Banc Ceannais na hÉireann
Central Bank of Ireland

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Market Based Finance
Monitor 2024

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Executive Summary

The *MBF Monitor* reviews trends and the evolution of vulnerabilities in the internationally-focused Irish Market Based Finance (MBF) sector. MBF refers to the raising of debt or equity through financial markets, rather than through the banking system. The Irish-domiciled MBF sector is large, outward-facing and diverse, providing many benefits to the real economy, including widening and diversifying financial channels. But with benefits come potential risks. In the event of an adverse shock, vulnerabilities in the MBF sector may lead to the amplification of systemic risks (see Central Bank of Ireland Discussion Paper for more details). The *Monitor* focuses initially on the sector as a whole and then on the specific cohorts of MBF in Ireland, monitoring trends and evolving vulnerabilities in outward-facing investment funds and Money Market Funds (MMFs) and presenting the main characteristics of Special Purpose Entities (SPEs).

The Irish domiciled MBF sector is large, outward-facing, and diverse, providing many benefits to the real economy.

MBF has increased in importance over the past decade for the real economy and for financial stability. The MBF sector is a significant source of finance for both the financial system and the real economy. Ireland is domicile to a large portion of the European MBF sector and is an international financial *hub* intermediating capital flows. While Equity Funds are the largest and fastest growing cohort, funds investing in bonds may be more important from a financial stability perspective (as they support credit intermediation).[1]

Vulnerabilities in the MBF sector may lead to the amplification of systemic risk.

Growth has returned to most MBF cohorts, alongside increasing concentration in US NFCs, higher Hedge Fund leverage and lower MMF liquidity. Recent changes in the interest rate environment, going from the hikes in 2022 to the first decreases in 2024, have had a significant impact on the trends observed in the MBF sector. Following decreasing valuations in 2022 and early 2023, growth in assets under management (AuM) has resumed over the past year, with most cohorts reaching new peaks by mid-2024. Strong valuation growth in equity markets, particularly in the US technology sector, led to increased concentration of Irish MBF portfolios in US non-financial corporations (NFCs). As a whole, the value of total MBF

[1] Credit markets are typically more important for financial stability than equity markets due to stronger financial accelerator effects. See Buch (2017), ESRB NBFI Monitor and FSB Global Monitoring Report on NBFI for more details.

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assets increased 14 per cent from 2023 Q2, reaching €6.1 trillion in 2024 Q2. Growth in the sector was coupled with increased leverage in Hedge Funds and lower weekly liquid asset holdings of MMFs. AuM and leverage of GBP LDI Funds has continued to fall since late 2022.

The Irish investment fund sector grew in 2023, following a sharp contraction in 2022. The sector's return to growth in 2023 was driven by an upward revaluation of both fixed income and equity securities as well as strong investor inflows. As of 2024 Q2, the investment fund sector fully recovered from the decrease in AuM reported in 2022. Growth in AuM was particularly strong among Equity, Hedge and Bond Funds, reflecting an improved macroeconomic outlook and expectations of rate cuts.

Improved macroeconomic outlook and expectations of rate cuts led to upward revaluation of assets, particularly for Equity Funds, Bond Funds, and Hedge Funds.

Leverage, a potential source of financial vulnerability, is highest in GBP LDI Funds and Irish Property Funds, with measures to guard against leverage-related vulnerabilities in place for both. Disruption in the UK gilt market in September 2022 highlighted the risks associated with excessive leverage for GBP LDI Funds.[2] In April 2024, the Central Bank of Ireland and the Commission de Surveillance du Secteur Financier (CSSF) introduced policy measures to increase GBP LDI Fund resilience to shocks in UK government bond yields.[3] The measures required these funds to be resilient to a sudden shock in UK yields of at least 300 basis points. Since the time of the shock, leverage amongst GBP LDI Funds has fallen significantly. Meanwhile, over the past year leverage in Irish Property Funds increased marginally, primarily due to falling commercial real estate asset valuations.[4] Leverage in Hedge Funds also increased, continuing a general upward trend since 2023. The Central Bank will continue to monitor and assess investment fund leverage as a potential source of financial stability risk.

Liquidity mismatch and interconnectedness are relatively high in Bond Funds. Investment funds' liquid asset holdings have generally remained stable since 2023, with small movements across fund cohorts. Liquidity mismatch is relatively high for Bond Funds, as they predominantly offer daily redemptions to investors and have lower

[2] Dunne et al (2023) for more details.
[3] See Central Bank's macroprudential policy framework for GBP denominated LDI funds and CSSF's macroprudential measures for GBP LDI funds.
[4] See Central Bank of Ireland's Financial Stability Review 2024 II.

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levels of liquid assets compared to other fund cohorts. Bond Funds support credit intermediation and are highly interconnected, investing in NFC, bank and government securities. Overall, the value of debt securities held by the investment funds sector has partly recovered after falling prior to 2023. Moreover, the overall sensitivity of the sector to interest rate shocks has decreased.[5] This is due to shorter durations as the weighted average maturity of bonds held by Irish investment funds has steadily declined, from approximately 11 years in 2020 Q1 to almost 8 years in 2024 Q2.

Money Market Funds have grown recently, benefitting from high interest rates and net inflows.

MMFs have grown recently, benefitting from the high interest rate environment and inflows. As they are cash management vehicles for investors, MMFs' attractiveness increases in a period of high interest rates, such as observed in 2022-2024. AuM in Irish MMFs increased by 15 per cent from 2023 Q2 to 2024 Q2, with net inflows to the sector over the same period. Low Volatility Net Asset Value (LVNAV) MMFs in particular experienced strong growth in AuM since 2022. Irish MMFs are denominated in three currencies with over 80 per cent invested in non-euro assets (GBP and USD). Over the past year, MMF managers increased the maturity profile of their assets and decreased weekly liquid assets, partially reversing significant changes over 2022.

Special Purpose Entities include a wide range of activities and are mainly sponsored by UK and US entities. SPEs are companies created to fulfil a narrow, specific purpose. In Ireland, there are two cohorts: Financial Vehicle Corporations (FVCs), which are securitisation vehicles, and Other SPEs, which are non-securitisation vehicles. Collateralised Loan Obligations (CLOs) remain the dominant type of FVC. A review of CLO activity indicates that distress ratios have returned to a more normalised level after peaking in 2022, and that downgrades of widely-held leveraged loans had an impact on the sale of distressed loans. The majority of assets continue to be held by SPEs sponsored by UK and US entities.

A number of changes have been introduced in this edition of the *Monitor*. New liquidity monitoring tools for investment funds are introduced in Box A. Box B investigates investor flows from US Prime MMFs following the announcement of new liquidity requirements by the US Securities and Exchange Commission (SEC) in July 2023.

[5] See Gianstefani, Metadjer and Moloney (2023).

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Finally, new analysis of Collateralised Loan Obligations' distress ratio and sale of distressed loans following downgrades is presented.

1. Introduction

The Irish domiciled Market Based Finance sector is large, outward-facing, and diverse. The sector supports credit and wider financial intermediation in the global economy for borrowers and savers, which include governments, banks, and insurers as well as non-financial companies and households. This growing form of financial intermediation provides a valuable alternative to bank finance, supporting economic activity. The Irish-domiciled MBF sector is internationally focused, with limited but important links to the domestic Irish economy.[6]

The *Monitor* focuses on recent trends and the evolution of cohort vulnerabilities which may amplify financial stability risks. As with all forms of financial intermediation, MBF can also contribute to a build-up of financial vulnerabilities. Vulnerabilities in the MBF sector (e.g. liquidity mismatch and leverage) have the potential to be key factors for the materialisation of systemic risk. Furthermore, strong interconnectedness makes it more likely that sections of the MBF sector may amplify or transmit shocks to the rest of the financial system or the real economy.[7] Thus, the transmission of shocks by the sector could have an impact on financial stability and affect the real economy through changes in investment, employment, wealth, etc. The Central Bank actively monitors the MBF sector as part of our mission to protect financial stability. The *Monitor* complements existing Central Bank publications, such as Financial Stability Notes or Research Technical Papers, which give more detailed analyses of specific issues related to the sector, or to particular sub-sectors. In addition, the *Monitor* looks at the entire MBF sector domiciled in Ireland, with a particular focus on outward-facing investment funds and MMFs (as these are priority areas for the Central Bank) and also surveying SPEs. This complements the existing *Financial Stability*

The Central Bank actively monitors the Market Based Finance sector as part of our mission to protect financial stability.

[6] These links include property funds which invest in commercial real estate in Ireland and some non-bank lenders which provide credit to SMEs in Ireland, see the Central Bank's Financial Stability Review 2024:II for further details.
[7] See Central Bank of Ireland Discussion Paper 11: An approach to macroprudential policy for investment funds.

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Review (FSR), which looks specifically at the segments of the MBF sector that are linked to the domestic economy.

This edition of the *Monitor* introduces new, in-depth analysis of recent developments and new monitoring tools across MBF entity types. New liquidity monitoring tools are introduced for investment funds in Box A. The indicator is used to compare liquidity mismatch across different bond fund cohorts and stress scenarios. Box B uses third-party datasets to identify investor flows from US Prime Institutional MMFs following the announcement of new liquidity requirements by the SEC in July 2023, highlighting inflows to US Government MMFs and Irish USD LVNAV MMFs over the same period. Finally, new analysis of Collateralised Loan Obligations is presented, focusing on developments in their distress ratios as well as the relationship between exposure to downgraded loans and sale of distress loans relationship between exposure to downgraded loans and sale of distress loans.

The remainder of this publication is structured as follows: *Section 2* provides a short overview of the MBF sector in Ireland. *Section 3* focuses on the investment fund sector and in particular on trends in leverage, liquidity mismatch and holdings of debt instruments (by maturity and ratings) for different fund cohorts. *Section 4* looks at recent trends and evolving vulnerabilities in MMFs, while *Section 5* highlights some of the characteristics of the SPE sector. As mentioned above, the *Monitor* also includes boxes that explore specific areas in more depth. Box A measures the resilience of Irish Bond Funds to simulated severe redemption shocks, introducing the *Redemption Coverage Ratio* as a new metric to assess liquidity vulnerabilities. Box B focuses on the new regulatory requirements set by the SEC to US-based MMFs and their potential impact on Irish-based MMFs.

2. Overview of the MBF sector in Ireland

The MBF sector recovered from a sharp contraction in 2022, reaching a new high of €6.1 trillion in June 2024. The MBF sector grew consistently between 2016 and 2021 before contracting in 2022. The sector returned to growth in 2023 (**Table 1**), driven by an upward revaluation of both fixed income and equity securities, as well as strong investor inflows into investment funds (see *Section 3*). As a result, strong growth in AuM for the sector, coupled with resilient growth of the domestic economy, saw the sector increase slightly in size from 19.2 times GNI* in 2022 to 19.3 times GNI* in 2023 (**Chart 1**).[8] Growth in the MBF sector relative to the size of the domestic sector continued into the first 6 months of 2024, with the MBF sector reaching a record size of nearly €6.1 trillion in AuM while the Irish economy reporting moderate but lower growth rates.[9]

In Ireland, the number of market based finance entities in June 2024 was 10,320 while asset values stood at €6.1 trillion.

Ireland is domicile to a large portion of the European MBF sector. Measuring by total asset value, Ireland has the second biggest investment funds sector in Europe (following Luxembourg) and the 4th biggest sector in the world.[10] Ireland also hosts the largest MMF sector and the largest exchange-traded funds (ETF) sector in the EU.[11] It is also the domicile of more than 95 per cent of CLOs in Europe, a particular type of SPE used to raise funding for (and in) credit markets.[12]

Ireland hosts the largest Money Market Fund and exchange-traded funds (ETF) sectors in the EU.

While Equity Funds are the largest and fastest growing cohort, funds investing in bonds may be more important from a financial stability perspective. Equity Funds are the largest cohort in the sector with €1.9 trillion AuM, followed by SPEs (€1.1 trillion) and Bond Funds (€1.1 trillion) (**Chart 2**). Equity Funds have dominated the overall growth in the MBF sector over the past 5 years, growing

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[8] Growth in modified gross national income at current prices decreased from 16 percent in 2022 to 9 percent in 2023. See CSO Annual National Accounts 2023.
[9] See Central Bank of Ireland's Quarterly Bulletin 02 / June 2024.
[10] See Central Bank of Ireland Discussion Paper 11: An approach to macroprudential policy for investment funds.
[11] Assets in Irish-domiciled ETFs increased from €535 million to €1.3 trillion over the past 5 years. Ireland is now the largest domicile for ETFs in Europe and is home to more than two thirds of the total European ETF market.
[12] See Box A, *MBF Monitor 2021.*

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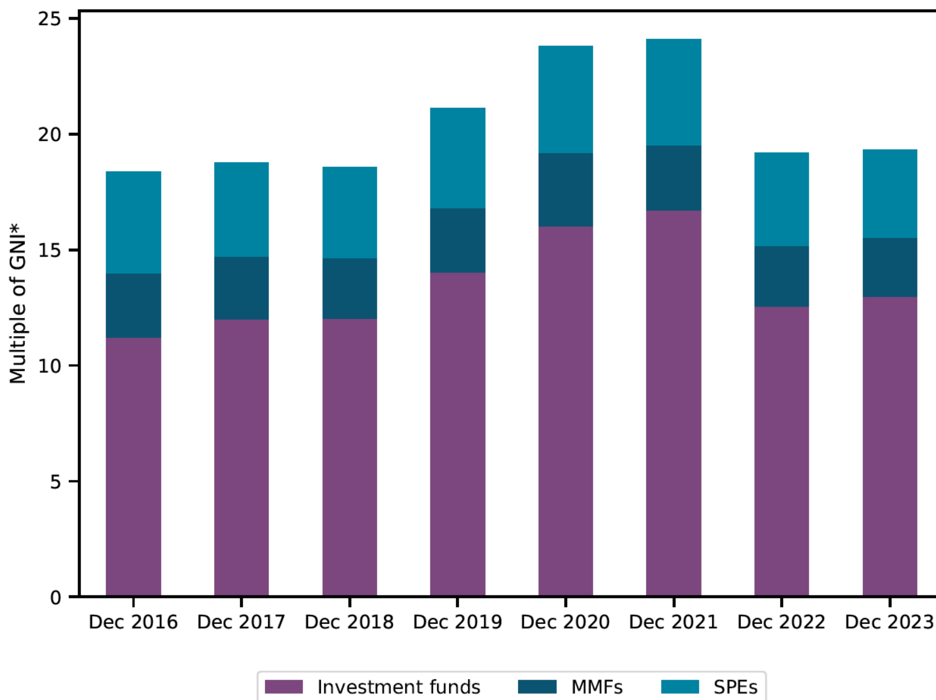
117 per cent; followed by Other Funds (51 per cent) and Bond Funds (47 per cent) (**Table 1**). Recent strong growth in Equity Funds is explained by strong valuation effects, against a backdrop of easing inflation, a resilient global economy and the prospect of lower interest rates.[13] However, due to their role in credit intermediation, MBF cohorts with larger holdings of bonds – particularly Bond Funds, MMFs and GBP LDI Funds – may be more important than Equity Funds from a financial stability perspective (See *Section 3*).

Chart 1: The size of the MBF sector has grown in line with the size of the national economy (GNI*) between 2022-2023
Total MBF sector's assets as a multiple of Ireland GNI* by type of entity; 2016 Q4 – 2023 Q4



Source: Central Bank of Ireland, Central Statistics Office.
Notes: GNI* is at current market prices.

[13] In 2023, the S&P 500 rose 24 per cent while the Stoxx Europe 600 increased by 13 per cent.

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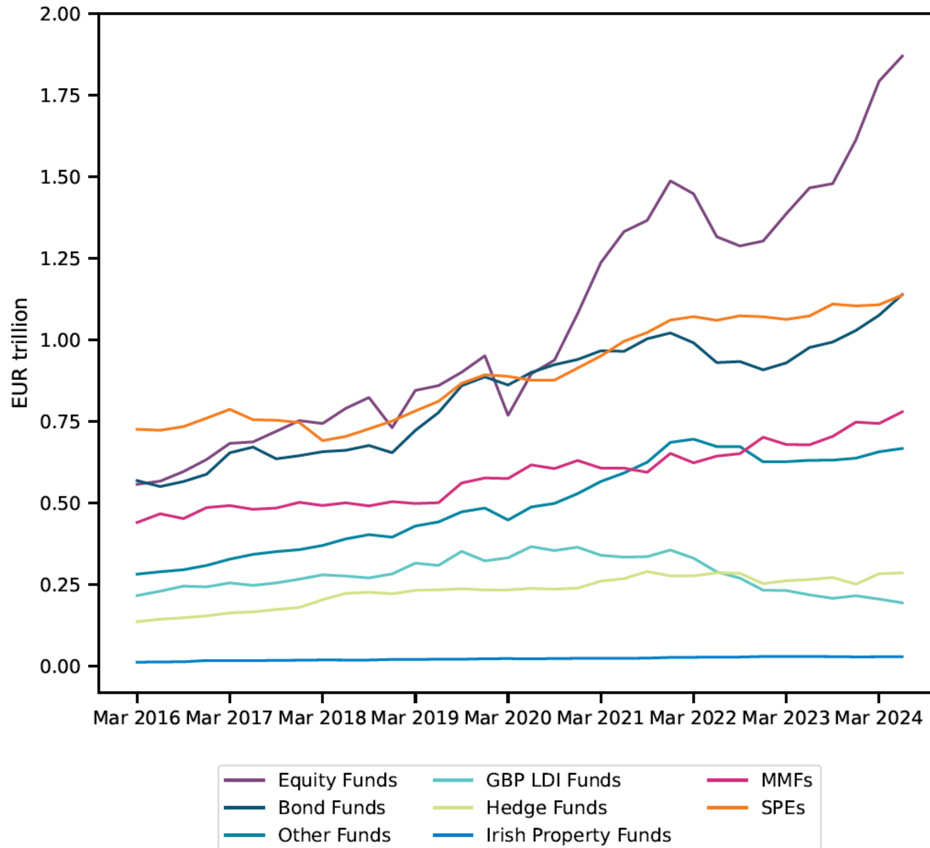
Table 1: Overview of the Irish MBF sector
Number of entities and AuM by type of entity; 2024 Q2

	Number of Entities	AuM (€bn)	2023 % AuM growth	2024 YTD % AuM growth	5-year % AuM growth
Equity Funds	2,576	1,869	24	16	117
Bond Funds	1,284	1,139	13	11	47
Other Funds	1,971	667	2	5	51
Hedge Funds	398	286	-1	14	22
GBP LDI Funds	293	194	-7	-10	-37
Irish Property Funds	208	33*	-2*	1	35
MMFs	89	779	7	4	56
SPEs	3,501	1,140	3	3	40
Total	10,320	6,107	10	8	54

Source: Central Bank of Ireland.
Notes: Irish Property Funds are categorised based on direct holdings of Irish property. Some funds in Ireland may also have indirect exposures to Irish property and such funds may be included in other cohorts. '2023 % AuM growth' shows the growth in AuM between 2022 Q4 and 2023 Q4. '5-year % AuM growth' shows growth between 2019 Q2 and 2024 Q2. Data marked with * comes from the new Irish Property Funds Returns dataset.

Chart 2: All MBF cohorts are growing in size except for GBP LDI Funds
Total assets by type of entity; 2016 Q4– 2024 Q2



Source: Central Bank of Ireland.

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Ireland is an international financial *hub* intermediating capital flows. Ireland is an international financial *hub*, i.e. it is a domicile financial entities receive finance from (mainly) international investors and invest in global markets. **Chart 3** illustrates the geographical sources of funding (liabilities) and the geographical domicile of investments (assets) for the MBF sector. On a first counterparty basis, the two largest sources of funding for the Irish MBF sector are from the UK and Other EU, whereas the largest domicile for investment is the US. Over the past year, the value of capital flows from the UK and Other EU being intermediated by the Irish MBF sector has increased, with the US being the primary recipient. However, this is at least partly related to positive revaluations in investment funds' existing holdings of US equities and bonds increasing the value of shares in those funds owned by UK investors increasing the value of shares in those funds owned by UK investors.

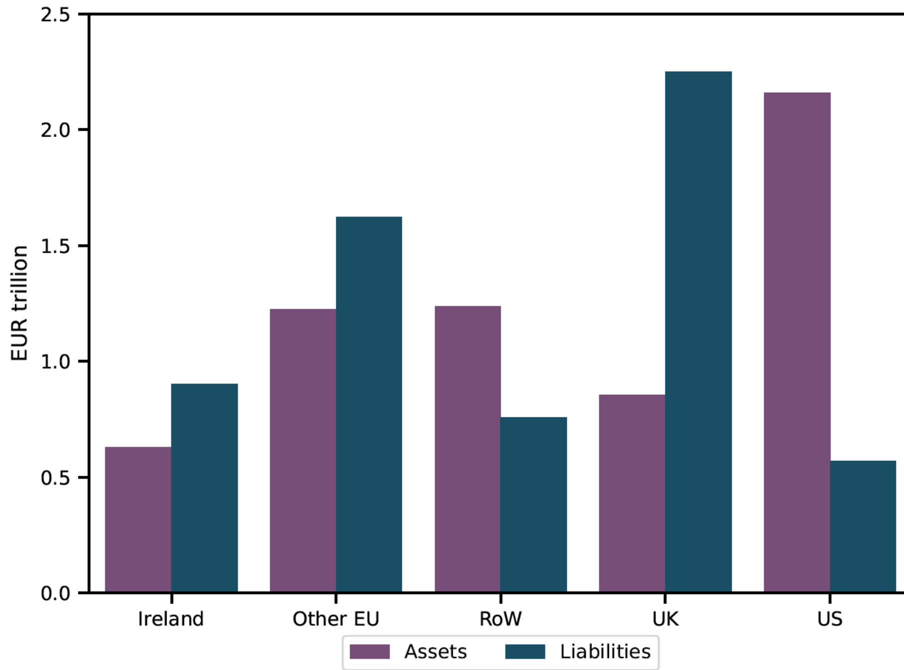
The MBF sector is an important source of finance for both the financial system and the real economy. As of 2024 Q2, approximately €3.4 trillion of assets held by MBF entities have been issued by the (mainly international) real economy, i.e., NFCs, governments, property and land (**Chart 4**). Over the past year, MBF entities increased their holding of assets issued by the international real economy by 16 per cent, while exposures to assets issued by the Irish real economy have remained stable at 3 per cent of AuM. When considered in the context of the overall size of the MBF sector, this small share emphasises the relatively limited but important links between the Irish MBF sector and the Irish real economy.[14] The MBF sector is also an important source of financing for the European banking sector. For example, Irish MMFs hold approximately 15 per cent of Euro area banks' outstanding money market instruments.

The MBF sector is an important source of finance for both the financial system and the real economy.

[14] These links include property funds which invest in commercial real estate in Ireland and some non-bank lenders which provide credit to SMEs in Ireland, see the Financial Stability Review 2024: II for further details.

Chart 3: The Irish MBF sector intermediates global capital flows, particularly from the UK to the US

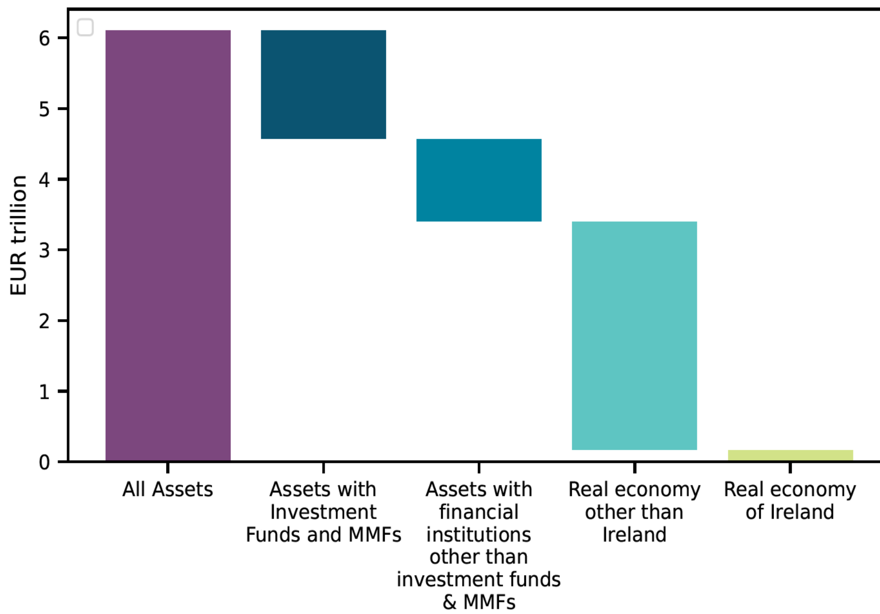
Total assets and liabilities of MBF entities by region of exposure; 2024 Q2



Source: Central Bank of Ireland.

Chart 4: MBF entities are an important source of financing for the international real economy

Exposure of the MBF sector to the real and financial economies; 2024 Q2



Source: Central Bank of Ireland.

Notes: Financing for the real economy includes assets issued by NFCs (non-financial corporations) or governments and property and land assets.

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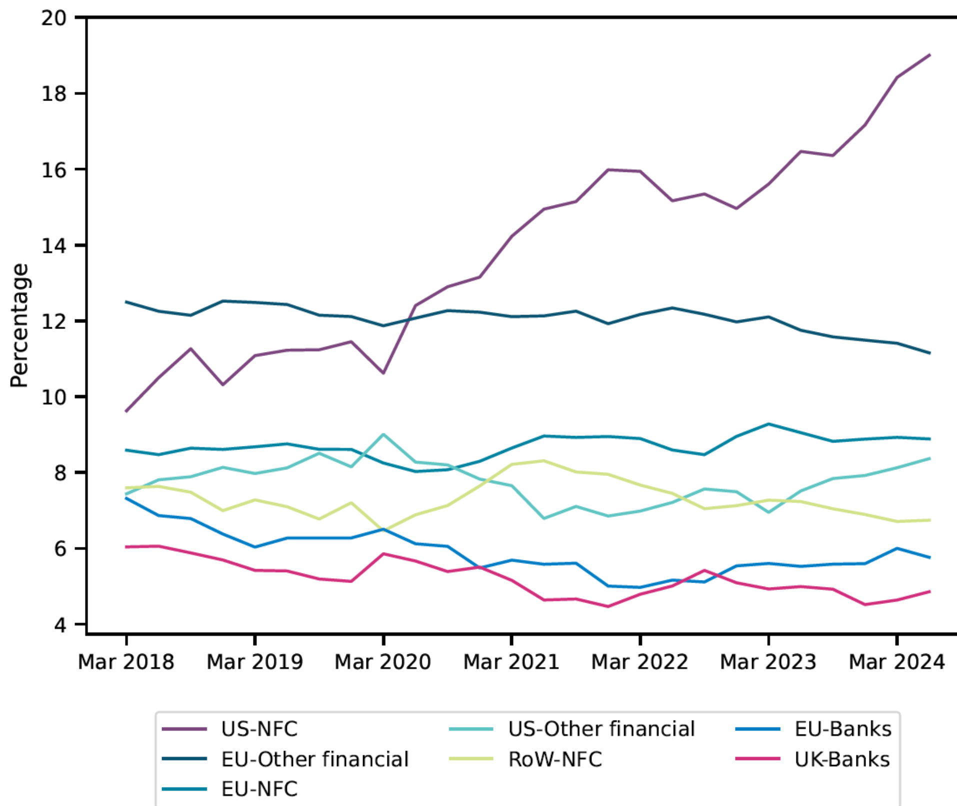
Exposures to US NFCs have risen to nearly a fifth of total MBF portfolio holdings, reflecting positive revaluations. MBF entities' exposure to US NFC assets has increased significantly over the past year, representing almost 20 per cent of total AuM as of 2024 Q2 **(Chart 5)**. This reflects US stock market developments and sharp upward revaluations, particularly in the technology sector.

US NFC exposures have increased significantly in recent years, and make up almost 20 per cent of all asset exposures.

Chart 5: Exposures to US NFCs has increased significantly since 2020

Selected country and sector exposures as share of total MBF assets; 2018 Q1 – 2024 Q2



Source: Central Bank of Ireland.

Notes: EU includes Ireland. Other financial includes money market funds, insurance corporations and pension funds, and other financial intermediaries.

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3. Recent trends and vulnerabilities in investment funds (excluding MMFs)

3.1 Recent Trends

Investment funds saw a rebound in growth since 2023, driven by investor inflows and increasing asset values.

The investment fund sector has seen a rebound in growth during 2023 and into 2024, driven by both investor inflows and increasing asset values. The investment fund sector remains the largest and fastest growing sub-sector within the MBF sector in Ireland, with AuM growing 17 per cent between 2023 Q2 and 2024 Q2. As of 2024 Q2, investment funds' AuM surpassed the previous peak reported in late 2021. GBP LDI Funds are the only fund cohort continuously reducing in AuM since 2022, primarily due to the UK gilt market turmoil, which has led to asset sales and funds unwinding leveraged positions.

An improving macroeconomic environment has led to significant inflows into Bond and Equity Funds since 2023. Equity Funds have benefited from an improved macroeconomic outlook, as falling inflation, expectations of rate cuts and resilient economic growth led to stock markets globally reaching record highs. Artificial Intelligence (AI) and technology sector stocks (particularly the "Magnificent Seven") have also contributed to this growth, leading to significant valuation increases. Inflows into Equity Funds over the year amounting to 11 per cent of 2023 Q2 Total Net Asset Value (NAV) (**Chart 6**). At the same time, Bond Funds have benefited from highly attractive yields in the context of a high interest rate environment, as well as a broad-based market perception of declining credit risk. This led to Bond Funds receiving net subscriptions amounting to 9 per cent of 2023 Q2 NAV.[15] Irish-domiciled Hedge Funds continued to experience net outflows over the past year. Separately, Irish Property Funds received net inflows as of 2023 Q4, amounting to 6 per cent of end-2022 NAV.[16]

[15] See ESMA's latest TRV Risk Monitor, No. 2, 2024.
[16] See the Central Bank's Financial Stability Review 2024:II for further details.

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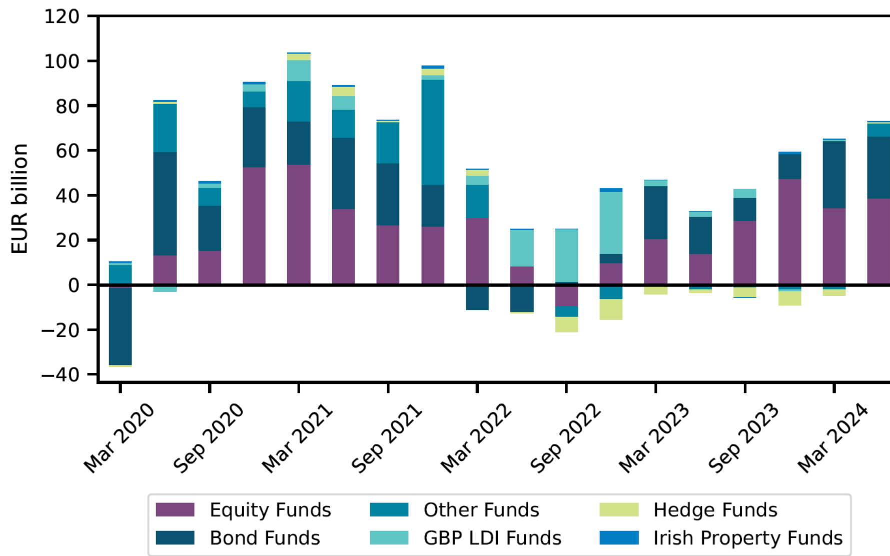
Chart 6: Equity and Bond Funds experienced strong net inflows since 2023, while Hedge Funds registered net outflows
Quarterly net flows by fund cohort; 2020 Q1 – 2024 Q2



Source: Central Bank of Ireland.

Upward revaluations largely drove the increase in funds' equity holdings, while net transactions played a more significant role in funds' holdings of debt securities. The change in the total amount of debt and equity securities held by investment funds can be decomposed into net revaluations and net transactions. The growth in the holdings of equity securities since 2023 can largely be attributed to increasing asset values, reflecting the improving macro-financial environment, which has driven market capitalisations in many advanced economies to record levels. At the same time, strong growth in net purchases of debt securities coincide with greater geo-economic uncertainty and higher risk free rates. Overall, investment funds have on aggregate not recorded net selling of either debt or equity securities since early 2023, reflected also in the net inflows experienced by both Equity and Bond Funds in the same timeframe (**Chart 7**).

Changes in asset valuations across equity securities were much more impactful on the level of holdings than net purchases in 2023, while the opposite was true for bond holdings.

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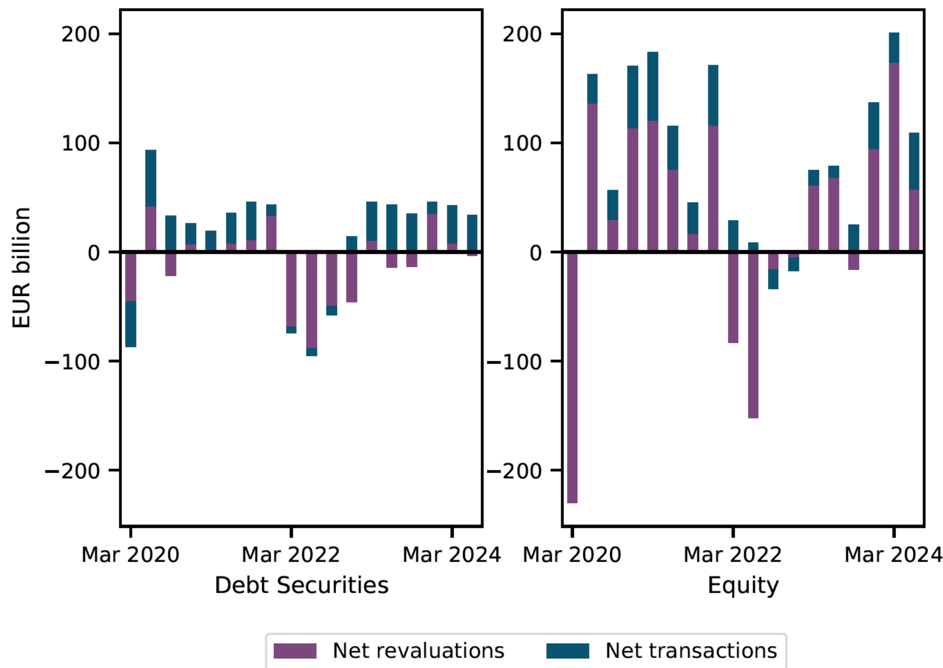
Chart 7: Positive revaluations have dominated the increase in equity asset holdings' values
Change in holdings of debt and equity securities by fund cohort; 2020 Q1 – 2024 Q2



Source: Central Bank of Ireland.

3.2 Vulnerabilities

Leverage, liquidity mismatch and interconnectedness in funds are key areas for monitoring evolving financial vulnerabilities. Typically, it is the collective actions of investment funds that have the potential to generate systemic risk. The materialisation of systemic risk arises from an adverse shock to the financial system and the collective interplay between investment funds' vulnerabilities, in particular leverage and liquidity mismatch, and the interconnectedness of the fund cohorts.[17]

The materialisation of systemic risk arises from an adverse shock to the financial system and the collective interplay between investment funds' vulnerabilities.

3.2.1 Leverage in investment funds

Leverage, a potential source of financial vulnerability, is highest in Irish Property Funds, GBP LDI Funds and Hedge Funds (Chart 8). Excessive leverage can make cohorts of funds less resilient to adverse shocks, such as was seen during the UK gilt market

[17] See Central Bank of Ireland Discussion Paper 11: An approach to macroprudential policy for investment funds.

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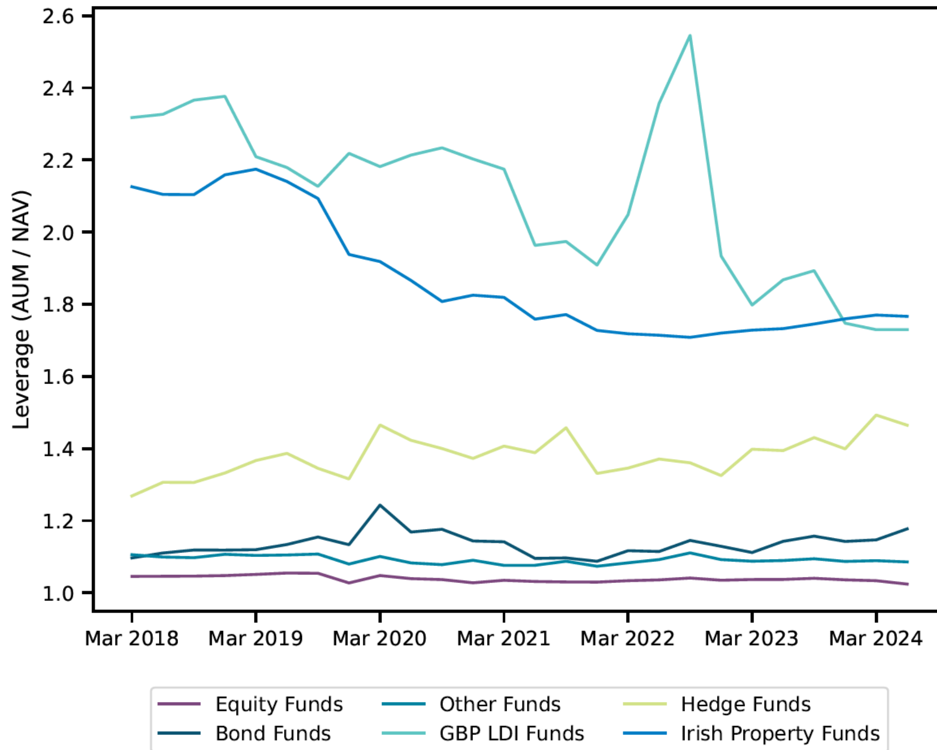
turbulence in 2022. Leverage is highest in Irish Property Funds, GBP LDI Funds and Hedge Funds.[18] Irish Property Funds mainly obtain leverage from the use of loans and GBP LDI funds through securities financing transactions (**Chart 9**). In practice, investment funds, and Hedge Funds in particular, also take on leveraged positions through the use of derivatives, i.e. synthetic leverage.

Leverage in Irish domiciled funds is highest in GBP LDI Funds and Irish Property Funds.

Chart 8: Leverage is highest among GBP LDI Funds and Irish Property Funds, but the longer term trend is downwards for both cohorts
Weighted average financial leverage by fund cohort; 2018 Q1 – 2024 Q2



Source: Central Bank of Ireland.

[18] The Central Bank of Ireland has introduced measures to limit leverage in Irish Property Funds and GBP LDI Funds in recent years. See here and here for details.

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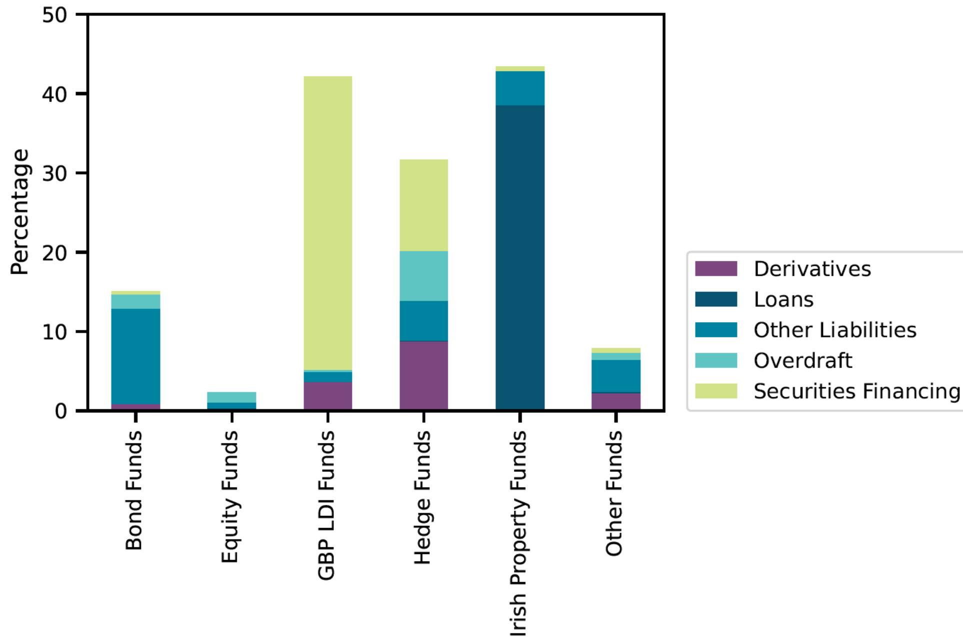
Chart 9: Securities financing transactions are the main source of leverage for Hedge Funds and GBP LDI Funds

Liabilities by type and fund cohort as share of total assets; 2024 Q2



Source: Central Bank of Ireland.

Notes: Securities financing contains positions in repurchase agreements and securities lending. Repurchase agreements (repos) allow the borrowing counterparty to a repo transaction to borrow cash using an asset as collateral (reverse repos allow the collateralised lending of cash). The repo involves the borrower of the cash selling the asset to the cash lender with an agreement to repurchase the asset at an agreed price and repay the loan at an agreed future date. As the chart only reflects the market value of derivatives positions, it does not reflect the additional off-balance sheet claims that may arise due to changes in the future value of an underlying asset.

Hedge Funds have increased levels of leverage in the past year, while leverage in GBP LDI Funds has fallen. Hedge Funds have increased leverage to 1.5 times NAV in 2024 Q2 (**Chart 8**). This is partly explained by an increased use of securities financing transactions (**Chart 9**). Leverage in Irish Property Funds has increased marginally since the start of 2023, after declining between 2019 and 2022. This is mainly due to falling commercial real estate market valuations, which represent the bulk of Irish Property Funds' holdings.[19] On the other hand, GBP LDI Funds leverage has continued to fall in 2024, following its high in mid-2022. (**Chart 8**).[20]

Since the events of late 2022, GBP LDI funds have maintained an increased resilience to changes in UK gilt yields and leverage has reduced.

[19] See Central Bank of Ireland's Financial Stability Review.

[20] See Central Bank of Ireland's letter to the industry on supervisory expectations and the announcement of macroprudential measures for Irish-authorised GBP-denominated LDI funds.

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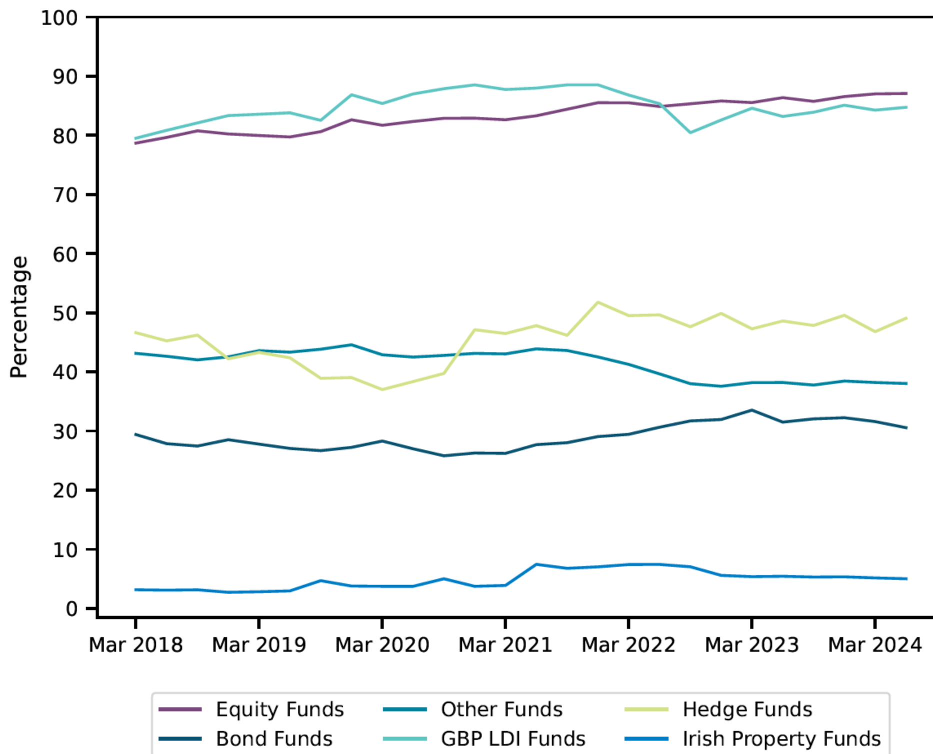
3.2.2 Liquidity mismatch in investment funds

Liquid asset holdings have generally remained stable since 2023, with small movements across fund cohorts. GBP LDI Funds and Equity Funds are the most liquid cohorts, holding 80 per cent of AuM in securities that are easily transformed into cash. Overall, investment funds have kept a relatively constant level of liquid assets in recent years.[21] Bond Funds saw a small decrease in the share of liquid assets in their portfolios to 32 per cent of AuM in 2024 Q2 (**Chart 10**). Low levels of liquid assets in Irish Property Funds are mitigated by their infrequent dealing frequency (**Chart 11**).

Overall, investment funds have kept a relatively constant level of liquid assets in recent years.

Chart 10: The share of liquid assets has remained relatively stable across fund cohorts
Liquid assets as share of total assets; 2018 Q1 – 2024 Q2



Source: Central Bank of Ireland.
Notes: Liquid Assets includes cash, advanced economies' government debt, debt or securities maturing in 7 days, and advanced economies' equities.

[21] Liquid Assets are defined as including cash, advanced economies' government debt, debt or securities maturing in 7 days, and advanced economies' equities.

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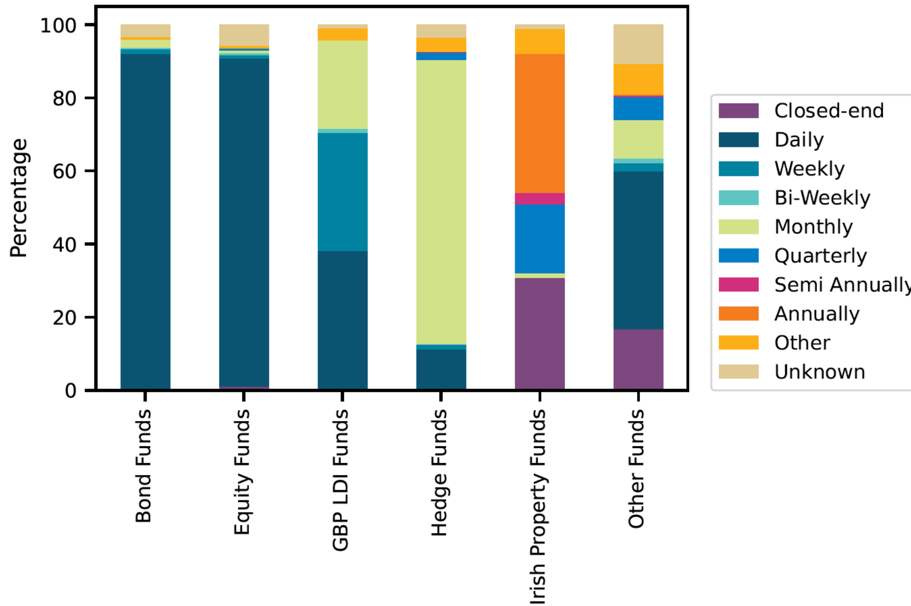
Chart 11: Bond and Equity Funds have the highest portion of daily dealing funds, while Hedge Funds mainly offer monthly dealing
Asset-weighted share of funds by dealing frequency and fund cohort; 2024 Q2



Source: Central Bank of Ireland.
Notes: The Central Bank introduced guidance to reduce liquidity transformation in a significant subset of Irish Property Funds. This guidance came into immediate effect from end November 2022 for new funds and had an 18 month phase-in period for existing funds, i.e. until May 2024. For more information see here.

Bond Funds have frequent dealing combined with a low share of liquid assets.

Frequent dealing coupled with low levels of liquid assets leads to elevated liquidity mismatch for Bond Funds. The vast majority of Bond Funds and Equity Funds offer daily dealing, while Hedge Funds mostly deal on a monthly basis and Irish Property Funds on an annual basis. Although the dealing picture is more heterogeneous for GBP LDI Funds and Other Funds, nearly 40 per cent of both cohorts also deal on a daily basis (**Chart 11**). Daily dealing exposes funds to situations where redemption requests have to be met immediately. Funds fulfil these requests by using their cash positions or liquidating assets. Of the daily dealing fund cohorts, Bond Funds have the lowest share of liquid assets (**Charts 10, 12**). This exposes Bond Funds to possible situations of liquidity mismatch, i.e. where liquid asset holdings are not sufficient to cover redemption requests (see **Box A**).

Bond Funds are potentially exposed to situations where liquid asset holdings are not sufficient to cover redemption requests.

The vast majority of funds' liquidity stock comprises of government debt and equity securities issued by advanced economies. Equity Funds, Hedge Funds and Other Funds concentrate their liquid positions in stocks issued by companies in advanced economies. Equity Funds, however, have very low cash holdings compared to Hedge Funds and Other Funds. On the other hand, the majority of

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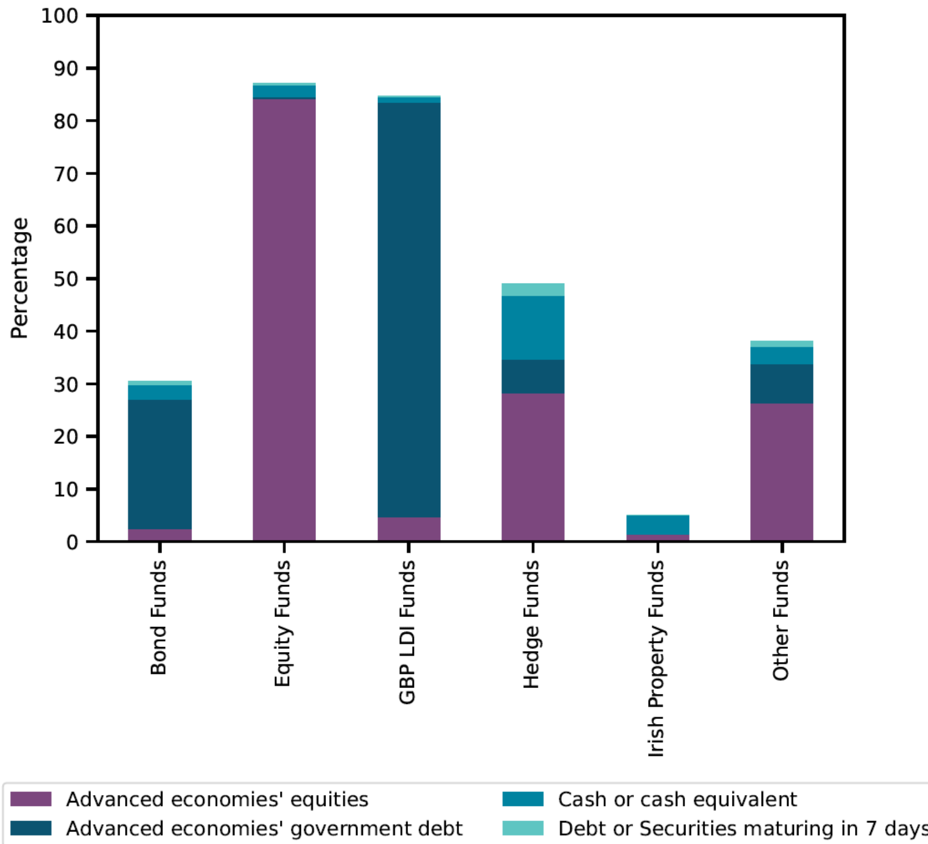
liquid assets held by Bond Funds and GBP LDI Funds is made of advanced economies' government bonds. However, as observed in September 2022 in the UK gilts markets, these markets can experience dysfunction under certain, albeit extreme, circumstances.

Chart 12: Source of liquid asset varies across fund cohorts, altering mainly between advanced economy equity and sovereign debt issuances
Liquid assets by type and fund cohort as share of total assets; 2024 Q2



Source: Central Bank of Ireland.

3.2.3 Other vulnerabilities

The weighted average maturity of debt securities held by Irish investment funds has gradually declined since 2020, but has stabilised more recently at almost 8 years. Increased macroeconomic uncertainty and higher interest rates have led to significant volatility in the value of bond portfolios in recent years. Fund managers seem to have responded by reducing the maturity of their debt holdings from approximately 11.0 years to 7.9 years (**Chart 13**). A lower weighted average maturity has made the value of funds' debt securities less sensitive to changes in the interest rate environment. As of 2024 Q2, the weighted average maturity of debt securities has stabilised at almost 8 years.

Since 2023 Q2, the weighted average maturity of debt securities held by Irish investment funds stabilized at approximately 7.9 years.

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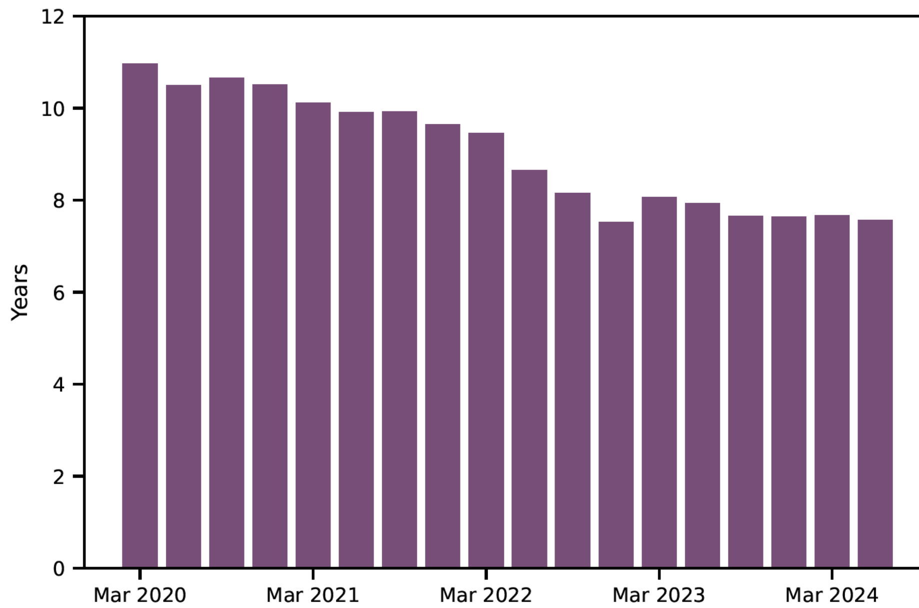
Chart 13: The weighted average maturity of debt security holdings has reduced significantly in recent years

Weighted average maturity of funds' debt securities holdings; 2020 Q1 – 2024 Q2



Source: Central Bank of Ireland.

Investment funds have seen a marginal increase in exposures to lower-rated bonds. Bond Funds and GBP LDI Funds hold the greatest proportion of debt securities. Both cohorts continue to hold a high share of investment grade securities, while Bond Funds are the most exposed cohort to high yield securities. Compared to 2023 Q4, investment funds across all cohorts have slightly increased their relative exposure to speculative bonds. While the change is marginal, it is the first increase in high yield bond holdings across the sector since 2022 (**Chart 14**). While the impact of interest rate changes on bonds is not dependent on credit rating, funds with a higher share of speculative grade bonds may even be less impacted by interest rate changes due to a higher share of floating rate notes.[22] However, funds with a large share of speculative grade securities are more exposed to credit risk, particularly in the current risk environment with rising corporate insolvencies.[23]

[22] See Gianstefani, Metadjer and Moloney (2023).
[23] See ECB Financial Stability Review, November 2024.

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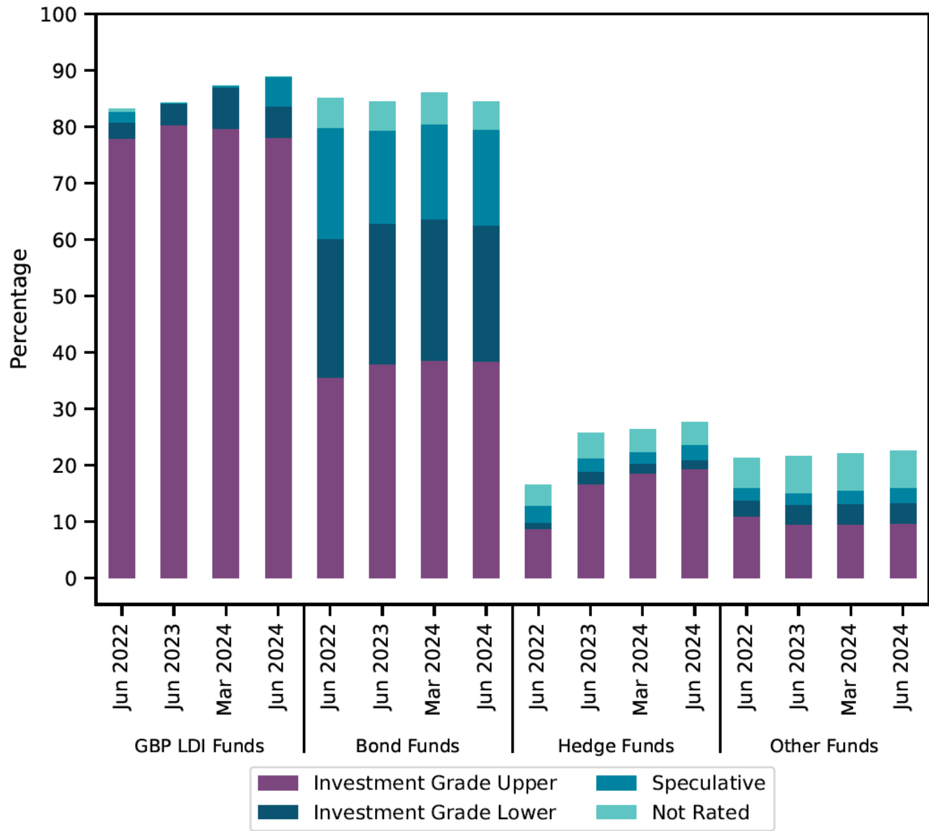
Chart 14: Investment funds have slightly increased exposures to speculative debt
Debt holdings by fund cohort and rating class as share of total assets; 2022 Q2, 2023 Q2, 2024 Q1, 2024 Q2



Source: Central Bank of Ireland.

3.2.4 Investment fund risk heatmap

Risk heatmaps are used to identify cohorts of funds that may be vulnerable to shocks due to compounding vulnerabilities. Cohorts of investment funds have characteristics that make them more likely to amplify market shocks and transmit financial market volatility to other sectors of the economy. This is especially true for groups of systemically important funds that have a combination of high leverage, liquidity mismatch, and close interconnectedness with other parts of the financial system or the real economy. Risk heatmaps were introduced in the last *Monitor* to identify portions of the sector that may be vulnerable to a shock (such as a sharp deterioration in market conditions) due to compounding vulnerabilities and that are more likely to amplify stress due to these characteristics. The heatmap considers a combination of metrics to identify leverage, liquidity mismatch, sensitivity to short-term market shifts and interconnectedness with key markets.

Bond Funds have high liquidity mismatch and significant exposure to important market segments. Compounding vulnerabilities in

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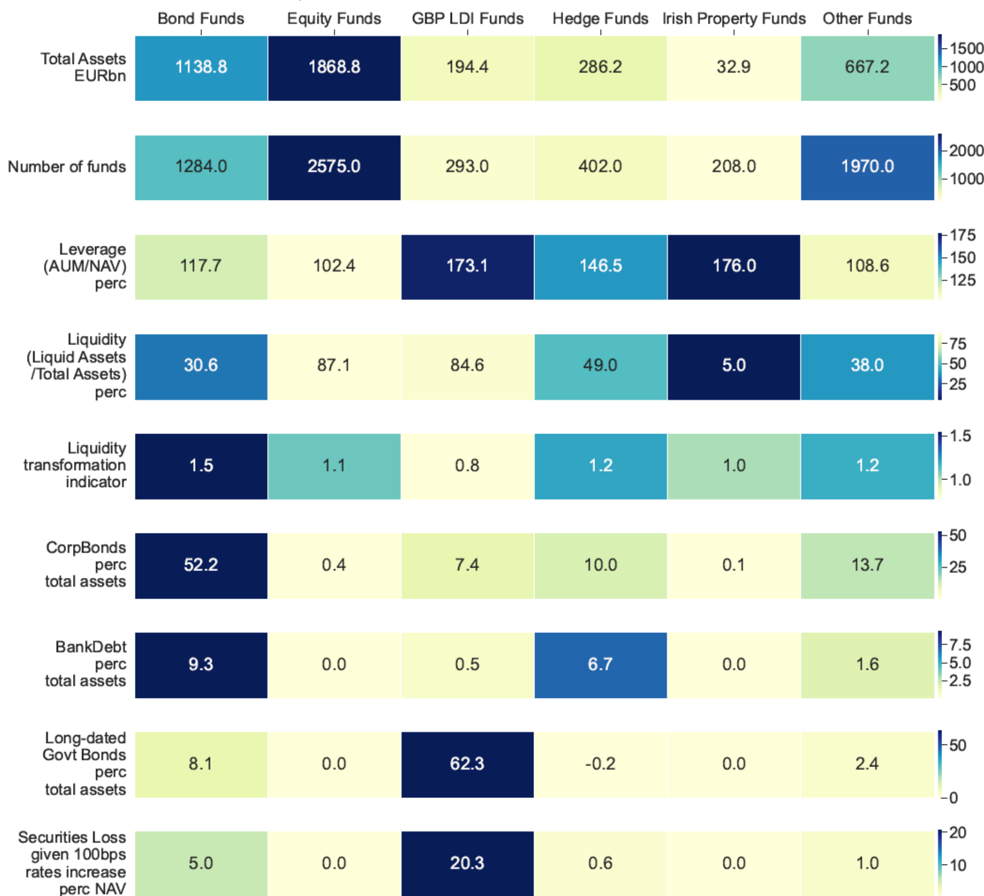
Bond Funds increase the likelihood of the materialisation of systemic risk and the transmission of shocks into the real economy (**Table 2**). Bond Funds represent the second largest cohort of funds with total assets of €1.1 trillion. While employed leverage is relatively low, Bond Funds have the highest liquidity mismatch among all cohorts and have a significant exposure to corporate bonds and banking sector debt. Taken together, Bond Funds may be vulnerable to redemption runs and may amplify shocks in these systematically important sectors in the real economy.

Table 2: Bond Funds are one of the least liquid and most exposed to the real economy among the fund cohorts monitored

Investment Fund Risk Heatmap; 2024 Q2



	Bond Funds	Equity Funds	GBP LDI Funds	Hedge Funds	Irish Property Funds	Other Funds
Total Assets EURbn	1138.8	1868.8	194.4	286.2	32.9	667.2
Number of funds	1284.0	2575.0	293.0	402.0	208.0	1970.0
Leverage (AUM/NAV) perc	117.7	102.4	173.1	146.5	176.0	108.6
Liquidity (Liquid Assets /Total Assets) perc	30.6	87.1	84.6	49.0	5.0	38.0
Liquidity transformation indicator	1.5	1.1	0.8	1.2	1.0	1.2
CorpBonds perc total assets	52.2	0.4	7.4	10.0	0.1	13.7
BankDebt perc total assets	9.3	0.0	0.5	6.7	0.0	1.6
Long-dated Govt Bonds perc total assets	8.1	0.0	62.3	-0.2	0.0	2.4
Securities Loss given 100bps rates increase perc NAV	5.0	0.0	20.3	0.6	0.0	1.0

Source: Central Bank of Ireland.

Notes: Heatmap with metrics measuring leverage, liquidity, sensitivity to interest rates, and interconnectedness. Each column is coloured so the darker the colour the greater the potential vulnerability. The liquidity transformation indicator is adapted from the a standard method used by the Financial Stability Board in the Global Non-Bank Financial Intermediation Monitoring Exercise where values less than 1 indicate that liquid assets exceed current liabilities, with higher values representing riskier liquidity mismatch.

Hedge Funds and GBP LDI Funds also present compounding vulnerabilities. Table 2 shows that Hedge Funds have a moderate level of financial leverage and liquid assets, and are the second

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cohort most exposed to the corporate and banking sector after Bond Funds. Hedge Funds may also be vulnerable to liquidity stress from margin calls and therefore have the potential to amplify shocks to the real economy. Moreover, GBP LDI Funds would suffer the most losses following a sudden increase in interest rates. This is primarily due to their high leverage and concentrated exposure to long-term government bonds. Such exposure has not decreased (relative to AuM) in the past year notwithstanding declines in leverage and shrinking of the cohort.

Box A: Liquidity stress simulation for Irish Bond Funds: measuring resilience to redemption shocks

By Elisa Telesca (International Finance Division)

Liquidity mismatch is one of the primary potential vulnerabilities in investment funds. It refers to the difference between the higher frequency redemption terms that funds may offer and the amount of time it may take to liquidate potentially less liquid asset holdings in an orderly manner to satisfy redemption requests. This mismatch creates the possibility that funds, especially daily-dealing funds, may become forced sellers of their assets, leading to dislocations in market price and consequently higher borrowing costs for bond issuers. These situations have materialised in the past in particular during periods of stress, such as in March 2020.

This box applies the *Redemption Coverage Ratio* (RCR) methodology to better characterise the resilience of Irish open-ended Bond Funds in times of stress.[24] In particular, it simulates severe but plausible redemption shocks of three distinct magnitudes, ranging from 9 to 23 per cent of NAV and calibrated on the basis of historical fund-level net flows. The RCR compares Bond Funds' high-quality liquid assets (HQLA) with estimates of severe redemptions. If the RCR is lower than 1, the fund does not have sufficient liquid holdings to meet the redemption shocks, and therefore is judged to have a liquidity mismatch (**Chart 1**). Among these funds, the level of additional liquid assets needed to make the difference is known as the liquidity shortfall.

Chart 1: Most HY Corp. Bond Funds would not pass even the least conservative RCR stress test

Distribution of fund-level *Redemption Coverage Ratio*

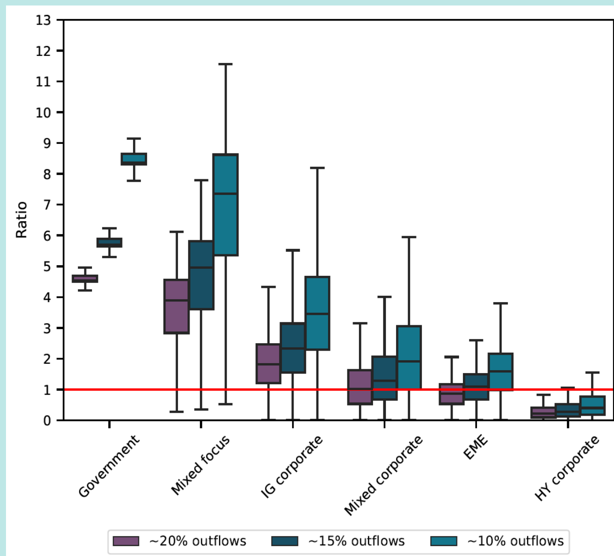
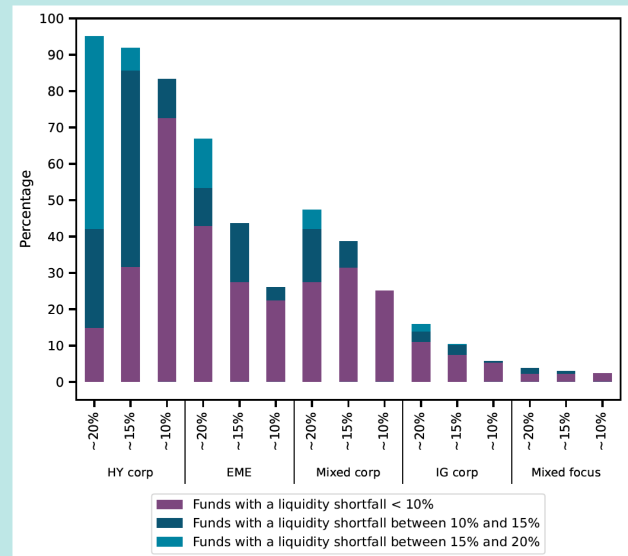


Chart 2: HY Corp., Mixed Corp. and EME bond funds would have the highest liquidity shortfall

Share of non-resilient funds by liquidity shortfall amount



Source: Central Bank of Ireland, ECB (CSDB), and author's calculations.

Notes: Funds' liquid assets are measured by categorising security-level holdings as of June 2024 according to the Basel Liquidity Coverage Ratio requirements for HQLA. HQLA Level 1 assets include cash, cash equivalents and qualifying government bonds; Level 2A and 2B include less liquid assets such as qualifying covered bonds, corporate bonds, asset-backed securities and stocks. The HQLA stock is then calculated by applying no haircut to cash and Level 1 assets, 15 per cent to Level 2A assets and 40 per cent to Level 2B assets. Redemption shocks are calculated, for each fund cohort, as the expected shortfall at the 3rd (most conservative), 5th (conservative), and 10th (least conservative) percentile of the distribution of monthly net flows experienced by individual funds in the same

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cohort between January 2014 and June 2024, in line with the methodology applied in ESMA (2019). The expected shortfall averages net flows below the Xth percentile of the distribution. The population of Irish bond funds is divided into six sub-categories following the methodology applied in Gianstefani, Metadjer & Moloney (2023). Chart 1: The red line represents the RCR threshold, i.e., an RCR lower than 1 indicates a liquidity mismatch. Chart 2: The liquidity shortfall refers to the redemption shock (net outflows) minus the HQLA stock (liquid assets). A high liquidity shortfall is defined as bigger than 10 per cent of NAV. Advanced government bond funds are excluded as there are no funds with a RCR < 1. The maximum liquidity shortfall observed is 19.5 per cent of NAV.

29 per cent of bond funds' AuM sits in funds that would have a liquidity mismatch in the most conservative redemption scenario. At least 80 per cent of Advanced Government, Investment Grade (IG) Corporate and Mixed Focus Bond Funds would have enough liquid assets to meet all simulated outflows. This is mainly thanks to their high share of advanced economies' government bond holdings. On the other hand, more than 80 per cent of High Yield (HY) Corporate Bond Funds would not be able to cover all simulated redemption shocks with HQLA assets. They would thus have to sell less liquid assets to meet the redemption requests and/or could explore the application of liquidity management tools. Mixed Corporate and Emerging Market (EME) Bond Funds also present potential vulnerabilities, as 45 per cent and 65 per cent of funds respectively would have a liquidity mismatch in the most conservative redemption scenario (**Chart 1**). On aggregate, the more vulnerable cohorts – HY Corporate, Mixed Corporate and EME Bond Funds – represent 42 per cent of the sector's AuM.[25]

HY Corporate Bond Funds have the highest liquidity shortfall, potentially making them the least resilient to shocks among the bond fund cohorts considered. Around 80 per cent of HY Corporate Bond Funds with an RCR lower than 1 would need to sell between 10 and 20 per cent of NAV in illiquid assets to satisfy the most severe simulated outflows. Instead, for the rest of the Bond Fund cohorts, the share of funds with a high liquidity shortfall is at most 20 per cent (**Chart 2**).[26] Based on this analysis, HY Corporate Bond Funds would thus be the most vulnerable to large redemption requests, and more likely to engage in fire sale behaviour. Fire sales can create pressures on an already illiquid underlying market, leading to the potential amplification of shocks and spillovers to other sectors.[27] [28]

[24] The RCR is an established methodology to measure investment funds' liquidity mismatch and their resilience to redemption shocks. See Bouveret (2017); Metadjer & Moloney (2017); ESMA (2019); IMF (2022); and Daly, Telesca and Weistroffer (2023).
[25] The same three cohorts were also highlighted as the most sensitive to changes in bonds' interest rates in Gianstefani, Metadjer & Moloney (2023).
[26] This is assuming funds do not apply liquidity management tools.
[27] Some limitations of the RCR methodology are worth mentioning, namely that even in presence of a sufficient amount of liquid assets, fire selling of such assets could still create price spirals, as seen during the 2022 UK gilt market crisis and GBP LDI funds reaction. Moreover, the HQLA framework automatically penalises certain asset classes and consequently the funds holding them, such as high yield Corporate Bond Funds, not considering the security-specific market liquidity.
[28] See Central Bank of Ireland Discussion Paper 11: An approach to macroprudential policy for investment funds for policy implications of liquidity mismatch in open-ended funds.

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4. Recent trends and vulnerabilities in Money Market Funds

4.1 Recent Trends

MMFs' total assets have continued to grow strongly, driven by large net inflows since 2023. MMFs are typically used by investors for cash management purposes and thus they are active players in short-term funding markets. Due to their low duration, rising policy rates pass through quickly to money markets, increasing the attractiveness of MMFs relative to other investments in the short term. Between 2022 Q4 and 2023 Q4, MMFs' AuM grew by 7 per cent while the number of funds increased from 82 to 85 (**Chart 15**). Growth has continued into 2024, with an increase in exposure to US assets in 2024 Q2, partly explained by MMFs seeking to profit from higher interest rates in the US.

MMF AuM at end 2024 Q2 was €779 billion, 15 per cent above the figure observed in 2023 Q2.

LVNAV MMFs experienced significant growth since 2023 and remain the largest MMF type. MMFs in Ireland are of three different types. Public Debt CNAV MMFs aim to maintain a stable share price. Variable Net Asset Value (VNAV) MMFs have share prices that fluctuate with the market value of their underlying assets, while LVNAV MMFs are a hybrid between the two and seek stability with slight price fluctuations. Between 2023 Q2 and 2024 Q2, the size of Public Debt CNAV MMFs grew by 9 per cent. As they also experienced strong growth in early 2023, this may reflect investors' desire for stability in times of increased uncertainty. LVNAVs remain the largest MMF type, accounting for 78 per cent of MMFs' total assets as of mid-2024 (**Chart 15**). VNAV MMFs have also grown by 5 per cent over the same period.

LVNAV MMFs account for about 78 per cent of assets held by Irish MMFs.

Although the majority of MMFs' exposures remain in USD assets, EUR exposures have increased in the past year. Investments into EUR-denominated assets have increased by 24 per cent since 2023 Q2. However, as of 2024 Q2, non-EUR assets still represent nearly 80 per cent of MMFs' total investments. USD assets alone represent half of all exposures and increased by 19 per cent compared to mid-2023. In contrast, GBP-denominated exposures have seen limited

Nearly 80 per cent of Irish MMFs are invested in non-euro assets.

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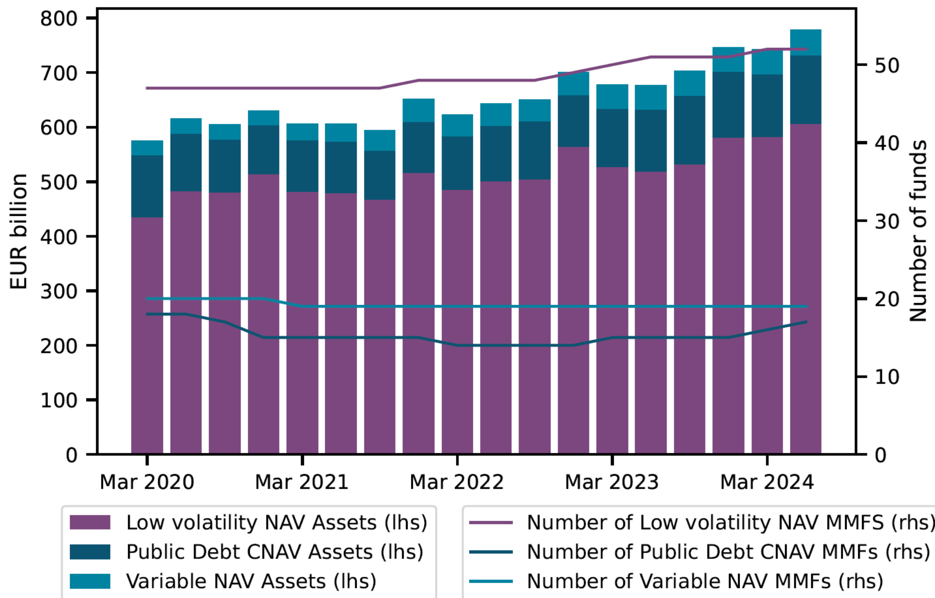
growth since 2020, and their relative share in the sector's total portfolio has continuously decreased (**Chart 16**).

Chart 15: Asset values for LVNAV MMFs continue to grow
Total assets and number of MMFs by MMF type; 2020 Q1 – 2024 Q2



Source: Central Bank of Ireland.

Irish MMFs received large net inflows since mid-2023. Following the high positive net flows seen in the second half of 2022 and their reversal in the first half of 2023,[29] MMFs recorded above average net inflows going into 2024. This is with the only exception of outflows in 2024 Q1, which reflect the usual seasonal patterns driven by investors' (such as corporates and investment funds) cash management strategies (**Chart 17**). Strong inflows into MMFs over the past year could be partly explained by inflows into USD LVNAVs as a result of new SEC rules (See **Box B**), or a general trend towards more higher-yielding fixed-income assets, particularly among VNAV funds with longer maturities.

MMFs recorded above average net inflows going into 2024.

[29] The magnitude of the increase in net inflows in 2022 Q4 can, at least partly, be linked to the actions of GBP LDI Funds during the UK gilt market turbulence. During 2022 Q3, GBP LDI Funds redeemed shares in MMFs to meet liquidity needs, while this process reversed strongly in the last quarter of the year. See Dunne et al. (2023) for more.

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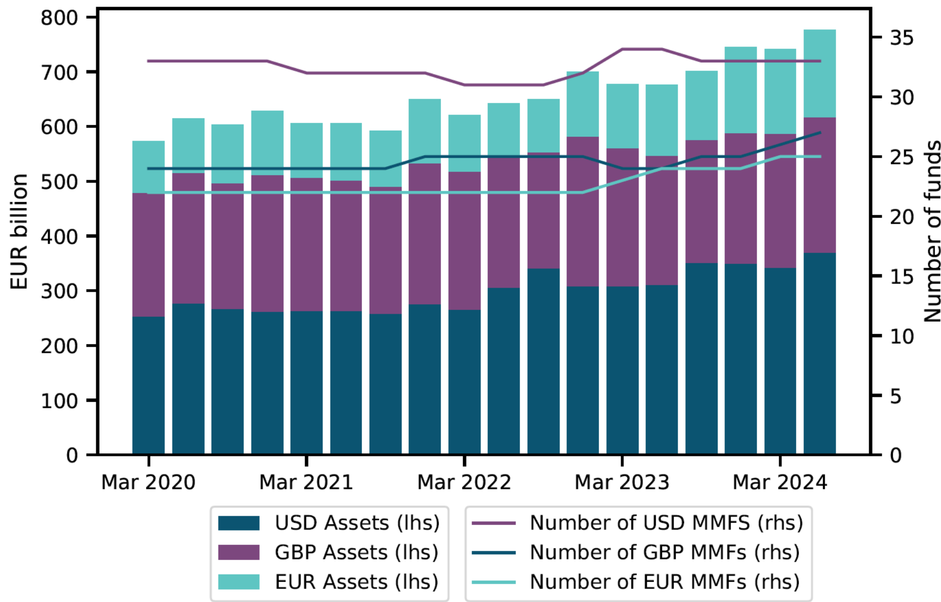
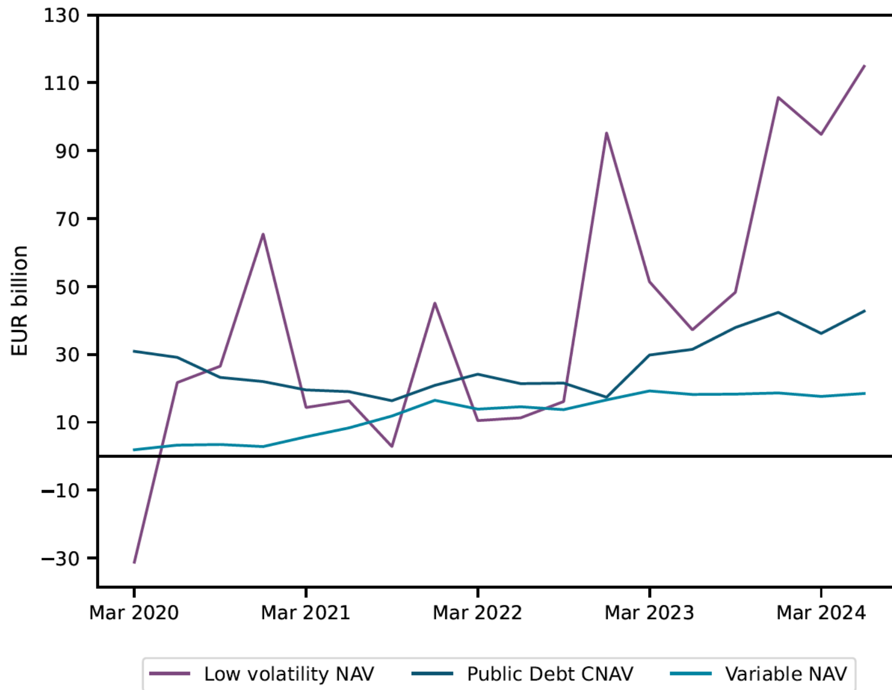
Chart 16: MMFs exposures to USD and EUR-denominated assets have increased
Total assets and number of MMFs by asset currency; 2020 Q1 – 2024 Q2



Source: Central Bank of Ireland.

Chart 17: MMFs have received large net inflows since Q3 2023
Cumulative quarterly net flows by MMF type; 2020 Q1 – 2024 Q2



Source: Central Bank of Ireland.

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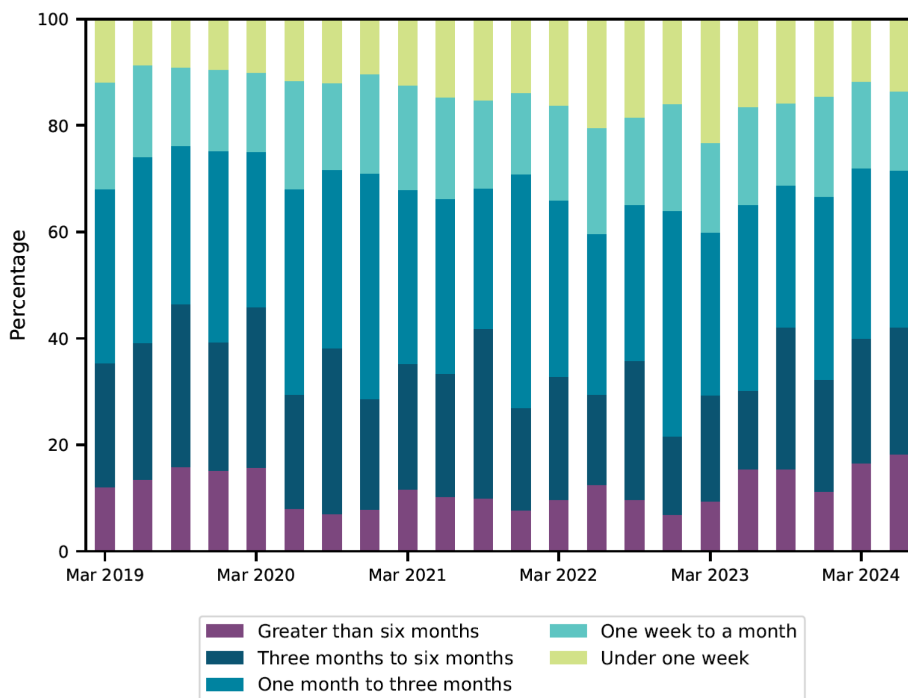
4.2 Vulnerabilities

MMFs have increased the average maturity of their bond holdings since 2023.

Since 2023, MMFs have increased the maturity of their debt holdings, reversing the decreasing trend seen in 2020-2022. Since 2023 Q1, MMFs have gradually increased the average maturity of their bond portfolio: the share of debt exposures that have a maturity higher than a month has risen from 60 per cent to 72 per cent in 2024 Q2. This has reversed the trend experienced in the previous years, as MMFs were actively reducing the duration of their portfolio. In particular, exposures to debt maturing in under a week went from 9 per cent in 2019 Q4 to 20 per cent in 2023 Q2. This then decreased to 14 per cent of their debt portfolio in 2024 Q2, which is nonetheless still higher than pre-Covid levels (**Chart 18**).

Chart 18: MMFs have increased the average maturity of their portfolios
MMFs' average maturity of bond holdings as share of total bond portfolio; Q1 2019 – 2024 Q2



Source: Central Bank of Ireland.
Notes: This chart does not include investments by MMFs via repurchase agreements.

MMFs hold a large share of highly liquid assets.

MMFs hold a large share of highly liquid assets, although differences exist across the cohorts. For the purposes of the *Monitor*, liquid asset holdings of MMFs are defined as cash, securities (including reverse repurchase agreements) that will mature within

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seven days, selected money market instruments (for LVNAVs)[30], and highly liquid government securities (for LVNAVs and Public Debt CNAVs).[31] LVNAVs and VNAVs depend more on a mix of cash or cash equivalents and short-term securities as a source of liquidity. Public Debt CNAVs hold a large number of liquid government securities, but have limited cash reserves (**Chart 19**).

MMFs have decreased exposures to weekly liquid assets since early 2023, albeit to levels that are still above pre-COVID-19 lows. All MMF cohorts decreased exposures to assets maturing within 7 days throughout 2023. This is also reflected in the increased maturity of their bond holdings. In particular, the level of Public Debt CNAVs' weekly liquid assets sharply decreased after the spike in exposures in early 2023. It reduced from around 90 per cent to 60 per cent of AuM in 2024. [32] LVNAVs and VNAVs both hold around 40 per cent of AuM in weekly liquid assets as of 2024 Q2. Overall, weekly liquid asset holdings are still above pre-COVID-19 levels for all MMF cohorts. Among all MMF types, LVNAVs have the lowest share of weekly liquid assets relative to their statutory requirement under the EU MMF Regulation (MMFR) (**Chart 20**).

MMFs have decreased exposures in weekly liquid assets since 2023.

[30] Includes highly liquid government securities that can be redeemed and settled within one working day and have a residual maturity of up to 190 days, subject to a limit of 17.5 per cent AuM.
[31] Includes money market instruments or units or shares in other money market funds, subject to a limit of 7.5 per cent AuM and provided they are able to be redeemed and settled with five working days.
[32] See MBF Monitor 2023.

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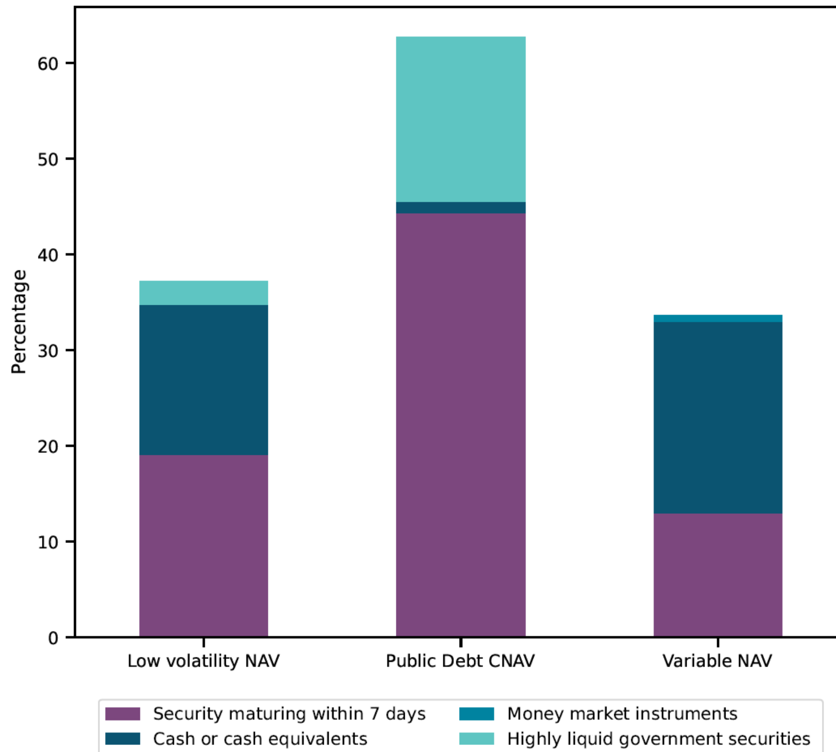
Chart 19: PD CNAVs hold the highest share of liquid assets

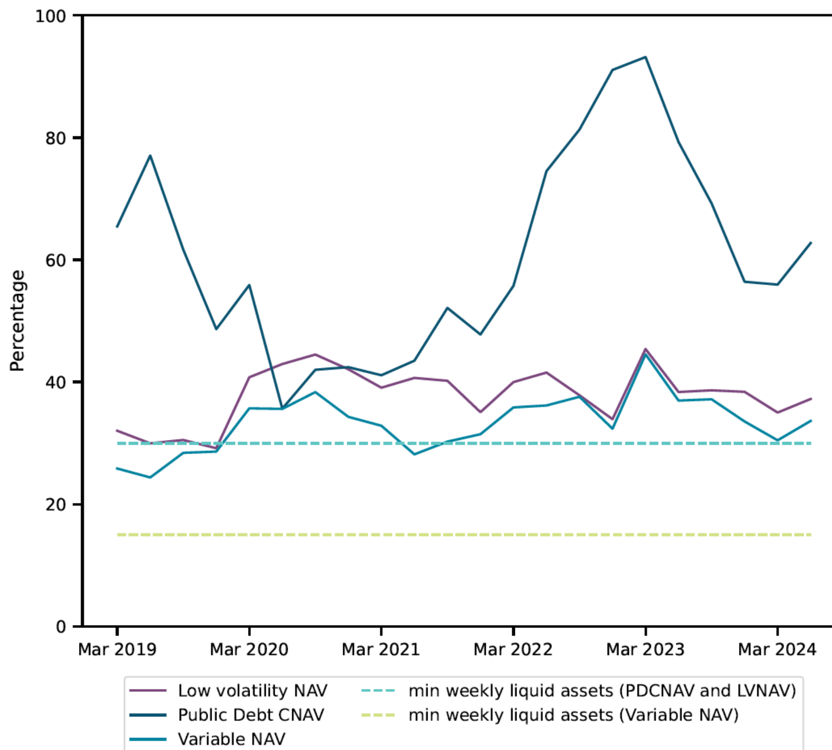
MMFs' liquid assets by asset type and MMF type as share of total assets; 2024 Q2



Source: Central Bank of Ireland.

Chart 20: Share of weekly liquid assets most volatile in the most liquid cohort, Public Debt CNAVs

Weekly liquid assets by MMF type as share of total assets; 2019 Q1 – 2024 Q2



Source: Central Bank of Ireland.

Notes: *Min weekly liquid assets* refers to the minimum required holdings of assets maturing within one week or other highly liquid assets for MMFs. For Public Debt CNAVs and LVNAVs, this requirement is 30 per cent of total assets, while for VNAVs, this requirement is 15 per cent of total assets. Reporting of MMFR regulatory limits began in 2020, weekly liquid assets are based on Central Bank calculations.

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Box B: Monitoring cross-border effects of US SEC rule changes on Irish Money Market Funds

By Angelica Ghiselli (International Finance Division)

On July 12, 2023, the US Securities and Exchange Commission (SEC) announced a new round of reforms to Rule 2a-7, which governs money market funds (MMFs) in the US. These reforms – including higher levels of liquidity requirements – are intended to strengthen the resilience of MMFs, following the vulnerabilities demonstrated during the "dash for cash" episode in 2020. The new reforms do not affect all US MMFs to the same extent.[33] For example, one of the reforms concerns the adoption of mandatory liquidity fees and has mostly affected US Prime and Tax-Exempted Institutional MMFs from 2 October 2024. The announced reforms are not the first regulatory change to affect US Prime Institutional MMFs ("US Prime funds") as the SEC introduced a first set of reforms in 2014. This box analyses the cross-border impact of the 2023 reforms, with a focus on spillovers to Irish-domiciled USD denominated MMFs.

Since the announcement of the new rules, US Prime funds have seen a significant reduction in assets under management (AuM), mainly due to conversions to other US MMFs types. From the announcement of the 2023 reforms to the implementation of the mandatory liquidity fees on 2nd October 2024, US Prime funds had total outflows of around US$320 billion. As Chart 1 shows, a significant share (US$246 billion) of the outflows were conversions to other types of US MMFs, largely to US Government MMFs. The redirection of flows to US Government MMFs also took place previously during the 2014 reforms. According to commentary by industry and commercial MMF data providers, one of the key reasons why many funds converted to other MMF types relates to the imposition of fees on investors' redemptions when net redemptions exceed 5 per cent of net assets on a single day.[34] The remainder of the USD outflows (US$74 billion) are not related to conversions into other US MMF types.

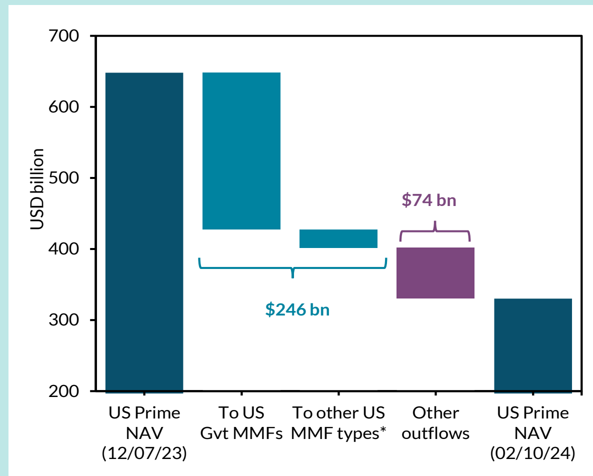
Excluding the conversion to other US MMF types (which accounted for the majority of the reduction in AuMs), there is some evidence of risk shifting to Irish-domiciled USD denominated MMFs. At the time of the residual cumulative outflows from US Prime funds, we see inflows of a similar magnitude to Irish domiciled USD-denominated LVNAV MMFs (known here as Irish USD LVNAVs). From the announcement of the measures to the implementation of the mandatory liquidity fee, Irish USD LVNAVs saw inflows of around US$77 billion (Chart 2). This cohort of Irish domiciled MMFs are similar to US Prime funds as they invest in USD non-Treasury commercial paper and certificates of deposits. However, while inflows into Irish USD LVNAVs were significant (37 per cent of their NAV), outflows from US Prime funds that were not

[33] For more details on the SEC's Money Market Fund Reforms, please see the final document here. For a more stylised version, you may find a shorter prospect here.
[34] See Bloomberg article on "Money funds start shuffling assets ahead of SEC rule changes".

redirected to other US MMF cohorts was a small proportion of adjustment following the reforms with the majority of the outflows being conversions to other US MMF types, as outlined above.

Chart 1: The reduction in US Prime institutional MMFs' AuM was mainly due to a conversion to US Government MMFs

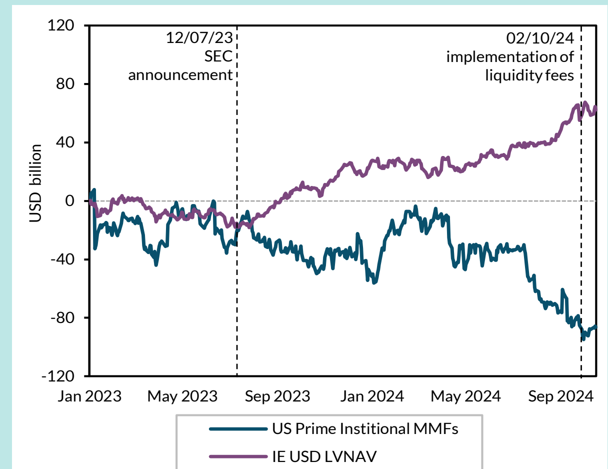
NAV in USD billion



Source: CRANE data and authors' calculation.
Notes: The contributions are calculated over the implementation window of the mandatory liquidity fee, i.e. from 12/07/2023 to 02/10/2024 (excluded). *Other MMF types include Prime retail and Ultra MMFs.

Chart 2: Excluding conversions, US Prime funds' outflows align with Irish USD LVNAVs inflows

Cumulative daily flows in USD billion, by MMF type



Source: CRANE data and authors' calculation.
Notes: LVNAV = low-volatility NAV. Net flows are proxied by the daily change in total net assets. Values are represented as weekly moving average and cumulative flows calculation starts from end-2022.

In conclusion, the analysis suggests that there is some preliminary evidence of a possible cross-border effect of the US SEC 2023 reforms on Irish-domiciled MMFs. Substantial inflows into Irish USD LVNAVs have taken place since the new regulatory requirements were announced. However, our current analysis does not (as such) track outflows from US Prime funds flowing into Irish USD LVNAVs, rather it points to the two events happening at the same time. The Central Bank will continue to monitor MMF flows as part of its ongoing monitoring and risk assessment analysis. The evidence provided here also underscores the need for Europe to proceed with MMF reforms consistent with the FSB, ESMA and ESRB proposals. [35]

5. Special Purpose Entities

SPEs are companies created to fulfil a narrow, specific purpose.[36] These purposes can include holding a pool of assets to act as collateral for loans, passing financial risks to other entities/investors, or availing of favourable tax circumstances. Unlike the investment

[35] See FSB Policy proposals to enhance money market fund resilience, ESMA Opinion on the review of the Money Market Fund Regulation and ESRB Recommendation on reform of Money market funds.
[36] See here for greater detail on SPEs.

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fund and MMF sectors, SPEs are not authorised by the Central Bank. However, SPEs may be subject to certain regulations depending on their activities (for example, if they trade in derivatives they would be subject to the European Market Infrastructure Regulation (EMIR)). SPEs can broadly be defined under two headings: FVCs, which engage in securitisation activities or Other SPEs, which engage in a variety of activities such as intra-group financing or loan origination.[37]

CLOs remain the dominant type of FVC, with Investment Fund Linked strategies accounting for the largest Other SPE category. CLOs are marketable securities backed by a pool of syndicated loans to sub-investment grade borrowers. The European CLO industry plays a role in providing financing for European NFCs and is mainly based in Ireland.[38] Growth in Irish CLOs has been substantial in recent years, with assets increasing by 32 per cent to €260 billion from 2021 Q4 to 2024 Q2 (**Chart 21**). However, links to the domestic economy remain limited. Investment Fund Linked SPEs are employed by investment funds to undertake all or part of their portfolio investment. Recent Central Bank research has outlined that links between Irish-resident funds and SPEs do not imply substantial indirect links between investment funds and the domestic Irish economy.[39] The key motivation for employing this type of SPE appears to be tax efficiency.

CLOs remain the dominant type of FVC, with Investment Fund Linked strategies accounting for the largest Other SPE category.

Chart 21: CLOs remain the largest and fastest growing SPE activity
Total assets of SPEs by primary activity; 2021 Q4, 2024 Q2

[37] See Golden and Hughes, 2018.
[38] See Market-Based Finance Monitor, 2021, Box A: Irish-resident Collateralised Loan Obligations' (CLOs) trends in 2020.
[39] See Golden, Kerr and Pillai (2023), Behind the Data: Do Special Purpose Entities hide domestic exposures from Investment Funds?

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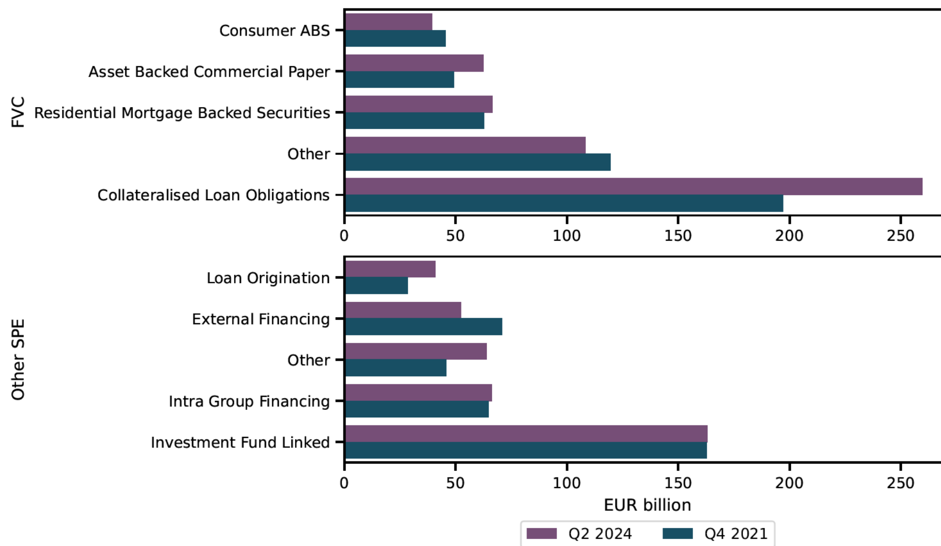

Source: Central Bank of Ireland.

The distress ratio of CLOs' loan portfolios returned to a more subdued level in 2024, following a spike in 2022. CLOs' distress ratio, which measures the proportion of CLOs' assets with a market price below 80 over their total portfolio, was stable at below 1 per cent between 2018 and early 2020. The onset of the COVID-19 crisis saw the ratio peak at almost 24 per cent. After a relatively smaller increase to 4 per cent in 2022, due to increased corporate defaults, the level of distressed loans has fallen and stabilised at around 1.5 per cent in the past year. This suggests the market now views borrowers as more resilient and less at risk of defaults (**Chart 22**).

Research suggests that CLOs respond to negative surprises in their loan portfolio by *fire selling* loans when they are close to breaching their loan-quality tests. In particular, these tests compare the value of what CLOs owe to investors to the value of their portfolio (overcollateralization test).[40] Kundu (2021), focusing on US financial markets, found that when CLOs are subject to idiosyncratic shocks that push them closer to these covenants, they fire-sell unrelated, riskier loans to alleviate these constraints.[41]

CLOs exposure to downgraded loans in 2024 Q2 shows a positive correlation with sales of distressed loans. Leveraged loans issued by

[40] The share of CCC-rated loans cannot be higher than 7.5 per cent of the total portfolio.
[41]See Kundu (2021).

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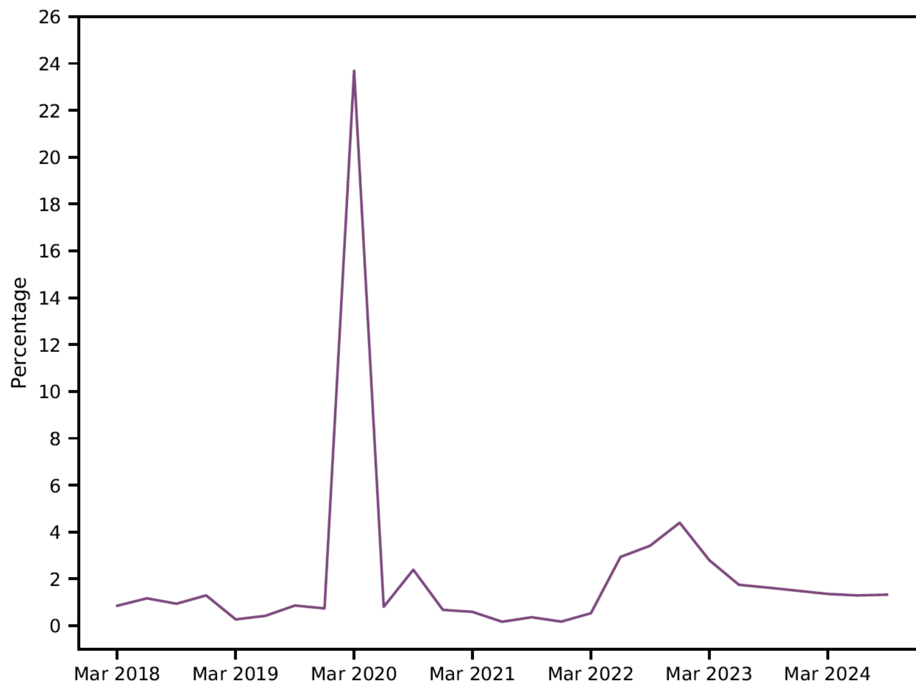
Altice France[42], widely held by Irish resident CLOs,[43] were downgraded following the company's decision in April 2024 not to use proceeds from asset sales to pay back lenders.[44] Data shows a positive correlation between Irish CLOs' exposure to these loans at the beginning of 2024 Q2 and sales of loans which were distressed at some point over the quarter (**Chart 23**). Distressed loans are a proxy for the type of loans CLOs have been found to fire sell. These conclusions suggest that research findings focused on US CLOs may carry over to European context, but further analysis is required to confirm.

Chart 22: CLOs' distress ratio decreased after 2022 corporate defaults
Number of distressed loans as share of total loans held by Irish CLOs; 2018 Q1 – 2024 Q2



Source: Central Bank of Ireland.

[42] Comprising of Altice France S.A. and Altice France Holding S.A.
[43] Altice France-issued loans are held by 65 per cent of Irish CLOs.
[44] See Financial Times articles here and here.

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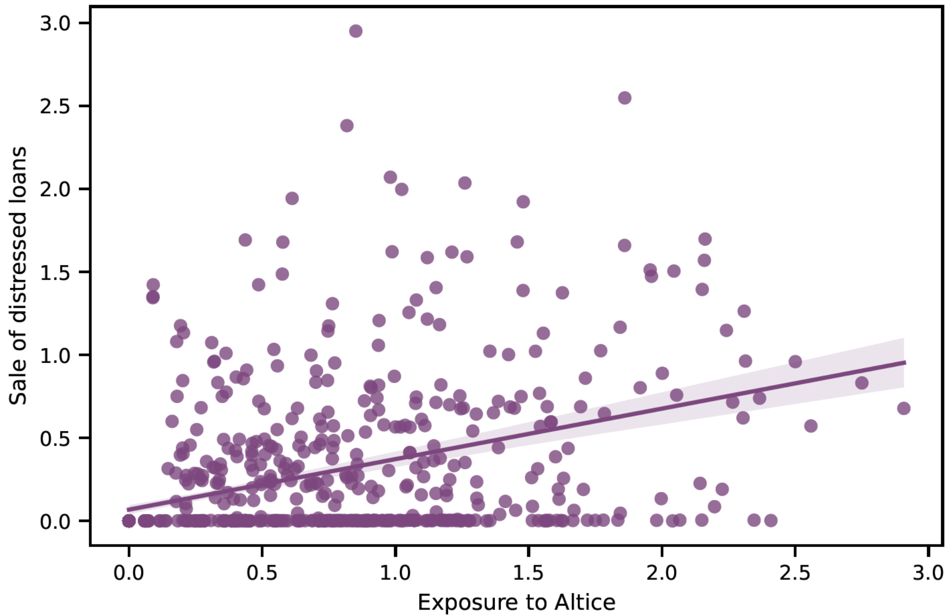
Chart 23: CLOs' exposure to Altice's downgraded loans was positively correlated with sale of distressed loans

Irish CLOs' exposure to Altice-issued downgraded loans (x-axis) and sale of distressed loans (y-axis) as share of total assets; 2024 Q2



Source: Central Bank of Ireland.
Notes: Each dot represents an Irish CLO.

The majority of assets continue to be held by SPEs sponsored by UK and US entities. In 2024 Q2, UK-sponsored SPEs accounted for 34 per cent of the total assets of Irish SPEs and US-sponsored SPEs accounted for 25 per cent (**Chart 24**). While sponsors from the rest of the world make up a relatively limited share of Irish SPEs, there was a noticeable fall in assets held by these entities in mid-2022. Financial auxiliaries continue to be the most active sponsor of SPEs from a sectoral perspective (**Chart 25**). Examples of financial auxiliaries include asset managers and insurance brokers. [45]

UK-sponsored SPEs accounted for 34 per cent of the total assets of Irish SPEs and US-sponsored SPEs accounted for 26 per cent.

[45] See CSO - Other Financial Corporations S125, S126 and S127.

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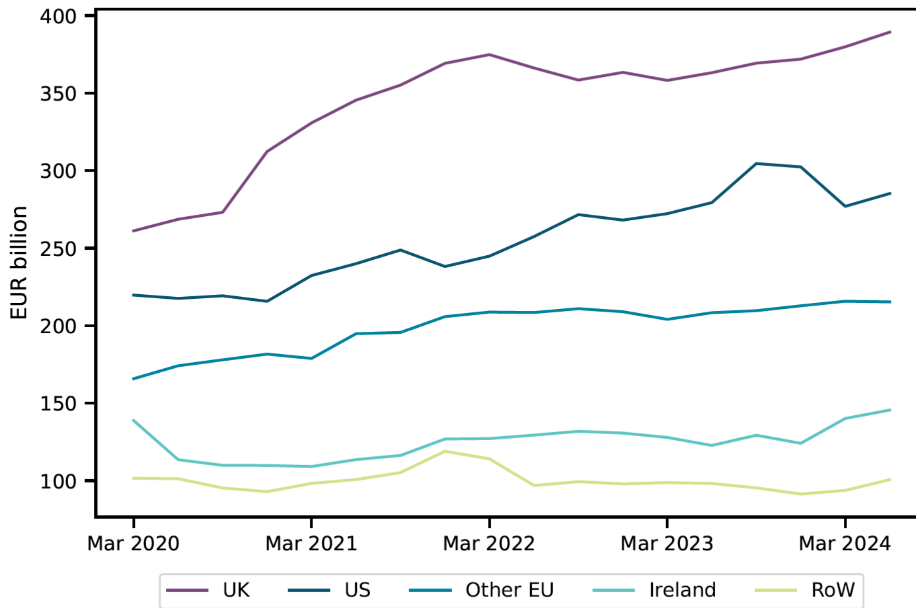
Chart 24: The UK remains the largest sponsor of Irish SPEs

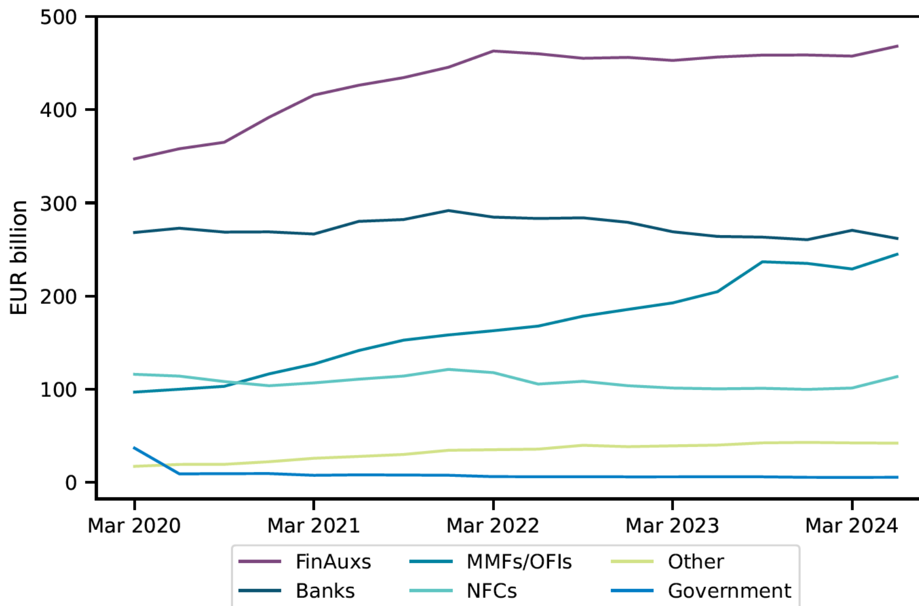
Total Irish SPEs' assets by geography of sponsor; 2020 Q1 – 2024 Q2



Source: Central Bank of Ireland.
Notes: Assets of SPEs with multiple sponsors from multiple geographies/sectors have been evenly distributed among each sponsors.

Chart 25: Financial auxiliaries (such as fund managers and insurance brokers) continue to stand out as the largest sponsors of Irish SPEs

Total Irish SPEs' assets by sector of sponsor; 2020 Q1 – 2024 Q2



Source: Central Bank of Ireland.
Notes: Assets of SPEs with multiple sponsors from multiple geographies/sectors have been evenly distributed among each sponsors. FinAuxs means financial auxiliaries, which facilitate financial transactions between third parties without becoming the legal counterparty (for example, stock exchanges, managers of pension funds and mutual funds, or insurance brokers). MMFs/OFIs denotes Money Market Funds and other financial intermediaries.

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Glossary

AIMFD Alternative Investment Fund Managers Directive. Directive 2011/61/EU is a legal act of the European Union on the financial regulation of hedge funds, private equity, real estate funds, and other "Alternative Investment Fund Managers" in the European Union.

EMIR The European Market Infrastructure Regulation (EMIR) regulates over-the-counter derivatives, central counterparties and trade repositories.

Financial Auxiliaries Companies which provide auxiliary financial services and other financial advisory and consultative services, such as loan brokers or investment advisors.

Investment Grade Securities Securities rated Aaa to Baa3 from Moody's, or AAA to BBB- from Standard & Poor's.

Leverage The use of debt to acquire additional assets, as captured by (AuM/NAV).

Liquidity The ease with which an asset can be converted into ready cash without affecting its market price. The definition of such assets as liquid is somewhat arbitrary, given the absence of a standard consensus on the precise divide between liquid and non-liquid assets.

LVNAV MMF The Low Volatility Net Asset Value MMF is categorised as a Short Term MMF. Units in the fund are purchased or redeemed at a constant price, as long as the value of the assets in the fund do not deviate by more than 0.2 per cent from par.

MMFR EU Money Market Funds Regulation. Directive 2017/1131 is a legal act of the European Union on the financial regulation of money market funds in the European Union.

NAV Net asset value or the value of equity issued by the investment fund(s).

PD CNAV MMF The Public Debt Constant Net Asset Value MMF is categorised as a Short Term MMF. Units in the fund are purchased or redeemed at a constant price.

Speculative Grade Securities Securities rated Ba1 to C from Moody's, or BB+ to D from Standard & Poor's.

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Synthetic Leverage stems from derivative instruments or securities financing transactions that create exposures contingent on the future value of an underlying asset, which becomes evident, for instance, when a derivative position's value moves strongly, potentially creating a profit or loss.

UCITS Undertakings for the Collective Investment in Transferable Securities. This refers to a regulatory framework that allows for the sale of cross-Europe mutual funds.

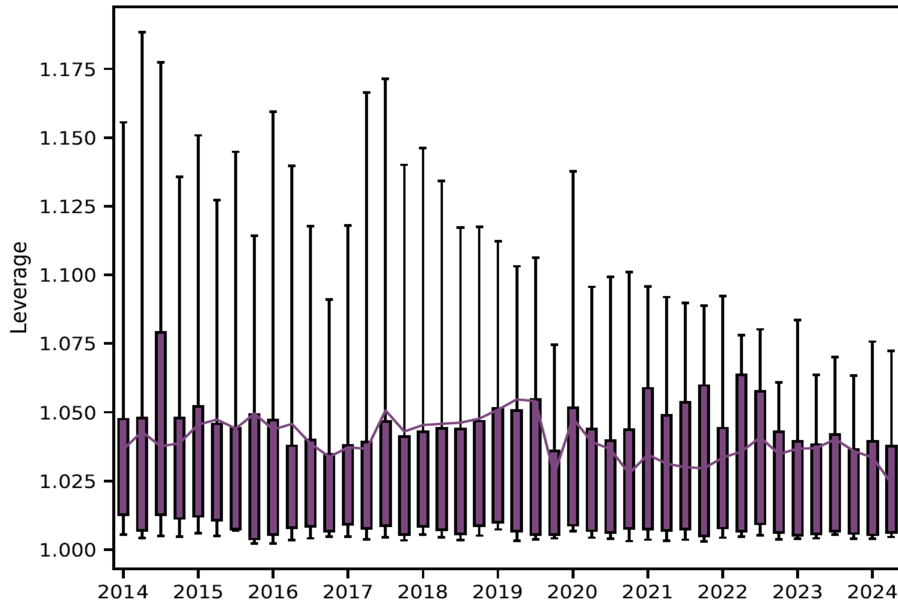
VNAV Variable Net Asset Value (VNAV) funds are MMFs in which investors purchase or redeem units in the fund at a variable net asset value.

Annex

In this annex, Irish domiciled funds' vulnerabilities are compared to investment funds in other EU countries using the common statistical cohorts.

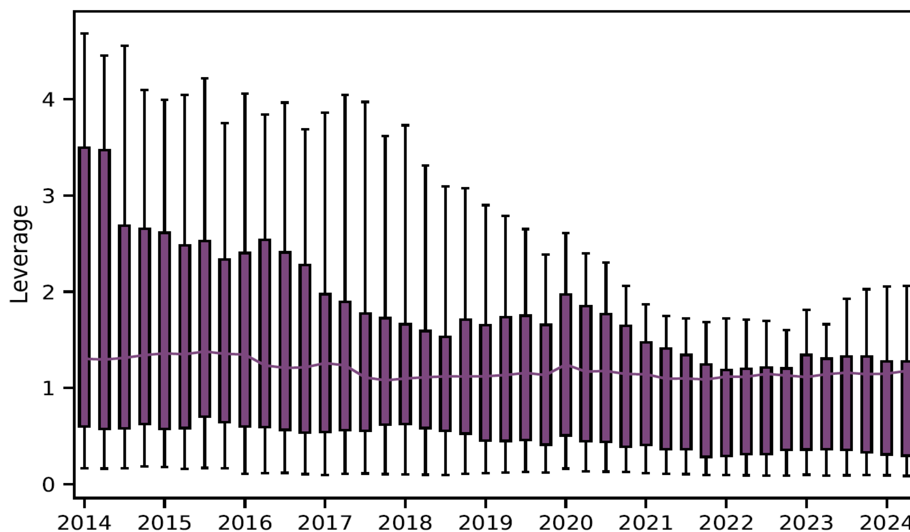
Figure 4 – Irish funds leverage with a distribution of leverage in funds across EU countries

Equity Funds' Aggregate Leverage in Ireland (line) vs distribution in the rest of EU



Source: Central Bank of Ireland and European Central Bank.
Notes: Financial leverage is calculated as assets under management divided by total net asset value (equity). The box plots show the 90th, 75th, 25th and 10th percentiles of leverage for equity funds across other European countries. The line indicates Irish equity funds' aggregated leverage.

Bond Funds' Aggregate Leverage in Ireland (line) vs distribution in the rest of EU



Source: Central Bank of Ireland and European Central Bank.
Notes: Financial leverage is calculated as assets under management divided by total net asset value (equity). The box plots show the 90th, 75th, 25th and 10th percentiles of leverage for bond funds across other European countries. The line indicates Irish bond funds' aggregated leverage.

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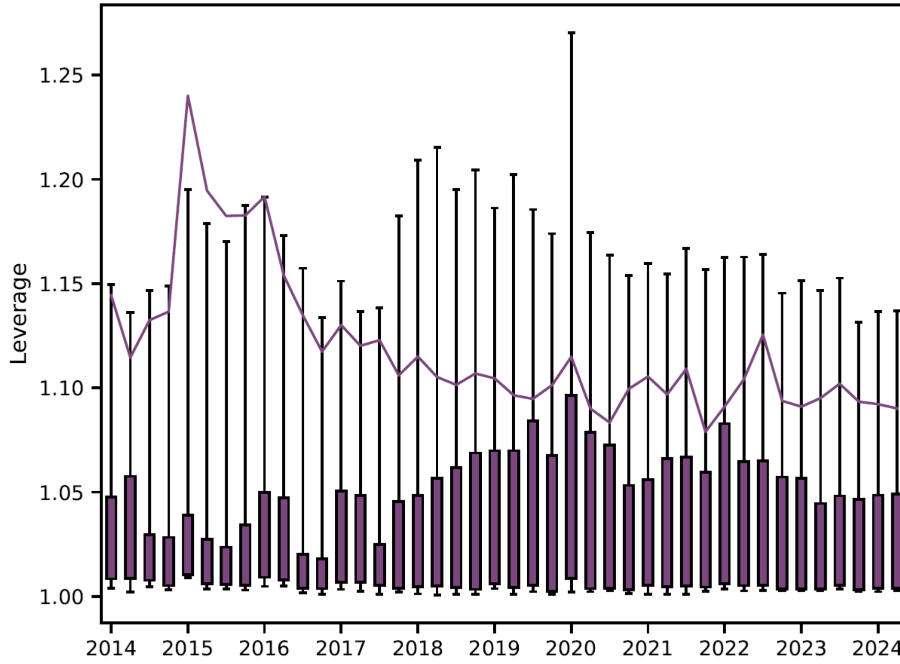
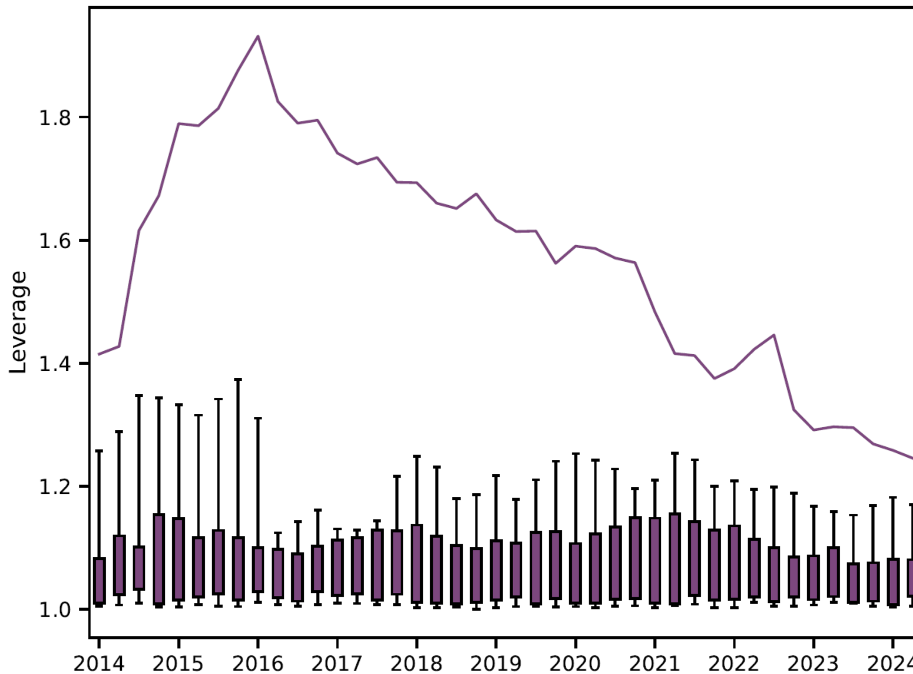
Mixed Funds' Aggregate Leverage in Ireland (line) vs distribution in the rest of EU



Source: Central Bank of Ireland and European Central Bank.
Notes: Financial leverage is calculated as assets under management divided by total net asset value (equity). The box plots show the 90th, 75th, 25th and 10th percentiles of leverage for mixed funds across other European countries. The line indicates Irish mixed funds' aggregated leverage.

Other Funds' Aggregate Leverage in Ireland (line) vs distribution in the rest of EU



Source: Central Bank of Ireland and European Central Bank.
Notes: Financial leverage is calculated as assets under management divided by total net asset value (equity). The box plots show the 90th, 75th, 25th and 10th percentiles of leverage for other funds across other European countries. The line indicates Irish other funds' aggregated leverage.

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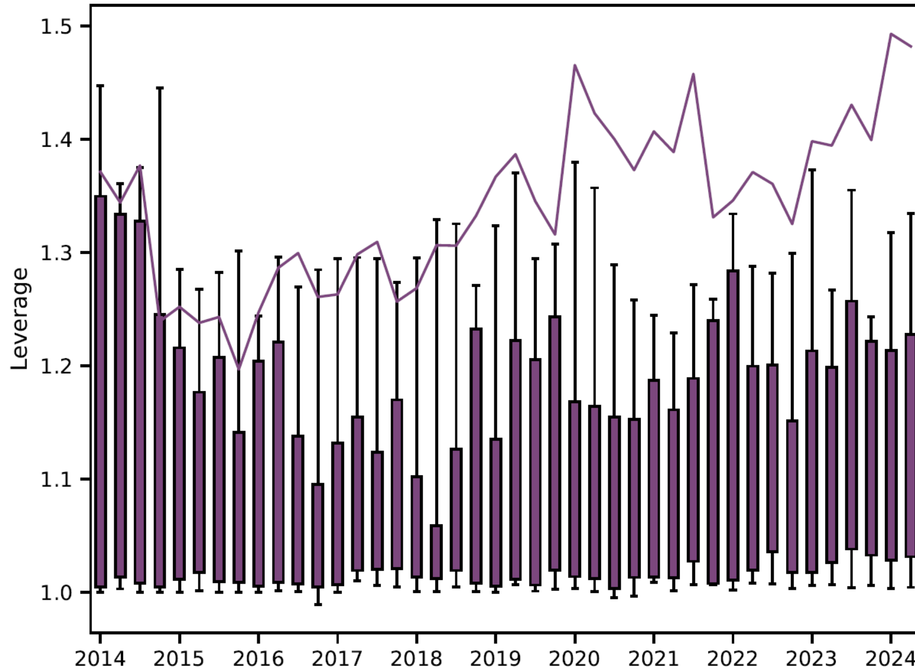
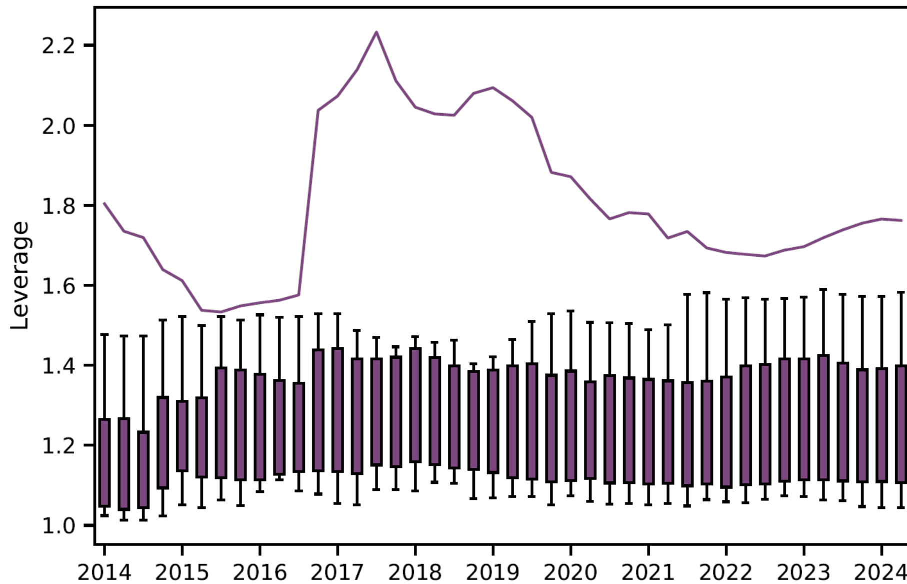
Hedge Funds' Aggregate Leverage in Ireland (line) vs distribution in the rest of EU



Source: Central Bank of Ireland and European Central Bank.
Notes: Financial leverage is calculated as assets under management divided by total net asset value (equity). The box plots show the 90th, 75th, 25th and 10th percentiles of leverage for hedge funds across other European countries. The line indicates Irish hedge funds' aggregated leverage.

Real Estate Funds' Aggregate Leverage in Ireland (line) vs distribution in the rest of EU



Source: Central Bank of Ireland and European Central Bank.
Notes: Financial leverage is calculated as assets under management divided by total net asset value (equity). The box plots show the 90th, 75th, 25th and 10th percentiles of leverage for real estate funds across other European countries. The line indicates Irish real estate funds' aggregated leverage. For further analysis on real estate fund leverage across the EU, see ESMA's TRV article on Assessing risks posed by leveraged AIFs in the EU.

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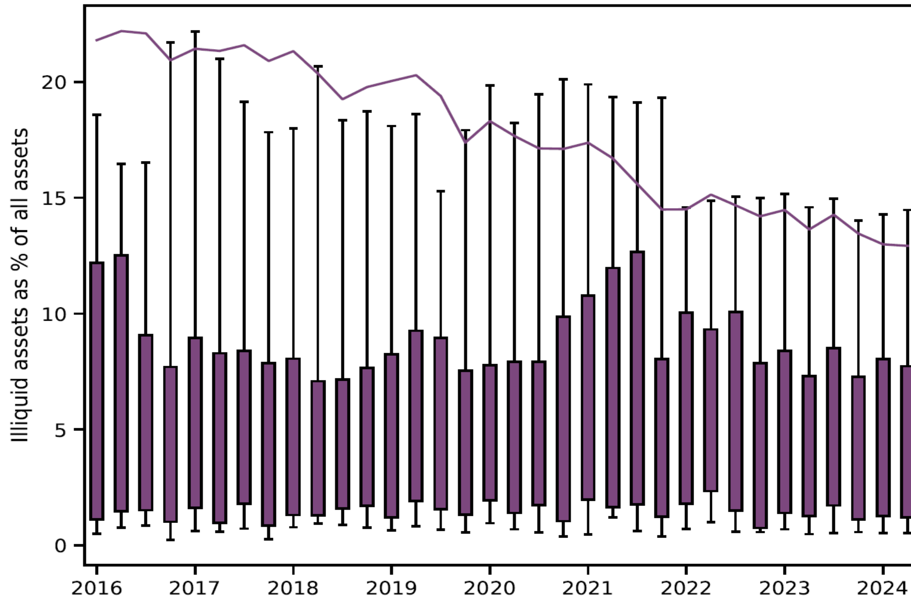
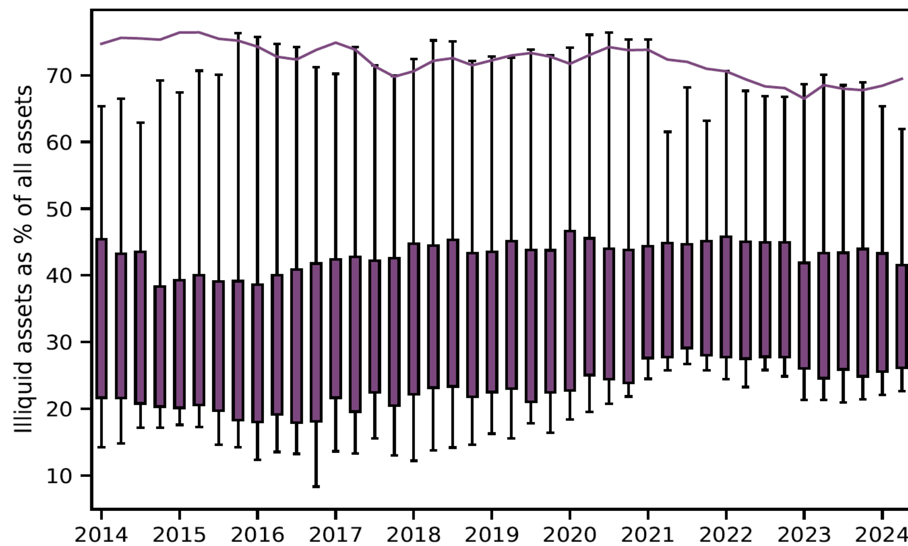
Figure 5 - Share of less liquid assets among Irish fund categories and the distribution of such across EU countries

Illiquidity of Irish equity funds (line) compared to equity funds in the rest of the EU (distributions)



Source: Central Bank of Ireland.
Notes: Illiquidity is calculated as [(Total Assets – Liquid Assets) /Total Assets]. Liquid assets are defined as Cash, advanced economies' government debt, euro-zone short-term bank debt, and advanced economies' equities. Box plots show the 10th, 25th, 75th and 90th percentiles of illiquidity of equity funds across other European countries. Equity funds are those investment funds that self-identify as equity funds.

Illiquidity of Irish bond funds (line) compared to bond funds in the rest of the EU (distributions)



Source: Central Bank of Ireland.
Notes: Illiquidity is calculated as [(Total Assets – Liquid Assets) / Total Assets]. Liquid assets are defined as Cash, advanced economies' government debt, euro-zone short-term bank debt, and advanced economies' equities. Box plots show the 10th, 25th, 75th and 90th percentiles of illiquidity of bond funds across other European countries. Bond funds are those investment funds that self-identify as bond funds.

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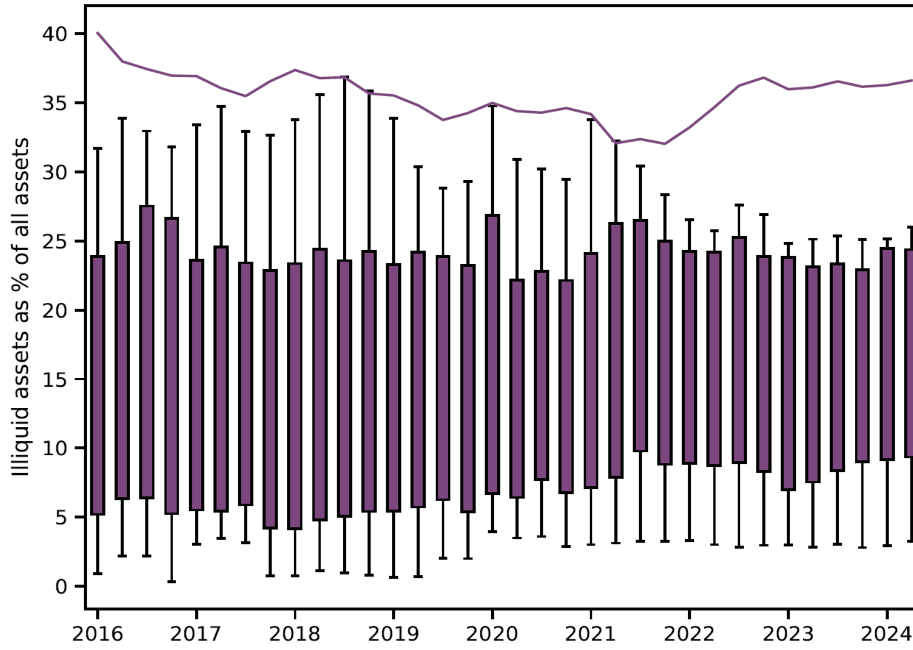
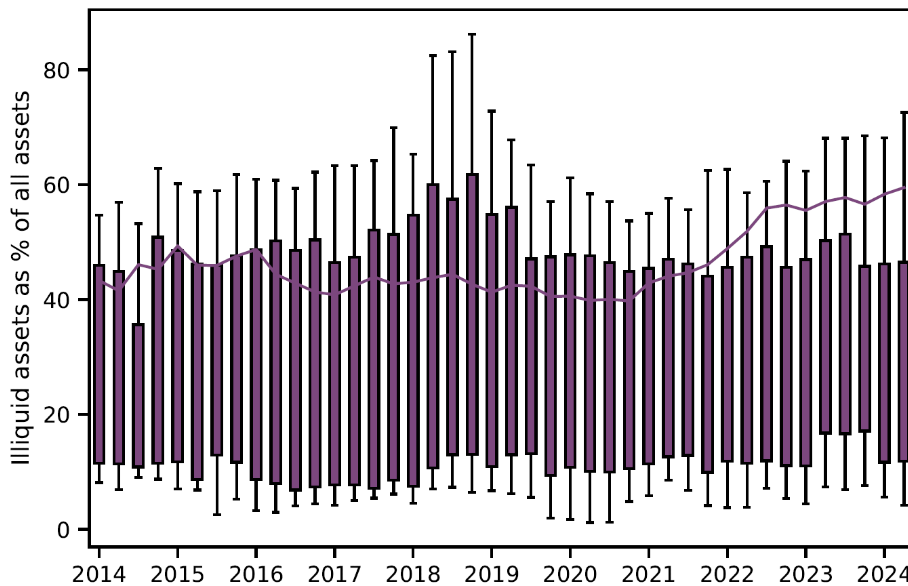
Illiquidity of Irish mixed funds (line) compared to mixed funds in the rest of the EU (distributions)



Source: Central Bank of Ireland.
Notes: Illiquidity is calculated as [(Total Assets – Liquid Assets) /Total Assets]. Liquid assets are defined as Cash, advanced economies' government debt, euro-zone short-term bank debt, and advanced economies' equities. Box plots show the 10th, 25th, 75th and 90th percentiles of illiquidity of mixed funds across other European countries. Mixed funds are those investment funds that self-identify as mixed funds.

Illiquidity of Irish other funds (line) compared to other funds in the rest of the EU (distributions)



Source: Central Bank of Ireland.
Notes: Illiquidity is calculated as [(Total Assets – Liquid Assets) /Total Assets]. Liquid assets are defined as Cash, advanced economies' government debt, euro-zone short-term bank debt, and advanced economies' equities. Box plots show the 10th, 25th, 75th and 90th percentiles of illiquidity of other funds across other European countries. Other funds are those investment funds that self-identify as other funds.

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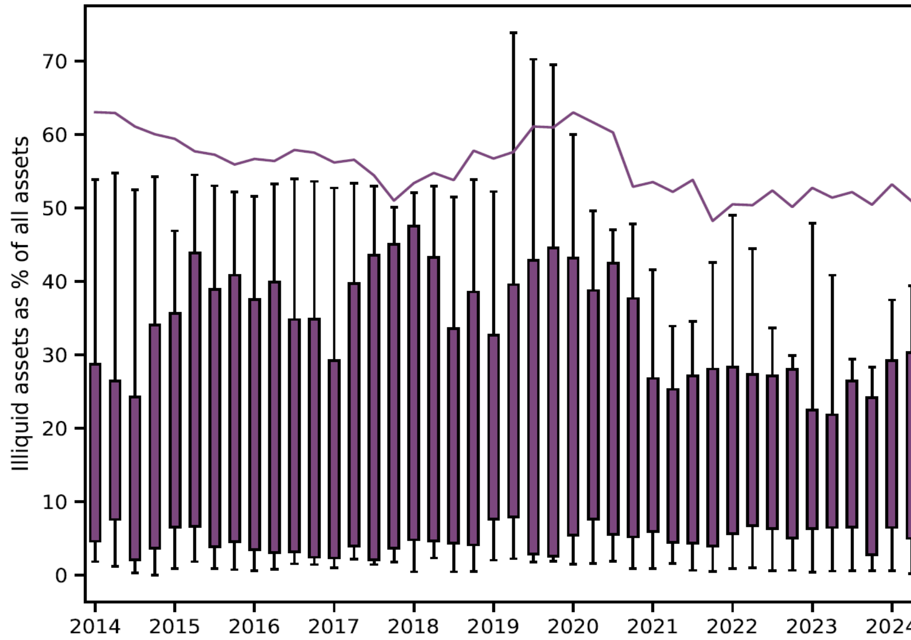
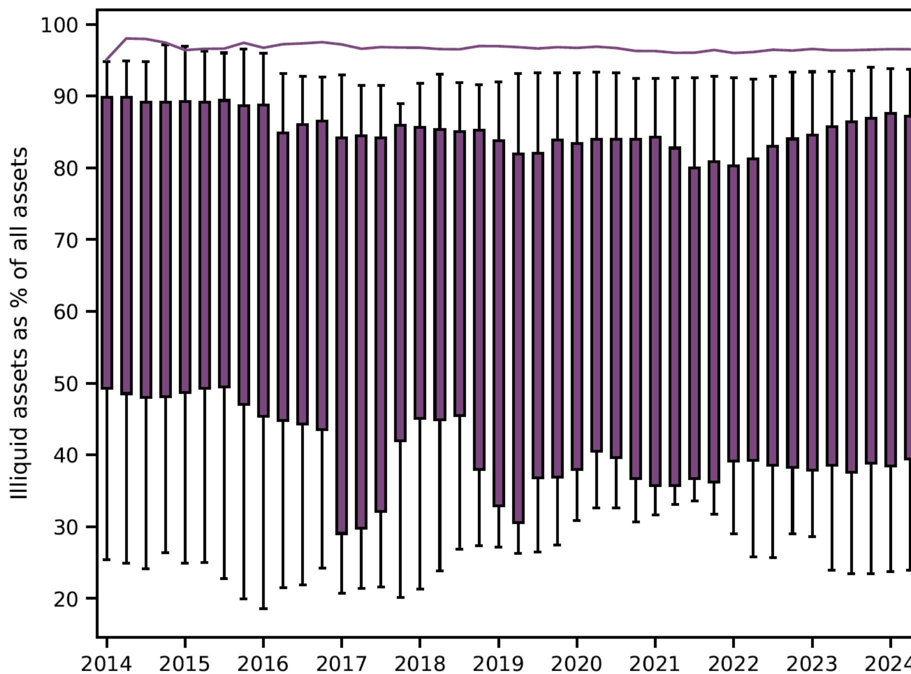
Illiquidity of Irish hedge funds (line) compared to hedge funds in the rest of the EU (distributions)



Source: Central Bank of Ireland.

Notes: Illiquidity is calculated as [(Total Assets – Liquid Assets) /Total Assets]. Liquid assets are defined as Cash, advanced economies' government debt, euro-zone short-term bank debt, and advanced economies' equities. Box plots show the 10th, 25th, 75th and 90th percentiles of illiquidity of hedge funds across other European countries. Hedge funds are those investment funds that self-identify as hedge funds.

Illiquidity of Irish real estate funds (line) compared to real estate funds in the rest of the EU (distributions)



Source: Central Bank of Ireland.

Notes: Illiquidity is calculated as [(Total Assets – Liquid Assets) /Total Assets]. Liquid assets are defined as Cash, advanced economies' government debt, euro-zone short-term bank debt, and advanced economies' equities. Box plots show the 10th, 25th, 75th and 90th percentiles of illiquidity of real estate funds across other European countries. Real estate funds are those investment funds that self-identify as real estate funds.

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