for investment-grade, Alt for alternative and EM for emerging market. Observations are as of the second quarter of 2023.

The composition of the aggregate investor base masks certain heterogeneity depending on the bond funds’ underlying strategies (Chart 18, panel b). Within institutional investors, investment funds represent a sizeable share of investors in all bond fund strategies.⁸⁶ However, they tend to be relatively more present among high-yield and emerging market strategies compared with other investors. Conversely, ICPFs have a relatively larger footprint in less risky strategies such as global, government and investment-grade bond funds. Households are also represented to a greater extent in these strategies.

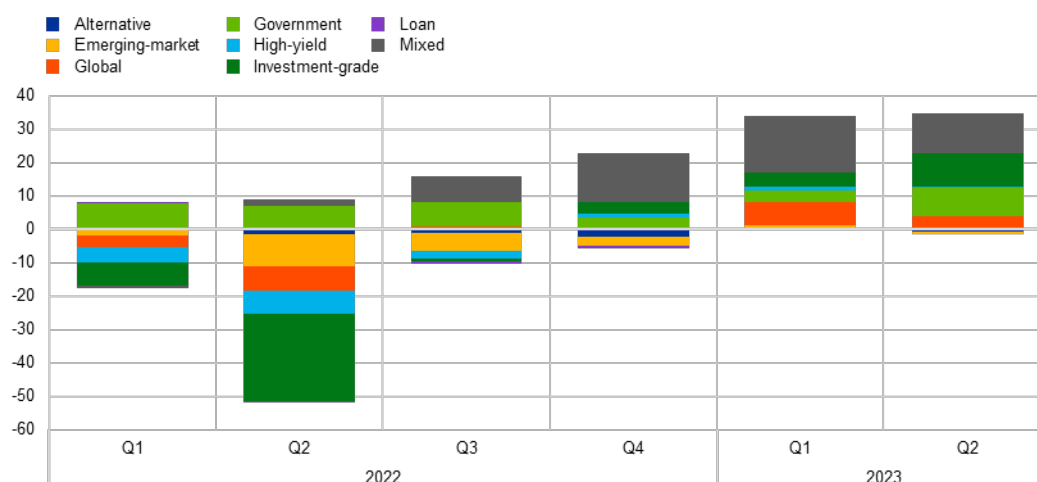
After strong outflows in 2022 in the context of tighter financial conditions, bond funds recorded net inflows in 2023 (Chart 19). Investment-grade, global and mixed strategies benefited the most from these inflows, after the significant decrease in assets in 2022. Riskier strategies (emerging markets and high-yield mandates) saw subdued inflows, which did not counterbalance the outflows observed in 2022, possibly suggesting some rebalancing of investors’ bond fund strategies.

⁸⁶ See also Fricke, D. and Wilke, H. (2023), “**Connected funds**,” Review of Financial Studies, Vol. 36, Issue 11, pp. pp. 4546-4587, on funds’ increasing presence among open-ended funds’ investor base and measurable contagion effects.



Chart 19
Flows by bond fund strategy

(EUR billions)



Sources: SHSS and Lipper.

Notes: The underlying data only include bond fund shares present both in Lipper and SHSS data. Only shares for which at least 50% of their investors are located in the euro area were included.

A growing literature has shown that not all investors act in the same way. While insurers are usually considered as “safe hands”⁸⁷, investment funds tend to trigger most of the outflows⁸⁸. These results did not apply during the second quarter of 2022, when bond funds faced the largest outflows, since the move was shared across all investor sectors within the euro area (Chart 20, panel a). However, within the set of euro area investors, other financial intermediaries redeemed more extensively than other sectors. Recently, in the second quarter of 2023, households and investment funds, often considered as return-oriented with short-term objectives, were responsible for most inflows, highlighting the potential speed in their selling/buying behaviour of shares compared with other investors (Chart 20, panel b).

⁸⁷ Coppola, A. (2022), “In Safe Hands: The Financial and Real Impact of Investor Composition Over the Credit Cycle”.

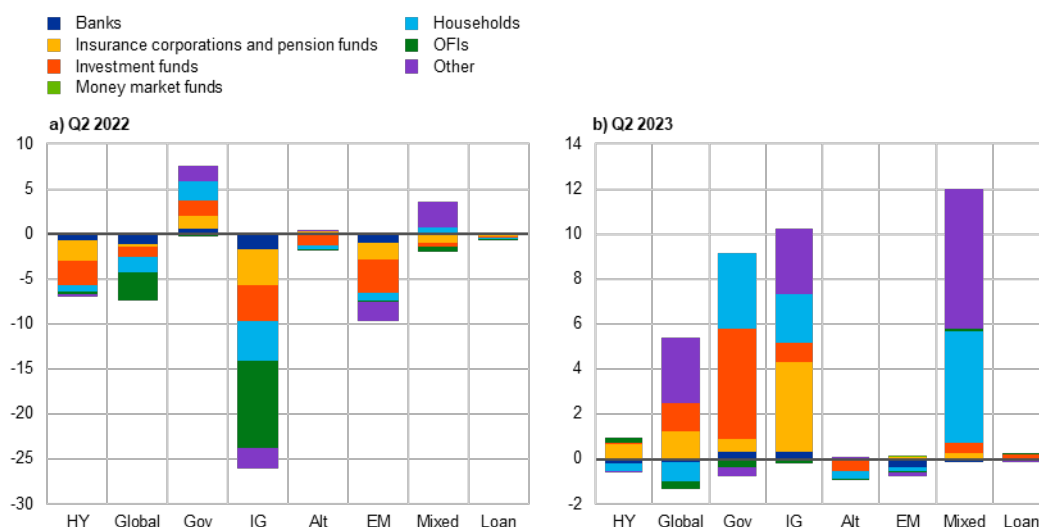
⁸⁸ Fricke, D., Jank, S. and Wilke, H. (2022), “Who creates and who bears flow externalities in mutual funds?”, *Working Papers*, No 41, Deutsche Bundesbank.



Chart 20

Flows decomposed by investor sector and strategy

(EUR billions)



Sources: SHSS and Lipper.

Notes: The underlying data only include bond fund shares present both in Lipper and SHSS data. Only shares for which at least 50% of their investors are located in the euro area were included. HY stands for high-yield, Gov for government, IG for investment-grade, Alt for alternative and EM for emerging-market.

Net transactions of longer-dated debt securities by euro area investment funds turned positive in 2023.

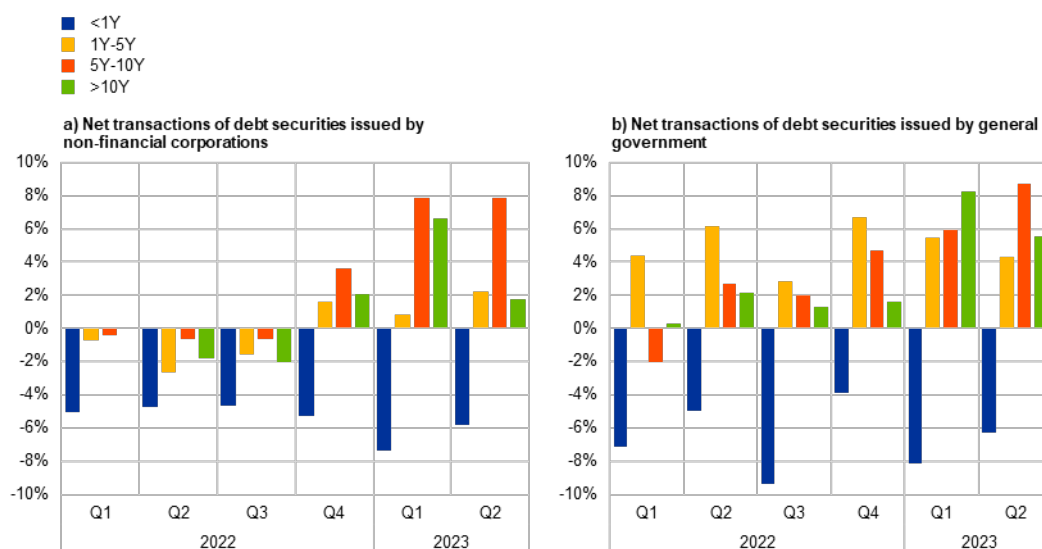
Starting in the fourth quarter of 2022, net transactions of bonds issued by NFCs with a remaining time to maturity of at least one year turned positive (Chart 21, panel a). These transactions, expressed as a percentage of the previous quarter's holdings, are largest for longer-dated bonds (with a remaining time to maturity of more than five years). A possible explanation is that by buying such longer-dated debt securities, euro area investment funds have locked in higher interest rates. A similar pattern is observed for sovereign debt, with net transactions of sovereign bonds with remaining maturities of more than five years picking up in 2023 (Chart 21, panel b). Net transactions of bonds with a remaining time to maturity of less than one year were negative in all quarters. This may be driven by the fact that bonds are typically dropped from popular benchmark indices once the remaining time to maturity falls below year. Investment funds that are evaluated against such indices may therefore face an incentive to sell these bonds once they are dropped from the benchmark index.



Chart 21

Net transactions of debt securities by euro area investment funds, split by time to maturity

(percentage)



Source: SHSS.

Notes: Net transactions expressed as a percentage of the previous quarter's holdings. Attention is restricted to investment funds domiciled in the euro area and to debt securities with an original time to maturity of at least one year.

Net sales of speculative-grade bonds by euro area investment funds slowed down as of the fourth quarter of 2022.

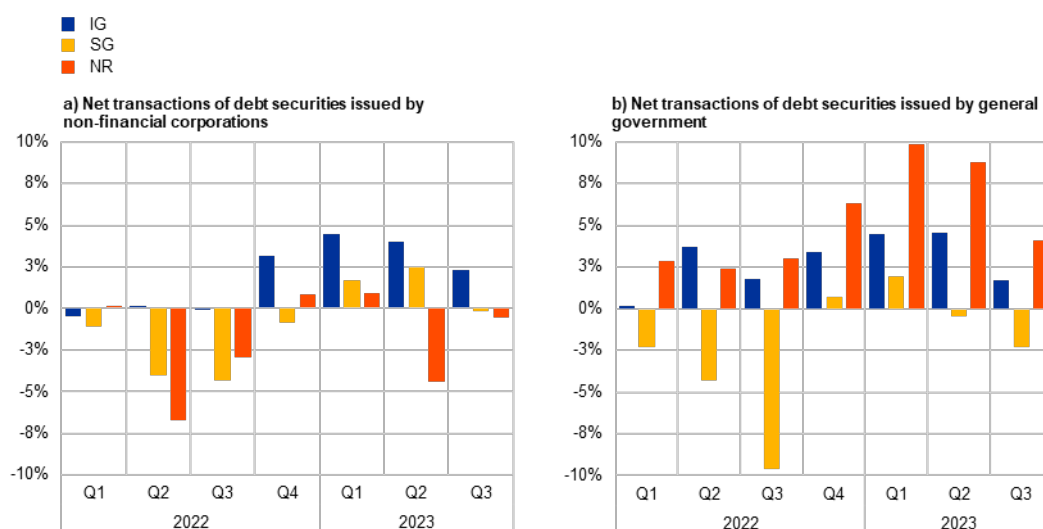
2022 was characterised by widespread selling of corporate bonds, most notably corporate bonds with a speculative grade rating or bonds without a credit rating. However, this trend reversed as of the fourth quarter of 2022, with positive net transactions throughout 2023. These positive net transactions were most pronounced for investment-grade corporate bonds (Chart 22, panel a). The pattern is somewhat different for sovereign bonds, as net transactions in 2022 were still positive except for sovereign bonds with a speculative grade rating. As of the fourth quarter of 2022, sales of speculative-grade sovereign bonds by euro area investment funds slowed down, with slightly positive net transactions in some quarters (Chart 22, panel b).



Chart 22

Net transactions of debt securities by euro area investment funds, split by rating grade

(percentages)



Source: SHSS.

Notes: Net transactions expressed as a percentage of the previous quarter's holdings. Attention is restricted to investment funds domiciled in the euro area and to debt securities with an original time to maturity of at least one year. IG includes rating grades equal to AAA, AA, A and BBB. SG includes rating grades <BBB. NR includes non-rated securities.

Vulnerabilities in the CRE market might negatively affect, or be affected by, real estate investment funds.⁸⁹

In recent quarters, net inflows to euro area real estate funds decreased compared with average volumes observed in previous years and turned negative in the third quarter of 2023 (Chart 23, panel a). As economic uncertainty and tighter financial conditions translate into a decline in transaction volumes and a challenging outlook for CRE markets, they could further deteriorate real estate fund valuations.⁹⁰ At the same time, structural vulnerabilities in real estate investment funds – arising mainly from liquidity mismatches and the use of leverage – may give rise to negative externalities and systemic implications across CRE markets at large.⁹¹

Liquidity mismatch remains a key vulnerability of (open-ended) real estate investment funds.

Real estate assets can be considered as inherently illiquid, often requiring several months for a transaction to be completed. At the same time – while there are important cross-country differences in terms of the structure of real estate funds – at the EU level a large share of funds have an open-ended structure, while the redemption terms and conditions as well as the availability and use of LMTs vary.⁹² In times of stress, when faced with large investor redemptions, open-

⁸⁹ See also ESRB (2023), “[Issues note on policy options to address risks in corporate debt and real estate investment funds from a financial stability perspective](#)”.

⁹⁰ See also ESMA (2024), “[EU Alternative Investment Funds Market Report 2023](#)”.

⁹¹ On risks related to real estate funds, see also ESMA (2024), “[Assessing the risks posed by leveraged AIFs in the EU](#)”.

⁹² According to the ECB’s IVF statistics, funds with an open-ended structure accounted for around 80% of all real estate funds. These data overestimate the share of open-ended funds for some jurisdictions. ESMA’s [EU Alternative Investment Funds 2022 Statistical Report](#) indicates that around 54% of real estate funds managed and/or marketed by EEA30 AIFMs were open-ended at the end of 2020. Similarly, 40% of real estate AIFs managed by Luxembourg AIFMs were open-ended at the end of 2022. For more details, see [CSSF AIFM Reporting Dashboard](#).



ended real estate funds might engage in procyclical selling, thereby negatively contributing to and in some cases exacerbating price movements in underlying markets. This could lead to spillover effects on OFIs that have exposures to the same or closely correlated assets, including banks, for example through the use of real estate as collateral for lending. Since EU real estate AIFs are predominantly exposed to EEA real estate, they have the potential to contribute to negative price dynamics in this market in particular. A further breakdown of AIF exposures (e.g. at country level) is not possible due to a lack of data granularity in AIFMD reporting, which impedes a more detailed analysis of cross-border linkages.

Real estate funds may not be substantially leveraged overall, but their use of financial leverage is the largest of all fund types. The use of leverage can increase selling pressure on funds following market declines, for example through deleveraging. Only a small share of EU-domiciled real estate AIFs use leverage on a substantial basis, i.e. above 300% of NAV under the commitment method. At the same time, real estate funds rely on borrowing, with loans to total liabilities amounting to 13% – the largest value for all investment fund types (Chart A14, panel a). In most jurisdictions, including the largest real estate AIF domiciles, funds rely on domestic intermediaries to facilitate borrowing.⁹³ Apart from direct borrowing, real estate funds can also use leverage indirectly through the use of special-purpose vehicles (SPVs). These exposures increase the overall level of leverage in the financing chain and should be captured by the current reporting framework for AIFs.⁹⁴

Financial institutions are the main investors in EU real estate AIFs, with potentially strong cross-border linkages. Banks, insurers, pension funds, other collective investment undertakings and OFIs account for approximately 70% of their investor base. While the large share of financial institutions in the investor base points to interconnectedness and the potential to spread shocks, it can also mitigate the risk of sudden redemptions for certain AIFs. For AIFs mostly held by investors with a long-term investment horizon, the risk of large, sudden redemptions may be lower, especially if they have a close business relationship with the fund managers (for instance, when the asset manager belongs to the same financial group as the investor or, in the case of funds, run for single institutional investors). Non-euro area investors may hold a sizeable portion of real estate AIF shares (Chart 23, panel b). At the end of 2022, investors from the euro area held approximately €370 billion in shares issued by real estate AIFs domiciled in the euro area. Most of this amount was held by domestic investors, i.e. investors from the same jurisdiction as the AIF domicile.

⁹³ ESMA TRV Risk Analysis (2023), “**Real estate markets – Risk exposures in EU securities markets and investment funds**”, January.

⁹⁴ See Article 6.3 of **Commission Delegated Regulation 231/2013 of 19 December 2012 supplementing Directive 2011/61/EU of the European Parliament and of the Council with regard to exemptions, general operating conditions, depositaries, leverage, transparency and supervision.**

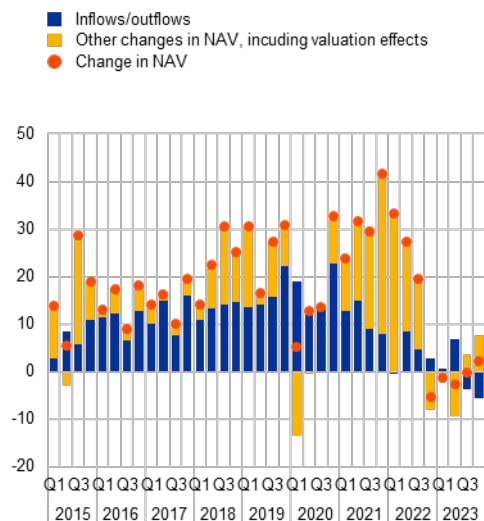


Chart 23

Vulnerabilities in the CRE market affect real estate fund valuations and investor flows

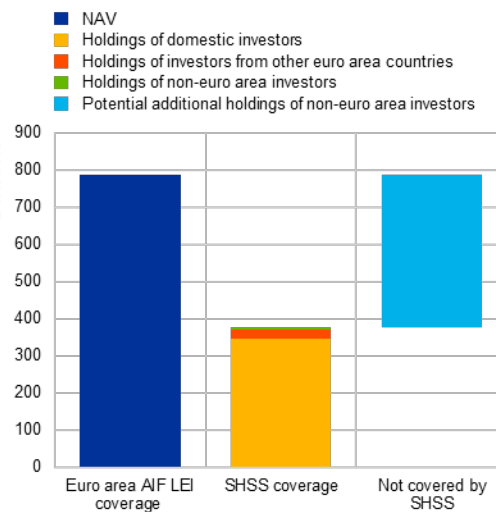
a) *Decomposition of changes in euro area real estate net asset value*

(EUR billions)



b) *Geographical distribution of investors in EU-domiciled real estate AIFs*

(EUR billions)



Sources: ECB IVF, AIFMD and ESRB calculations.

Notes: In panel b), calculations are only for AIFs with LEIs. Data as of the end of 2022.

Real estate funds (whether single funds or groups of funds) which combine several vulnerabilities – a large market share, large liquidity mismatch and high leverage – should be duly monitored. Such a combination may be particularly concerning in the current economic environment, with tighter financial conditions and rising borrowing costs as well as subdued transaction volumes in the CRE market. For instance, should the CRE market continue to deteriorate, certain funds could find that the debt they have raised in the fund for a property purchase cannot be serviced by net rental income. The resulting adjustment (“right-sizing”) could lead to forced sales, pressure on valuations and further pressure on CRE prices. To allow for a more comprehensive risk assessment, including potential cross-border spillovers, more effort is needed to address remaining data gaps.⁹⁵

⁹⁵ See ESRB **Recommendation on closing real estate data gaps** (ESRB/2016/14) as amended by Recommendation ESRB/2019/3.



3.2 Other financial institutions

Main risks of other financial institutions

Data gaps	There is little information available to monitor vulnerabilities in some other financial intermediaries, captive financial institutions and money lenders.
Interconnectedness	Financial vehicle corporations engaged in securitisation have strong linkages with the banking sector. Security and derivative dealers are connected to a wide variety of market participants in their role as liquidity providers.
Liquidity/maturity transformation	Security and derivative dealers may rely on short-term funding to provide market-making services and conduct proprietary trading. Financial corporations engaged in lending rely on short-term loans and deposits in order to fund long-term loans.

The OFI sector includes a wide variety of entities, which may contribute to systemic risk in various ways. OFIs are financial institutions that are not monetary financial institutions, investment funds, insurance corporations or pension funds. The OFI sector is composed of three subsectors based on their main activities and business models (Annexes I and II): (i) other financial intermediaries, (ii) financial auxiliaries and (iii) CFIs and money lenders. Other financial intermediaries include, among others, FVCs engaged in securitisation transactions, SDDs and FCLs. The interconnectedness and the liquidity/maturity transformation inherent in intermediation activities undertaken by other financial intermediaries make them particularly relevant to financial stability.

The size of the OFI sector increased slightly in 2023 (Chart A7). OFIs' assets in the EU amounted to €24.8 trillion as of the end of 2023 (73% held by CFIs and money lenders, 6% by financial auxiliaries and 21% by other financial intermediaries). Assets of euro area FVCs, as well as risk indicators, remained relatively stable (Chart A25, panel a, and Chart A26, panel b). Securitised loans continued to be the main component of FVC portfolios.

Further work on identifying and addressing data gaps is fundamental to disentangle the potential risks and complexities of OFIs. As of October 2022 the three OFI subsectors can be distinguished in the quarterly financial accounts published by the ECB. However, within other financial intermediaries, primary statistics are now only available for FVCs at the euro area level, as the collection of data for FCLs has been discontinued. Large data gaps remain for other entities, including CFIs – the largest component of the OFI sector – preventing comprehensive risk monitoring. While some progress has been made through recent initiatives at the EU level, there are still difficulties in identifying CFIs, as no harmonised approach exists.⁹⁶ Hence, the relative importance of the wide variety of entities belonging to this subsector remains unknown. A clear assessment of the risks borne, propagated or possibly generated by CFIs is currently not possible,

⁹⁶ A survey conducted by the ECB found that most CFIs can be categorised as holding companies of larger groups or as SPEs. Nevertheless, there is a need for additional identification criteria, possibly including a materiality threshold, to identify these entities. However, before new criteria can be introduced, they should also be assessed from the viewpoint of data availability and some initial cost-benefit considerations.



although in some jurisdictions CFIs have important interlinkages with investment funds, especially for real estate and private equity funds⁹⁷.

Due to their strong linkages with financial institutions, OFIs can spread risk throughout the financial system. SDDs may rely on banks as a funding source, especially when they are consolidated into banking groups. The consolidated banking group is usually required to hold capital, including against the risks associated with the group's SDDs. This incentivises banks to exert a degree of control over the risks borne by SDDs, which implies that risks stemming from SDDs that have such interlinkages with the banking sector are lower. FVCs are interconnected with banks which use securitisations by FVCs to offload assets and their related risks from their balance sheets onto investors in FVC securities. Nevertheless, banks retain some of the risk due to risk retention rules and may also hold FVC securities in excess of the mandated quantity.⁹⁸ In addition, banks may face potential "step-in" risk if they sponsor an FVC and decide to provide support during times of stress. Linkages between CFIs and the banking system appear to be low. CFIs can still form part of complex financial intermediation chains, however, where they may engage in securities financing transactions or maintain high levels of leverage through the use of derivatives.

Tighter financial conditions could affect OFIs engaged in credit intermediation. Higher financing costs for businesses, elevated credit risk and potentially reduced demand for funding might put a strain on certain OFIs, including FCLs, FVCs and leasing or factoring companies. Those providing funding based on floating rates could be more sensitive to the current financial conditions. For some OFIs, vulnerabilities related to tighter financial conditions might interact with their interlinkages with real estate markets. Developments in those markets may be of concern for FVCs, as residential mortgage-backed securities (RMBSs) dominate the EU securitisation market⁹⁹, as well as other non-banks providing funding to SMEs engaged in construction and other real estate activities.¹⁰⁰

In certain circumstances, OFIs may amplify liquidity strains. SDDs are active in derivatives and repo markets and engage in market making while also relying on short-term funding. In a stressed environment, the willingness or capacity of SDDs to intermediate may be reduced and could affect systemic liquidity risk.¹⁰¹ Market participants may then experience difficulties in obtaining secured funding. In addition, the market liquidity of securities may decline substantially. Following regulatory changes, certain EU SDDs have recently been classified as systemic investment firms (SIFs) and are now subject to the same prudential requirements as credit

⁹⁷ See di Filippo, G. and Pierret, F. (2022), "A Typology of Captive Financial Institutions in Luxembourg: Lessons from a New Database", *Working Papers*, No 157, Banque centrale du Luxembourg; and di Filippo, G. (2023), "Alternative Distributions of Foreign Direct Investment Stocks: Evidence from Captive Financial Institutions affiliated to Private Equity and Real Estate Investment Funds in Luxembourg", *Working Papers*, No 169, Banque centrale du Luxembourg.

⁹⁸ See Regulation (EU) 2017/2402 of the European Parliament and of the Council of 12 December 2017 laying down a general framework for securitisation and creating a specific framework for simple, transparent and standardised securitisation, and amending Directives 2009/65/EC, 2009/138/EC and 2011/61/EU and Regulations (EC) No 1060/2009 and (EU) No 648/2012.

⁹⁹ See ESRB (2022), "Monitoring systemic risks in the EU securitisation market", July.

¹⁰⁰ See CBI (2023), "Non-bank lenders to SMEs as a source of financial stability risk – a balance sheet assessment", December.

¹⁰¹ See FSB (2020), "Holistic Review of the March Market Turmoil", November.



institutions.¹⁰² Continued monitoring of the sector remains important, as the recent changes in EU regulation may result in changes to business models, total assets held and risks borne by SDDs.

Regulation for OFIs varies across Member States. For instance, there is some prudential regulation in place to address liquidity and leverage risk in FCLs, but the features of such regimes vary. In some countries the assets of FCLs are partly consolidated into banking groups and therefore fall within the banking regulatory perimeter, while in other jurisdictions FCLs are not subject to any prudential requirements. There are no current legal initiatives to create a harmonised regulatory framework for these entities at European level.

¹⁰² In June 2021 the new Investment Firm Regulation (IFR) and Investment Firm Directive (IFD) and amendments to the Capital Requirements Regulation (CRR) entered into force. This new framework governs the prudential requirements of investment firms and their prudential supervision. See ECB (2021), "**ECB takes over supervision of systemic investment firms**", press release, 25 June.



4 Crypto-assets, centralised finance and decentralised finance

Main risks of crypto-assets, centralised finance and decentralised finance

Leverage	Excessive leverage multiples offered to retail investors on crypto exchanges or DeFi protocols through margin lending and derivatives are common in crypto.
Market risk	Leverage coupled with crypto-assets' speculative nature, i.e. lack of underlying cash flows or claims on tangible assets, cause and amplify boom and bust cycles.
Liquidity risk	Several crypto business models rely on maturity and liquidity transformations but do not have appropriate safeguards in place and are thus vulnerable to "runs".
Credit risk	Predominantly stemming from opaque business structures and unsustainable business models that have frequently resulted in defaults.
Operational risk	Immature technology, combined with a lack of mandatory standards and regulatory surveillance of crypto businesses, allow for unintentional failures and malevolent misconduct.
Interconnectedness	Very high interconnectedness within the crypto ecosystem, but small linkages with traditional markets, mainly through reserve holding of money market instruments by stablecoins. Adoption of crypto ETPs might increase the links between crypto and traditional finance.

The crypto-asset market showed strong growth in 2023.¹⁰³ The outstanding value (market value) doubled from around €800 billion in January to €1,600 billion in December (Chart 24, panel a). However, currently the total system's size represents only slightly more than half of its historical peak value of €2,600 billion in November 2021. Despite a rebound in the fourth quarter of 2023, crypto-asset trading volumes remained below historical levels (Chart 24, panel b), indicating reduced market liquidity and potential price rises on the back of relatively small volumes.

Stablecoins do not pose a meaningful risk to financial stability at this point, due to their small size, but require close monitoring. After an extended period of capital outflows lasting from May 2022 to July 2023, the overall market value of stablecoins settled at around €120 billion in the second half of the year (Chart 25, panel a). Most stablecoins claim to be reserve-backed and are pegged to the US dollar, while euro-pegged stablecoins continue to remain negligible. In December 2023 stablecoins represented around 8% of the total crypto-asset market value – down from 17% a year earlier. Close monitoring of stablecoins is warranted, as they may come to pose systemic risks

¹⁰³ Data on the crypto ecosystem that are provided in the report should be interpreted with caution, as they are gathered for the most part from commercial sources. In addition, estimates are available only at the global level, and not at EU level, due to data gaps.

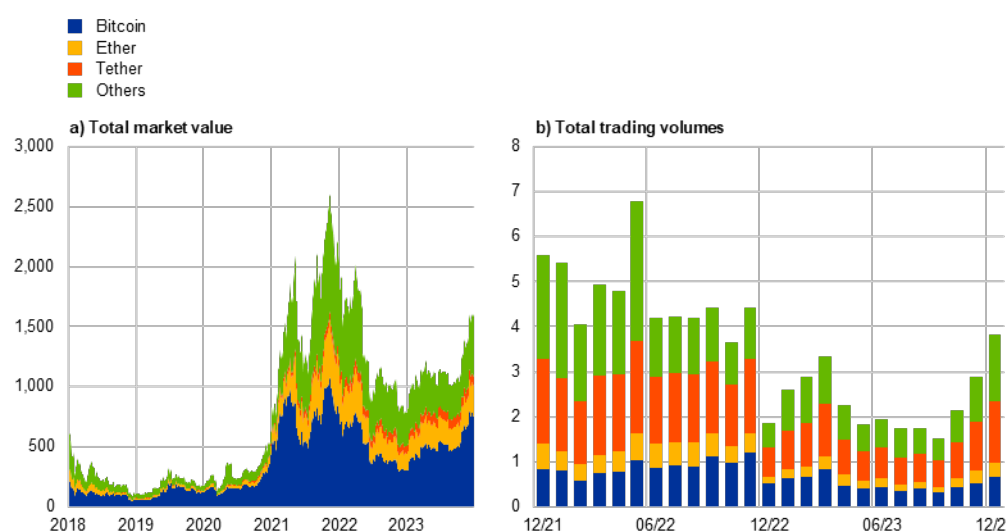


because of their inherent features (liquidity and maturity transformation) and ability to act as a risk transmission channel between crypto and traditional financial markets.¹⁰⁴

Tether, the largest stablecoin by far, increased its market share even further in 2023, despite recurring concerns over its lack of transparency. Its market value amounted to around €75 billion (+35% year-on-year) and its market share was 70% (+20percentage points year-on-year). The second and third largest stablecoins are USD Coin (€23 billion) and Dai (€5 billion). The once third largest stablecoin Binance USD all but disappeared in 2023 after the SEC accused Paxos, the issuer of Binance USD, of offering unregistered securities and the New York Department of Financial Services (NYDFS) ordered the company to stop minting new tokens¹⁰⁵. Newer stablecoins that were subsequently promoted by Binance such as TrueUSD and First Digital USD have so far failed to gain notable ground, with a market value of around €2 billion and €1.5 billion respectively.

Chart 24
Crypto-asset market: rebound in 2023

(EUR billions)



Sources: CoinMarketCap and ESMA.

Notes: Data on Bitcoin, Ethereum, Tether and other crypto-assets. "Others" contains all other crypto-assets that are listed on the CoinMarketCap website.

The dominant position of Tether in the stablecoin market merits attention. Tether's market share reached 70% in terms of market capitalisation and 90% in terms of trading volume relative to all stablecoins. While not a threat to the stability of the wider financial system, for the crypto system itself Tether most likely carries systemic importance. Tether discloses only consolidated figures on

¹⁰⁴ See also ESRB (2023), "Crypto-assets and decentralised finance. Systemic implications and policy options", May.

¹⁰⁵ See Department of Financial Services (2023), "Notice Regarding Paxos-Issued BUSD" and Reuters (2023), "Paxos in talks with U.S. SEC over Binance stablecoin-internal email", 22 February.



its reserves. As their existence and composition remain unverifiable, the assessment of Tether's overall soundness is challenging.

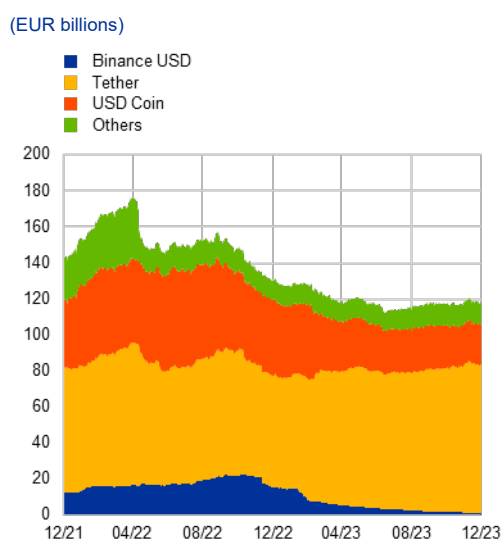
Stablecoins can act as a risk transmission channel between the crypto and the traditional financial system. The reserve assets used to back their value are usually composed of traditional financial assets. A run on stablecoins could force them to quickly sell their reserve assets to service withdrawals. This could in turn trigger a downward valuation spiral, especially in case of less liquid assets. However, this risk does not seem imminent at this juncture given the small size of stablecoins.

In March 2023 USD Coin faced a liquidity crunch and temporarily lost its peg when Circle, its issuer, revealed a USD 3.3 billion exposure to failing Silicon Valley Bank (around 8% of its reserves at that time). It took three days to recover its peg after US authorities stated that Silicon Valley Bank creditors would be repaid in full (Chart 25, panel b). The event triggered an immediate wave of customer withdrawals, which continued throughout the year and resulted in a reduction in USD Coin's market value of almost 50% in 2023. It was noteworthy to the extent that it highlighted for the first time existing interlinkages between the crypto and the traditional financial system and possible spillover effects. Nevertheless, contagion in this case occurred from the traditional banking system to the crypto market and not, as might have been expected, the other way around.

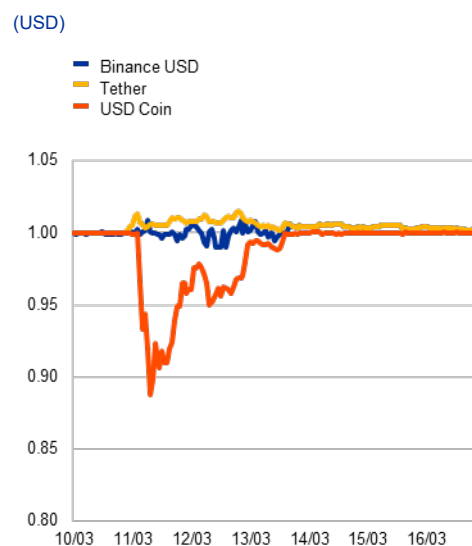
Chart 25

Stablecoin asset market: overall stable but temporary depegging during US banking sector stress in March 2023

a) Stablecoin market value



b) USDC depegging



Sources: a) CoinMarketCap and ESMA. b) Kaiko and ESMA.

Notes: a) Market value of Binance USD, Tether, USD Coin and other stablecoins. b) Price of selected stablecoins between 10 and 15 March.



2023 saw an extensive crackdown by US authorities on CeFi entities. In particular, Binance and Coinbase, the two largest crypto exchanges by trading volume, received Wells notices from the SEC in June, accusing both entities, among other charges, of running unregistered securities exchanges.¹⁰⁶ In November Binance and its CEO pleaded guilty to violating US anti-money laundering requirements and agreed to pay a USD 4.3 billion fine with several US authorities. While the news sent Binance's native token tumbling by around 10%, the wider crypto market remained broadly stable, suggesting that the settlement was perceived as an overall positive outcome.

Speculation around the long-awaited decision on spot crypto ETPs by the SEC drove the market rally in the second half of the year, including after a court victory by an asset manager against the SEC. Several traditional asset managers have filed applications with the SEC to launch spot crypto ETPs, which could facilitate wider crypto adoption (by retail as well as institutional investors) and bolster the crypto system's aspiration of becoming mainstream. This would in turn increase interlinkages between the crypto and the traditional financial system and generate potentially larger spillover effects, for example in case of a default of a crypto-asset exchange. In the EU, available data indicate that investment funds providing exposure to crypto-assets remain very small in size.¹⁰⁷ AIFs can invest directly in Bitcoin but not UCITS.

Another potential source of vulnerability is crypto derivatives, which can involve high leverage and whose trading volumes exceed spot volumes at times. Most crypto derivatives (including futures, options and "perpetual futures") are traded on unregulated crypto exchanges, although a growing volume of cash-settled options and futures are traded on the Chicago Mercantile Exchange (CME). Open interest in Bitcoin futures on the CME reached an all-time high of around 24,000 contracts (each containing 5 Bitcoin) in December 2023, equivalent to €4.5 billion, seeing it surpass Binance as market leader in this segment. While crypto derivatives often involve considerable leverage, which can exceed multiples of 100 on some crypto exchanges, the CME requires an initial margin of 50% for its Bitcoin and 60% for its Ethereum futures, i.e. a maximum leverage multiple of two. Crypto exchanges sometimes rely on automatic liquidation of derivative positions if their values fall below certain thresholds – in contrast to margin calls, which give position holders the opportunity to recapitalise. While auto liquidation mechanisms may be useful in limiting specific position losses, they can amplify market movements and lead to cascading effects. A major risk of crypto derivatives is the potential capital loss on the side of investors that could occur as a result of adverse price developments and over-leveraged positions, or the failure of a crypto exchange that might take positions itself without adequate reserves.

At present, exposures of financial institutions to crypto-assets and CeFi appear very small. The failure of a large crypto-asset exchange would not be expected to materially threaten the stability of the wider financial market.

DeFi activities picked up again in 2023 but remain relatively small in size. The total value locked (TVL) stood at around €45 billion as of December 2023, equivalent to about 4% of the total market value of crypto-assets globally. Public sources list more than 2,800 protocols, but the vast

¹⁰⁶ See SEC (2023), "**SEC Files 13 Charges Against Binance Entities and Founder Changpeng Zhao**", press release, 5 June; and SEC (2023), "**SEC Charges Coinbase for Operating as an Unregistered Securities Exchange, Broker, and Clearing Agency**", press release, 6 June.

¹⁰⁷ Using Morningstar data and screening for key words such as "Bitcoin", "Ether" or "crypto", we identified funds providing exposure to crypto-assets representing a total NAV of around €6 billion as of January 2024.



majority are very small in size or not even active. The largest protocol types in terms of TVL are decentralised exchanges, lending protocols and liquid staking protocols¹⁰⁸. Although investors' exposure to DeFi remains small overall, there are serious risks to investor protection due to the highly speculative nature of many DeFi arrangements, important operational and security vulnerabilities and lack of a clearly identified responsible party.¹⁰⁹ DeFi does not represent a meaningful risk to financial stability at this juncture, considering its small size, but requires monitoring as it continues to quickly evolve.

¹⁰⁸ Liquid staking is a process that allows crypto-asset holders to stake their tokens on a blockchain network while still maintaining the ability to use these tokens for other purposes, such as trading or providing liquidity in DeFi protocols.

¹⁰⁹ See ESMA (2023), "**Decentralised Finance in the EU: Developments and risks**", October; and ESMA (2023), "**Decentralised Finance: A categorisation of smart contracts**", October.



5 Activity-based monitoring

Activity-based monitoring complements entity-based monitoring, thereby providing a broader understanding of financial stability risks. Entity-based monitoring may not capture all aspects of systemic risks, in particular those that may arise in specific markets and that cut across entities. Complementing entity-based monitoring with activity-based monitoring sheds further light on the use of certain financial instruments and the type of markets in which investment funds and OFIs interact with each other and with entities outside the monitoring framework. Thus, it provides further insights from a systemic perspective into the nature of risks that may arise due to these activities.

5.1 Derivatives

Main risks of derivatives

Interconnectedness	Use of derivatives can create complex intermediation chains, which can include various financial sectors and asset classes.
Leverage risk	Use of derivatives can increase market risk exposure beyond risk-bearing capacities.
Counterparty risk	Insufficient margining can lead to unintended market exposures in the event of counterparty default.

EMIR data show that the EU derivatives market had a total gross notional outstanding amount of €358 trillion in 25 million open trades at the end of 2023, an increase of €44 trillion from a year earlier. IRDs continue to account for the bulk of the notional amounts outstanding, at 80%, with 12% in currency derivatives and the remaining 8% in equity, credit and commodity derivatives (Chart 26, panel a). Over-the-counter (OTC) contracts still accounted for 95% of the total gross notional amount in the fourth quarter of 2023, the same as a year earlier, with 5% in exchange-traded derivatives (ETDs). Unlike other derivative types, for equity and commodity derivatives ETDs accounted for a sizeable proportion of notional amounts, at 59% and 37% respectively, at the end of 2023, up from a year earlier.



Chart 26

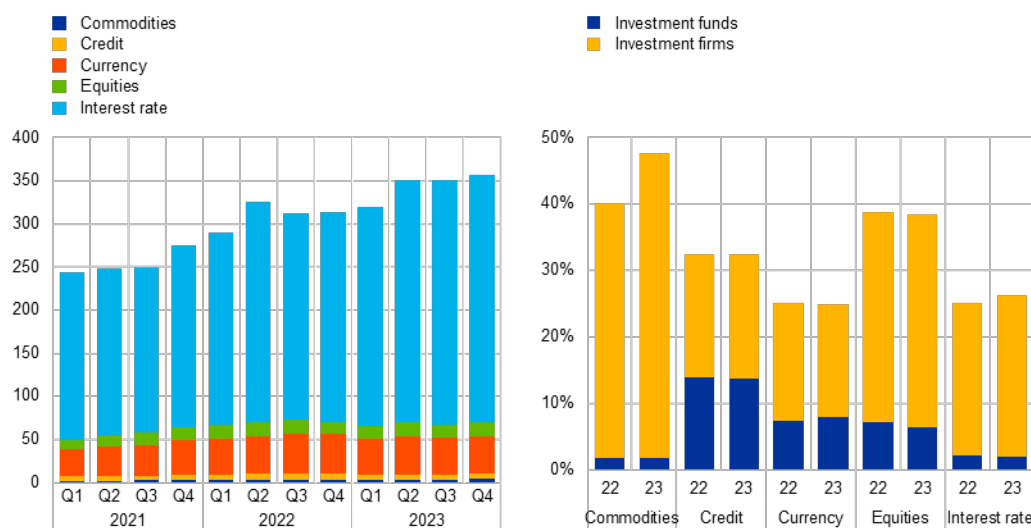
Derivatives markets remain dominated by IRDs, most of which were traded OTC and cleared

a) Gross outstanding notional amounts by asset class by quarter for the EU

b) Share of outstanding notional amount cleared in the fourth quarter of 2022 and the fourth quarter of 2023

(EUR trillions)

(percentages)



Sources: Trade repositories and ESMA.

Central clearing rates for credit and IRD assets increased in 2023 for products subject to a clearing obligation in the EU.¹¹⁰

The proportion of gross outstanding notional amount for OTC credit and interest rates cleared stood at 58% and 81% respectively at the end of 2023, both up from a year earlier (by 8 and 4 percentage points respectively) (Chart 26, panel b). Central clearing of OTC derivatives in other asset classes remained low (3% in commodities, 4% in equities and 1% in currencies). In the second half of 2023 CCP margin levels for commodities stabilised following a decrease in the first half of the year, mirroring the downturn in energy prices and their volatility. Similarly, margins for interest rate-related derivatives reached a steady state in the latter half of 2023, albeit at a lower level compared with the first half. This stability aligns with the steadying expectations for future policy rates in Europe and the United States (Chart 27, panel a). Directional exposures to interest rates vary by type of financial institution, with banks using IRDs mainly to hedge against higher rates while ICPFs use derivatives to obtain additional exposures to interest rates (Box 5).

Non-bank financial institutions (excluding CCPs) accounted for €96 trillion in outstanding notional in the fourth quarter of 2022, up from €82 trillion a year earlier.

Investment funds accounted for €11 trillion, unchanged, while investment firms accounted for €85 trillion, up by €14 trillion in 2023, essentially driven by increases in their IRD exposures. At the end of 2023 the share

¹¹⁰ ESMA has recommended that the European Commission apply the clearing obligation to pension funds from June 2023, as such entities are currently exempt. If this recommendation is endorsed, pension funds will be subject to requirements to clear their OTC interest rate derivatives. See [ESMA news release](#) from February 2022.



of total gross notional amount outstanding for both types of investors was 26% for IRDs, 32% for credit, 25% for currencies, about 38% for equities and 47% for commodities. These shares remained largely unchanged over the course of the year, except for commodities which increased by 7 percentage points. Most of the exposures are associated with large investment firms (Chart 27, panel b). However, as some of the banks' exposures are on behalf of non-bank clients that do not report directly under the EMIR, these figures are liable to understate the derivative exposures of non-bank financial institutions to a certain extent. The sizeable role of non-bank financial institutions in derivative markets, combined with the interconnectedness of derivative markets, presents a contagion channel for risks from non-bank financial institutions to the wider financial system and vice versa. These risks are greater where non-bank financial institutions have built up excessive leverage and where exposures are in uncleared OTC contracts, which are less transparent, have lower margins and do not benefit from the risk reduction of netting through clearing.

Chart 27

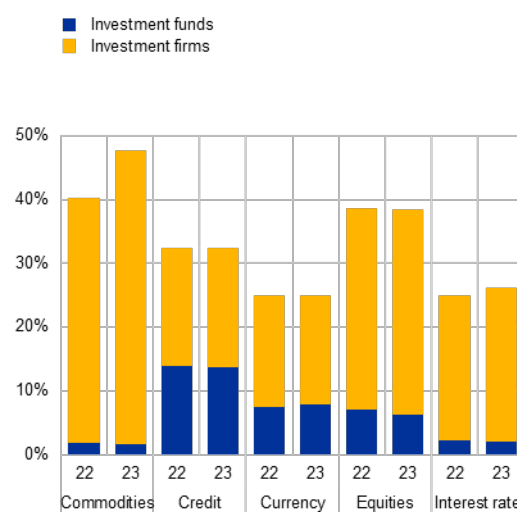
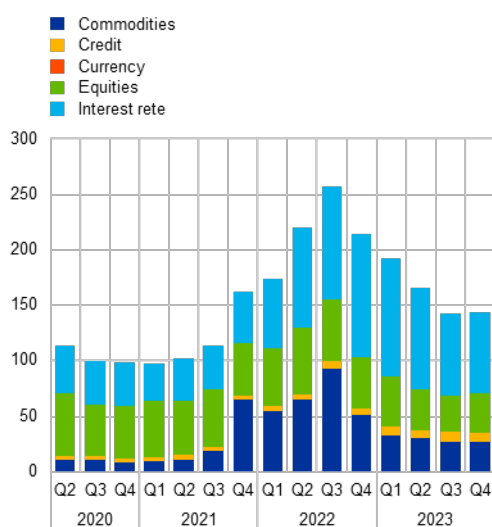
Sharp increase in margins required for commodities; large footprint of investment funds in credit derivatives

a) Outstanding amounts of initial margin required and excess collateral received by EU27 CCPs for derivatives

b) Proportion of outstanding notional amount held by investment funds and investment firms by asset class

(EUR billions)

(percentages)



Sources: Trade repositories and ESMA.

Note: Data for CCP.A, CC&G and BME are missing.



5.2 Securities financing transactions

Main risks of securities financing transactions

Counterparty risk	During volatile periods, the price of collateral might fluctuate widely. In the case of non-centrally cleared SFTs, if the price declines by more than the haircut applied to collateral and the borrower fails to pay the repurchase price, the market value of the collateral will not cover the lender's losses resulting from the counterparty's default. If, on the other hand, the price increases and the lender fails to deliver the security, the borrower will be exposed to losses from the counterparty's default.
Leverage	SFTs can enable institutions to increase their exposures via secured borrowing.
Reinvestment	If cash collateral is reinvested in volatile/illiquid assets, the counterparty may suffer losses, which may in turn result in a more widespread spillover to unsecured funding markets.
Liquidity	SFTs typically have short maturities but may be subject to a drop in activity (and hence liquidity), especially at the end of a quarter, thus exposing market participants to funding liquidity risk. Moreover, additional collateral requests might result in liquidity strains for borrowers during stress periods.
Procyclicality	During periods of stress, counterparties may face liquidity demands from higher haircuts and a decline in the value of collateral. Procyclicality associated with margining and haircut practices may increase contagion risks.

The total value of the European (EU and UK) repo market increased by 11.5% year-on-year to reach €10.8 trillion in June 2023 (Chart A34, panel a), according to industry surveys.¹¹¹ The rise in repo activity can be explained by higher rates, which allow repo lenders to obtain higher returns on loans backed by collateral. Government securities continued to be the primary assets used as collateral, amounting to 90% of collateral used. The share of non-government bonds such as corporate and other bonds rose from 9% to 10%, while equity collateral remained small (0.2%, down from 0.5%).

According to EU regulatory data, outstanding repo activity reported by EEA counterparties amounted to €7.3 trillion in September 2023.¹¹² Turnover averaged €2.4 trillion per day in the EU in the first half of 2023. The share of outstanding CCP-cleared repo principal amounts remained stable at 40% in the first ten months of 2023 and in 2022. According to the SFTR, government bonds constituted 87% of the overall collateral pledged in 2023 (in line with industry estimates). However, centrally cleared repos used almost exclusively government bonds as collateral (98% in 2023), whereas in non-cleared repos their share was lower (79%), albeit still dominant (Chart 28, panel a). EEA-issued sovereign bonds were employed particularly in the cleared segment, amounting to about 90% of all bond collateral. Italian, French and German government bonds played the most relevant role, representing 28%, 21% and 20% respectively of all collateral in

¹¹¹ Data from the International Capital Market Association based on a survey completed by 62 offices in June 2023.

¹¹² Data reported under the SFTR. This estimate includes all executed transactions that have not yet matured as of the date of reporting and excludes all repo transactions that have not yet been contractually initiated (forward repos).

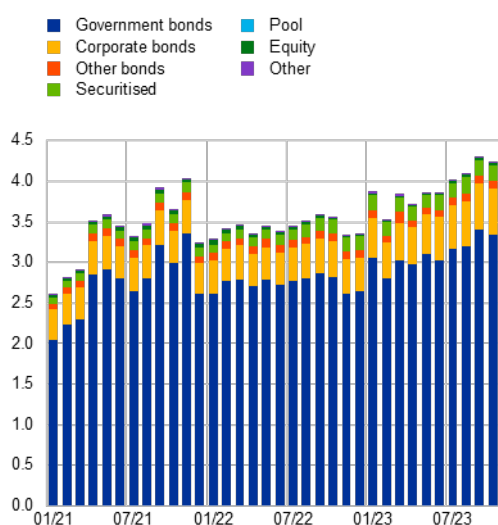


cleared repos in 2023. The non-cleared segment featured more collateral heterogeneity: non-sovereign bonds and securitised assets amounted to 15% and 5% in 2023 respectively (Chart 28, panel b). Additionally, in this segment the share of non-EEA bonds was higher (a relevant role was played by US Treasuries and UK gilts, with an average collateral share of 22% and 8% during 2023)¹¹³.

Chart 28
Collateral market value

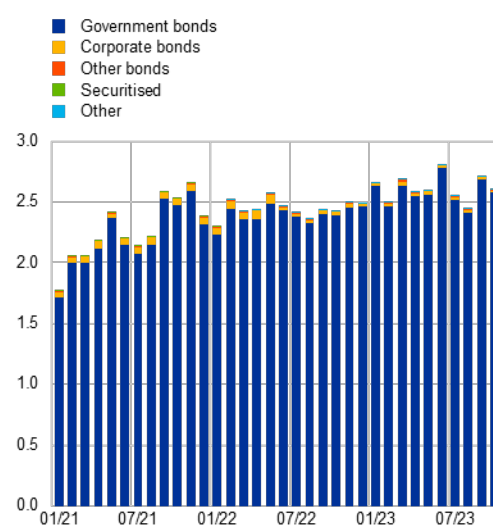
a) Non-cleared segment

(EUR trillions)



b) Cleared segment

(EUR trillions)



Sources: SFTR and ESMA.

Notes: Panel a) shows the market value of collateral employed in outstanding non-cleared repo transactions by issuer jurisdiction, in EUR trillions. Panel b) shows the market value of collateral employed in outstanding cleared repo transactions by issuer jurisdiction, in EUR trillions. Latest data point was for October 2023.

Collateral scarcity concerns eased amid an unwinding of central bank support. Repo rates increased in line with policy rates in 2023 (Chart A34, panel b). The unwinding of central bank asset purchase programmes reduced collateral scarcity and lowered demands for specific securities. The repayment of targeted longer-term refinancing operations (TLTROs) by euro area banks resulted in an increase in the supply of collateral, as banks retrieved their securities.

Securities lending activity remained strong during 2023. SFTs involving European government bonds remained high amid the continued increase in interest rates, which pushed up government bond yields, although expectations about peaking ECB rates contributed to a decrease in yields in November and December 2023¹¹⁴. Average loan balances decreased mildly by 3% year-on-year to USD 359 billion in 2023, while the average utilisation (ratio of assets on loan to lendable assets) decreased markedly to 27%; however, the amount of loanable assets remained unchanged at high

¹¹³ See ESMA (2024), "EU Securities Financing Transactions markets 2024".

¹¹⁴ See IHS Markit Securities Finance Quarterly Reviews, H2 2021, H1 2022, H2 2022, H1 2023 and H2 2023.



levels (USD 1.2 trillion). Securities lending activity involving European equities was adversely affected by increases in interest rates, a deterioration in economic data and challenges related to tighter monetary policy. More specifically, the average value of loan balances decreased across the majority of European markets and for the major contributors by 57% to USD 25 billion in France, 54% to USD 23 billion in Germany and 8% to USD 28 billion in the United Kingdom.

Overall financing conditions for euro-denominated SFTs remained unchanged in the fourth quarter of 2023 after significant tightening in 2022.¹¹⁵ The overall unchanged conditions masked some heterogeneity, as price credit terms eased overall while non-price terms tightened for NFCs and sovereigns. Market respondents reported that the easing was mainly attributable to an improvement in general market liquidity and improvements in the current or expected financial strength of counterparties. A sizeable percentage of respondents reported an increase in the maximum amount of funding secured against high-quality government bonds for the most-favoured clients, while the picture was more mixed as regards the maximum amount of funding offered against other euro-denominated collateral types. Finally, a sizeable percentage of respondents reported an increase in overall demand for funding, particularly funding secured against domestic and high-quality government bonds, high-quality financial corporate bonds as well as equities.

Interconnectedness between banks and the monitoring universe through the use of repo transactions remains sizeable. Banks' repo liabilities to non-MMF investment funds and other OFIs increased from €89 billion in December 2022 to €126.8 billion in December 2023 (Chart A35). Moreover, the share of banks' repo transactions with non-MMF investment funds and OFIs increased to 41% of total bank repo transactions in December 2023, compared with 39% in December 2022 (the average share amounted to 33% throughout both 2023 and 2022). Furthermore, banks' repo liabilities to CCPs – the largest bank counterparty, as most EU repo transactions are centrally cleared – increased to €148 billion in December 2023, compared with €122.2 billion in December 2022. Bank repo transactions with CCPs amounted to around 48% of all bank repo transactions in December 2023 (compared with 53% of transactions in December 2022), and the average share amounted to 55% throughout 2023.

5.3 Securitisation

Main risks of securitisation

Interconnectedness	Interconnections through securitisation open contagion channels between financial institutions, as well as across sectors and the whole economy.
Leverage	Securitisation may create excessive leverage in the financial system, fuelling a rise in asset prices and over-indebtedness across borrowers.

¹¹⁵ See ECB (2023), “[Survey on credit terms and conditions in euro-denominated securities financing and OTC derivatives markets \(SESFOD\)](#)”, December.



The gross issuance of European securitisations in 2023 remained mostly unchanged compared with the previous year.

Issuance increased slightly in 2023 compared with the previous year (+2%) despite strong differences across quarters. RMBSs continued to account for the bulk of gross issuance, at 65% of the total in 2023 (Chart A27). The share of collateralised debt or loan obligations (CDOs/CLOs) remained stable at 11% of total gross issuance.

The stock of securitised loans in euro area FVCs remained stable at €1.3 trillion.

Around 90% of all EU securitised loans were originated within the euro area (Chart A25, panel b). The largest outstanding was held in Italian FVCs, accounting for 30% of the securitised loans originated in the euro area. FVCs remained closely linked to euro area banks (50% of FVC assets are debt and securities loans issued by banks and 35% of FVC liabilities are held by banks), although the interconnectedness has declined over the last five years (Chart A26, panel a).

European CLO issuance was flat in 2023.

Issuance increased slightly from €26.2 billion to €26.6 billion between 2022 and 2023 (Chart 29, panel a), with the total outstanding value reaching €223 billion. The low supply of CLOs reflects muted activity in the underlying leveraged loan market (which account for 80% of CLO collateral) and a reduction in risk appetite by investors amid credit risk concerns. After surging in 2022, EU CLO spreads remained at high levels in 2023, above the peaks observed during the COVID-19 pandemic period (Chart 29, panel b). Total CLO holdings in the euro area amounted to €109.8 billion in 2023.¹¹⁶ The main holders were investment funds with €49.3 billion, equivalent to 45% of total CLO holdings. The second and third most important holders were banks and ICPFs with holdings of €33.6 billion (37% of total CLO holdings) and €18.6 billion (17% of total CLO holdings) respectively.

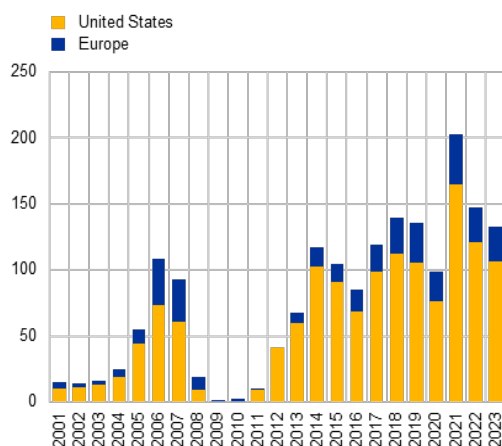
¹¹⁶ Data sourced from ECB SHSS.



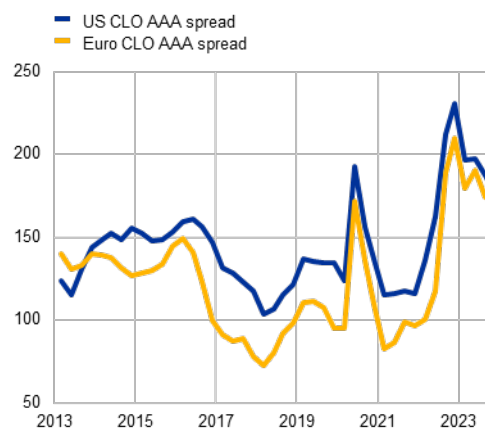
Chart 29

CLO issuance has grown substantially, accounting for a large part of the European leveraged loan market

a) United States and Europe CLO issuance
(EUR billions)



b) United States and Europe CLO AAA spread
(basis points)



Sources: S&P LCD, SCI and ESRB.

Notes: Figures are based on institutional leveraged loans. Due to a change in sources of securitisation issuance data used in this report affecting European CLOs, outstanding volume from the first quarter of 2023 onwards may show discrepancies. Latest observations are for the fourth quarter of 2023.

The credit quality of EU CLOs worsened in 2023, reflecting higher credit risk for the underlying loans, and loan defaults picked up.

Almost 80% of EU CLOs are backed by leveraged loans. The credit quality of these loans worsened in 2023, as the share of leveraged loans with weak covenants reached new highs in Europe at 95% of outstanding loans compared with 75% in 2018 (Chart 30, panel a). In addition, the default rate of leveraged loans increased from 0.5% in 2022 to 1.5% in 2023 (Chart 30, panel b). The leveraged loan market was affected by the high interest rate environment and weak earnings prospects. Overall, these developments raise concerns about a potential surge in systemic risk linked to leveraged loans and hence to EU CLOs.



Chart 30

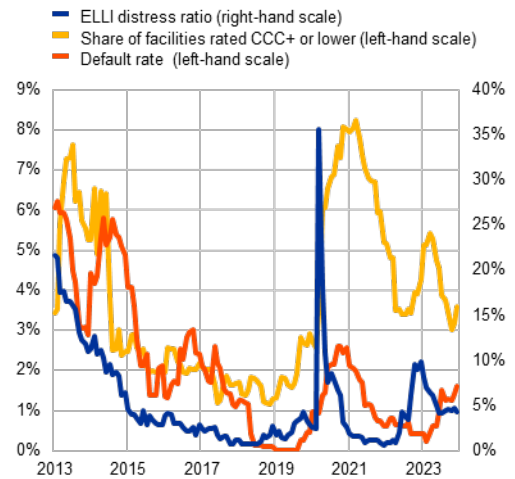
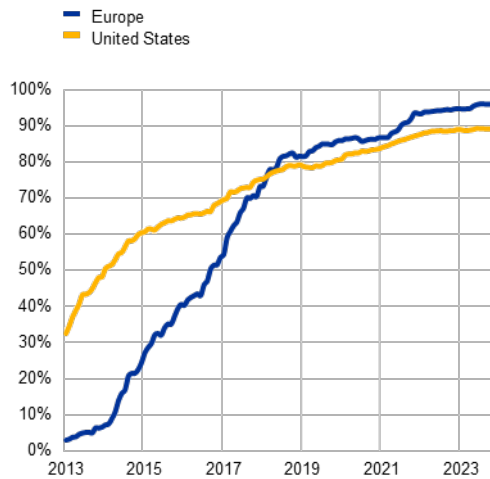
Credit risk metrics have deteriorated in recent years, as highlighted by the increase in the share of covenant loans, defaults, low ratings and the distress ratio

a) Covenant-lite loans in the United States and Europe

b) ELLI distress ratio, share of low-rated facilities and default rates in Europe

(percentages of total leveraged loans outstanding)

(percentages)



Sources: S&P LCD and ESRB.

Notes: Figures are based on institutional leveraged loans. The rolling 12-month European default statistics are based on the principal number of defaults in EUR billions. The default rate is calculated as the amount defaulted over the last 12 months divided by the amount outstanding at the beginning of the 12-month period. The ELLI distress ratio is based on the number of ELLI issuers. Latest observations are for the fourth quarter of 2023.



Annexes

See [more](#).



Imprint and acknowledgements

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