



Banc Ceannais na hÉireann
Central Bank of Ireland

Eurosystem

Discussion Paper

An approach to macroprudential policy for investment funds

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Background and Overview

The objective of this Discussion Paper is to advance the debate on a potential approach to the development and operationalisation of a macroprudential framework for the investment funds sector (hereafter “the funds sector”). While macroprudential policy is well developed in the banking sector, it remains nascent beyond banks, including the funds sector. This is despite the growing role of the funds sector in global financial intermediation and recent episodes, including the COVID-19 shock and last year’s Gilt market disruption, highlighting the potential for the funds sector globally to amplify shocks in the face of financial vulnerabilities. Investment funds, though, are different to banks, so a macroprudential approach to the funds sector cannot simply be an extension or replication of the macroprudential framework applied to banks. This Discussion Paper therefore aims to inform and aid the ongoing international and European regulatory debate on macroprudential policy for the funds sector.

The global non-bank financial intermediaries (NBFIs) sector, and particularly the investment fund component of it, has grown significantly since the Global Financial Crisis (GFC). The absolute size of the global NBFIs sector grew from €72 trillion in 2008 to €212 trillion in 2021 and this growth can be largely attributed to the rise of investment funds. The NBFIs sector now represents approximately half of all global financial assets in 2021 and just over half for the EU. Similar to developments at a global level, the NBFIs sector in Ireland has grown significantly over the last decade, driven by the growth in the funds sector.

The funds sector is playing an increasingly important role in the wider global financial system. The sector, both globally and in Ireland, is now a larger part of overall financial intermediation and has strong linkages to other sectors of the financial system - e.g. through funding and derivatives markets - and also has increased linkages to the real economy.

Increased financial intermediation via the funds sector brings many benefits. It diversifies the financing channels available to the real economy and enables diversification of asset portfolios, with benefits for investors. In doing so, the funds sector supports broader

economic activity and acts as a useful alternative to bank financing. These economic benefits of increased financial intermediation via capital markets are reflected in the EU's Capital Markets Union (CMU) policy agenda.

As the funds sector grows in size, so does its systemic importance.

Systemic risk is defined as the disruption to the provision of financial services caused by an impairment of all, or parts, of the financial system, with serious negative consequences for the real economy.¹ Like all forms of financial intermediation, the activities of investment funds can pose risks that, in certain circumstances, can become systemically relevant.

There has been increasing focus by policymakers and regulators globally on addressing systemic risk in the funds sector.

International bodies such as the Financial Stability Board (FSB), the International Organisation of Securities Commissions (IOSCO), the European Systemic Risk Board (ESRB) and the European Securities and Markets Authority (ESMA) have all progressed work in recent years covering the role of investment funds and their relevance from a systemic risk perspective. These have included analytical and policy work on issues such as Money Market Fund ('MMFs') resilience, liquidity mismatch in Open-Ended Funds ('OEFs') and Exchange Traded Funds ('ETFs').

The assessment of systemic risk posed by the funds sector is still evolving. Relative to the banking sector, systemic risk assessments for the funds sector remain at an earlier stage. As it matures, the approach to systemic risk assessment needs to account for the heterogeneity in investment funds' business models and, therefore, differences in the way in which different fund cohorts can generate systemic risk. It also needs to take into account developments in the broader ecosystem of markets, including the broader composition of market participants and drivers of liquidity demand and supply.

Against this background, there are a number of key considerations with respect to the systemic risk posed by the funds sector that

¹ This definition is derived from that used by the ESRB, with similar definitions adopted by other central banks and national competent authorities alike. See European Parliament (2010).

should serve as the starting point for the wider debate on the design of a macroprudential framework in this area, namely:

- **Like in financial markets more generally, economic frictions exist in the intermediation of financing by the fund sector.** Examples include incentive misalignment; asymmetric information; externalities; and/ or coordination problems. Their presence means that individually-rational decisions and actions by investment fund managers may lead to excessive risk-taking in aggregate across the financial system;
- **Typically, it is the collective actions of investment funds that have the potential to generate systemic risk:** a certain degree of critical mass and concentrated market positions are generally needed to generate wider spillover effects to other parts of the financial system and the real economy. There have, however, also been some examples when individual entities have also been of systemic concern; and
- **The underlying systemic risk posed by the funds sector stems from the potential of cohorts of funds to spread or amplify shocks to other parts of the financial system and/or the real economy, particularly in times of market stress.**

The **materialisation of systemic risk** from the funds sector comes following a **shock or trigger event** and the interplay between two factors:

- **Vulnerabilities** at a fund cohort² level, **specifically leverage and liquidity mismatch.** For instance, the growth of the open-ended funds sector, among other factors, has changed the dynamics of liquidity demand and supply in certain segments of financial markets, particularly in periods of market stress, making systemic liquidity stresses more likely;³ and the use of leverage in some cohorts, combined with the larger size of the sector, means that shocks can result in rapid deleveraging with wider market impacts; and

² In the context of this Discussion Paper, the term fund “cohort” generally refers to funds pursuing similar investment strategies or asset allocation, such as real estate funds, money market funds (MMFs), bond funds, equity funds, hedge funds, mixed funds and so on.

³ See FSB (2022b) which highlights that the functioning and resilience of the NBFIs sector and wider ecosystem depends on the availability of liquidity and its effective intermediation in times of market stress.

- The **interconnectedness** of the funds sector, which can transmit and/or amplify the effects of a shock to other parts of the financial system or real economy. This can happen directly through the counterparty channel, or indirectly through the asset value/collateral channel.

The funds sector is diverse, with different types of fund cohorts presenting different systemic risk profiles. This needs to be accounted for in any systemic risk assessment as well as policy deliberations. Indeed, some cohorts of funds display few underlying vulnerabilities, such as liquidity mismatch or leverage, or play a more limited role as participants in core financial markets.

Overall, as the funds sector has continued to grow and become more integral to the wider functioning of several key financial markets, the regulatory framework needs to evolve. The current regulatory framework for the funds sector – which has been largely designed around the protection of investors – helps address some funds-specific elements that can contribute to systemic risk. However, as evidenced by recent episodes, the current framework has not been sufficient to reduce the propensity of certain fund cohorts to amplify shocks in times of stress because this is not what it was primarily designed to do.

A macroprudential perspective is therefore needed in the regulation of the funds sector. Significant progress in this direction has been made recently, including through the FSB and IOSCO’s package of measures on MMF resilience and on liquidity management of OEFs.⁴ As the nature of systemic risk is multi-faceted and constantly evolving, developing an overarching macroprudential framework for the funds sector would strengthen the overall regulatory architecture. In turn, this would better equip the sector to serve as a resilient form of financing, supporting broader economic activity. This Discussion Paper aims to advance the discussion on how a comprehensive macroprudential perspective in the regulation of the funds sector could be achieved. It covers what the objectives of a macroprudential framework would be; outlines key principles that could underpin its design; discusses potential tools that could be used to achieve these macroprudential objectives; and considers a

⁴ See, for example, FSB (2023) and IOSCO (2023) on OEFs and FSB (2021) on MMFs.

range of practical issues that would need to be progressed to make such a framework operational.

A macroprudential perspective in the regulation of the funds sector would complement the existing investor protection perspective.

Financial stability and investor protection are complementary policy objectives. For example, investors can suffer if markets are not resilient and liquidity disappears in times of stress, when it may be needed most. Similarly, financial intermediaries operating in the best interests of investors, safeguarding the integrity of markets, is a necessary precondition for financial stability.

The Central Bank of Ireland (hereafter the “Central Bank”)

recognises that international co-ordination is needed to develop and operationalise a macroprudential framework for the funds sector.

Given the global nature of investment funds and capital markets, macroprudential policies for the funds sector will be most effective if regulators coordinate. This underpins the importance of developing a globally-consistent approach. In certain circumstances, domestic action may also be required. For instance, the Central Bank activated those elements of the existing funds framework that have a macroprudential purpose in November 2022, and announced the phased implementation of measures to limit leverage and liquidity mismatch in the Irish resident property fund sector. The phased implementation of these measures underscores the Central Bank’s determination to take action where necessary, whilst also seeking to advance the global debate on the development of the macroprudential framework for the funds sector.

The Central Bank also recognises that the fund sector is just one part of overall NBFIs sector. In time, other parts of the NBFIs sector may also require a macroprudential lens, depending on the specific systemic risks those sectors pose. However, in light of Ireland’s significant funds sector, the Central Bank has decided to focus this paper on the funds segment of the NBFIs sector. The Central Bank believes it is appropriate to focus at this point on the funds sector, given its increased size and importance for financial intermediation, as well as the role played by certain fund cohorts in recent episodes of financial instability.

The Discussion Paper is designed to engage stakeholders, domestically and internationally, on the most salient issues related

to the development of a comprehensive macroprudential framework for the funds sector. It represents the Central Bank's perspective as both the macroprudential authority and the securities markets regulator in Ireland. This Discussion Paper aims to generate feedback from stakeholders to help inform the Central Bank's participation in international or European regulatory discussions on the topic, as well as its policy and analytical work on investment fund issues more broadly.

Stakeholder feedback

A number of key questions are posed throughout this Discussion Paper. Stakeholders are requested to provide written responses to the questions contained throughout this Discussion Paper. They are also invited to provide any general observations on the matters discussed or issues raised.

Central Bank of Ireland request that written responses are submitted via www.centralbank.ie/fundsurvey by 15 November 2023.

Unless requested otherwise, the intention is to publish written contributions submitted. The Central Bank will consider the feedback received and the intention is to publish a feedback statement covering some or all of the topics raised in the written responses.

1. The growth of NBFIs and investment funds and the heterogeneity of business models

The global NBFIs sector, including the funds component, has grown substantially since the GFC. Total assets of the NBFIs sector increased from €72 trillion in 2008 to €212 trillion in 2021, according to the FSB's latest annual monitoring report on non-bank financial intermediation (FSB, 2022a). To a large extent, this growth can be attributed to the growth of the funds sector, which has grown substantially over the last decade (FSB, 2022a). According to the FSB, the global funds sector grew from €15 trillion in 2008 to €72 trillion in 2021. The rapid growth in the global funds sector during this period has been driven by both net inflows into the sector and valuation effects.

The NBFIs sector has become increasingly relevant for both the overall functioning of the financial system and the financing of the real economy over the last decade. There are several different examples of the growing importance of the NBFIs sector as a source of financial intermediation. At a global level, banks' cross-border linkages with NBFIs have risen markedly, underscoring the growing linkages of NBFIs with other parts of the global financial system (see Chapter 2 of IMF (2023)). In the EU, the share of debt financing of non-financial corporations (NFCs) by NBFIs has almost doubled over the past decade (see ECB (2022)). In emerging market economies, NBFIs have played an increasing role in the intermediation of cross-border capital flows (see Calò, Emter and Galstyan (2020)).

Similar to developments at a global level, the NBFIs sector in Ireland also grew significantly since the GFC, driven by the growth in investment funds (see Cima, Killeen and Madouros, (2019)). Total assets of the NBFIs sector in Ireland were €6.3 trillion as of end-2021, from €1.5 trillion in 2008.⁵ Investment funds accounted for around 80 per cent of that growth. Ireland is now one of the world's largest hubs for investment funds at a global level (Chart 1). Ireland hosts

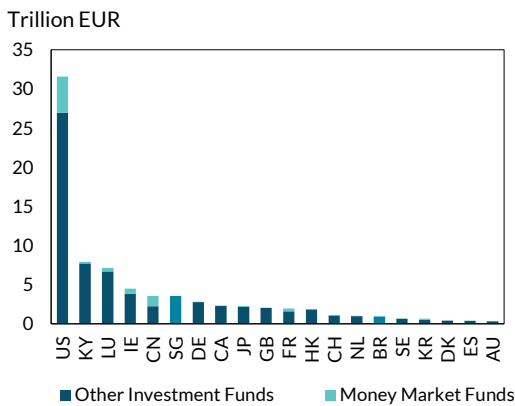
The funds sector, both globally and in Ireland, is diverse and is increasingly relevant for the functioning of the financial system and the financing of the real economy.

⁵ Data from the Central Bank of Ireland's Quarterly Financial Accounts.

the largest MMF sector in Europe, with assets totalling over €700 billion in the fourth quarter of 2022. Ireland is also host to the largest ETF sector in Europe with total assets of over €900 billion, or about two-thirds of the total assets of ETFs in the euro area during the same period. Similar to global developments, the significant growth in the Irish funds sector during this period has been driven by both net inflows and valuation effects (Chart 2).

Chart 1: Ireland has the fourth largest investment fund sector globally

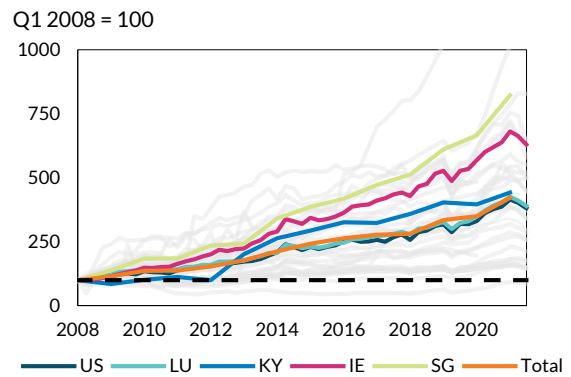
Total assets of 20 largest investment fund jurisdictions as of Q4 2021



Source: ECB/Eurostat, OECD, ABS, CIMA, MAS, AMAC, HK SFC & World Bank
 Notes: Data refers to 2021. For SG, and BR no decomposition of the investment funds industry is available. KY data from CIMA's Investments Statistical Digest for the year 2021 and includes master funds. SG data from the MAS Singapore Assets Management Survey. CN data from the Asset Management Association of China. AU data from the Australian Bureau of Statistics. HK data from the Securities and Futures Commission of Hong Kong. BR data from the World Bank for the year 2020. US, CA, JP, GB, CH & KR data from OECD sectoral accounts. Other countries' Data from ECB/Eurostat quarterly sectoral accounts.

Chart 2: The Irish resident investment fund sector has seen significant growth since 2008

Indexed growth of the investment fund sectors of countries across the world, with largest jurisdictions highlighted



Source: ECB/Eurostat, OECD, ABS, CIMA, MAS, HK SFC & World Bank
 Notes: Grey lines refers to other countries. China is excluded due to a lack of historical data, KY data from CIMA's Investments Statistical Digest, available until 2021. SG data from the MAS Singapore Assets Management Survey. AU data from the Australian Bureau of Statistics. HK data from the Securities and Futures Commission of Hong Kong. BR data from the World Bank up to the year 2020. US, CA, JP, GB, CH & KR data from OECD sectoral accounts. Other countries' data from ECB/Eurostat quarterly sectoral accounts. Data for CN is only available since 2014, hence the country is not included in this chart.

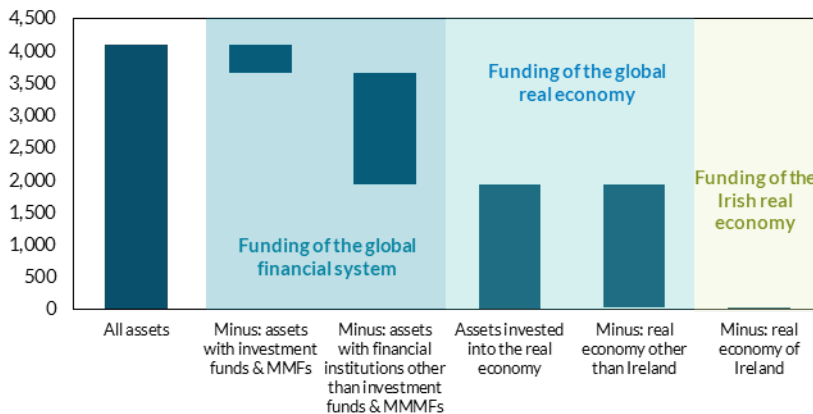
The funds sector is diverse and includes a range of entities, with a variety of business models and investment strategies. There are numerous ways to categorise investment funds, including, for instance, by investor type, e.g. retail versus institutional investor; by their investment strategy, e.g. actively-managed and passively-managed; by their redemption profile, e.g. open-ended and closed-ended; or by asset allocation or fund cohort, e.g. bond funds, equity funds, real estate funds, mixed funds, etc. These characteristics matter for the systemic risk profile of different parts of the fund sector. The diversity of business models, investment strategies and underlying financial vulnerabilities underscores the need for a

granular understanding of different cohorts of the funds sector from a financial stability perspective.

The Irish-resident funds sector intermediates financing to the global financial system, supporting the funding of financial institutions. Around half of Irish funds’ investments provide financing to other financial institutions, through holdings of debt and equity securities issued by such institutions (Chart 3). For example, Irish resident MMFs provide significant financing to the euro area banking sector. The amount of money market instruments issued by euro area banks held by Irish resident MMFs increased to almost €80 billion by the third quarter of 2022, or approximately 18 per cent of these institutions’ outstanding money market debt securities. The funds sector in Ireland also holds almost €45 billion in long-term debt securities, or roughly 1.5 per cent of the total long-term debt securities issued by euro area banks as of the third quarter of 2022.

Chart 3: Irish investment funds are providing funding to the global financial system and real economy

Billion EUR



Source: Central Bank of Ireland and staff calculations

Notes: Data as of end-2022.

The Irish-resident funds sector also intermediates funding to the global real economy, supporting global economic activity directly. This is reflected in the fact that approximately half of Irish funds’ assets are invested directly into the global real economy (Chart 3). This is comprised mainly of holdings of debt and equity securities issued by NFCs and holdings of debt securities issued by governments. For example, Irish resident investment funds hold around €200 billion of debt securities issued by global NFCs and €580 billion of debt securities issued by governments internationally.

Within those aggregates, the Irish funds sector plays a particularly important role in intermediating financing in specific markets. For example, Irish investment funds hold around 10 per cent of outstanding UK government debt securities.

The Irish funds sector's linkages to the domestic real economy are relatively small compared to the size of the sector, but have been increasing, and are particularly relevant in the Irish commercial real estate (CRE) market. Investment funds are significantly involved in the Irish CRE market, which is of systemic importance to the Irish economy (see Cima, Killeen and Madouros, 2019 and Daly, Moloney and Myers, 2021). Irish property funds hold approximately 35 per cent of the estimated investable Irish CRE market. Central Bank (2022) analysis has examined the underlying vulnerabilities associated with this segment of the funds sector, including pockets of high leverage and liquidity mismatch by Irish resident property funds. In response, in November 2022, the Central Bank announced the phased implementation of a package of macroprudential measures to safeguard the resilience of this growing form of financial intermediation.

1.1 Financial intermediation role of the funds sector

The core economic function of the funds sector is to channel investor savings into capital markets. Investment funds are collective investment vehicles that provide asset management services to ultimate investors. Retail or institutional investors purchase shares in investment funds and those proceeds are, in turn, invested by funds in underlying assets on behalf of investors. These assets are typically tradeable securities, such as bonds or equities, but can also include non-tradeable assets, such as real estate.

Increased financial intermediation by investment funds brings a range of benefits:

- Financial intermediation by investment funds provides a **valuable alternative to bank financing, supporting economic activity.** From a macro-financial perspective, resilient sources of non-bank or market-based financial intermediation have the potential to mitigate the effects of any disruption in the supply of credit by the banking system;

- The growth of the funds sector allows for **increased financing of NFCs through equity, rather than debt**. This can further add to resilience of both the financial system and the broader economy to adverse shocks; and
- The funds sector enables **diversification of asset portfolios, with benefits for investors**. The diversity of products offered by the funds sector also allows risks to be channelled through to those investors best suited to bear the risks.

The benefits of increased financial intermediation through capital markets – including by investment funds – are reflected in policy initiatives such as the CMU. The EU’s CMU plan aims to create a single market for capital. It seeks to facilitate cross-border investment across the EU to the benefit of consumers, investors and companies, and regardless of where they are located. For the benefits of increased capital market financing to be realised fully, it is critical that this source of financial intermediation is resilient to adverse shocks.

Investment funds are part of a broader ecosystem of market participants in capital markets. The resilience of capital markets, depends on the behaviour of different types of entities in the broader ecosystem. This includes those entities that supply liquidity to markets, including banks in their roles as market makers as well as other financial institutions, such as principal trading firms. Beyond investment funds, there are also a range of other investors in capital markets, which may act as a source of demand for liquidity in response to certain shocks, such as pension funds and insurance companies. In assessing the systemic footprint of the funds sector, therefore, it is important to consider the broader ecosystem of participants in capital markets and the interaction of investment funds with these types of financial institutions.

2. Systemic Risk from Investment Funds

At a global level, regulators’ understanding of the nature of systemic risk posed by the funds sector continues to evolve. The growth of the funds sector represents a structural shift in the composition of the global financial system. In that context, when seeking to analyse how vulnerabilities in the funds sector can contribute to systemic risk, history may not be as useful a guide to the future. In contrast to the banking sector, where decades of microprudential regulation helped pave the way for the introduction of macroprudential frameworks following the GFC, the regulatory framework for the funds sector has evolved differently. This makes the task of addressing systemic risk from the funds sector more challenging, but no less important.

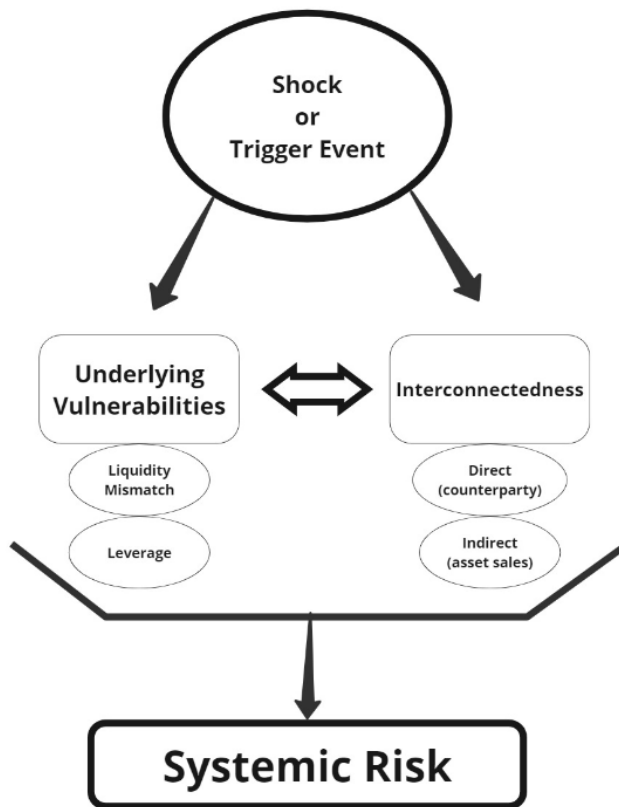
Nevertheless, there are a number of salient points regarding the funds sector that serve as the starting point for understanding its contribution to systemic risk. In summary:

- **Like in financial markets more generally, economic frictions exist in the intermediation of financing by the investment fund sector.** Examples include incentive misalignment; asymmetric information; externalities; and/ or coordination problems. Their presence means that individually-rational decisions and actions by investment fund managers may lead to excessive risk-taking, in aggregate, across the financial system; and
- **Typically, it is the collective actions of investment funds that have the potential to generate systemic risk.** A certain degree of critical mass and concentrated market positions is generally needed to generate material spillover effects to other parts of the financial system and the real economy. The COVID-19 shock, and UK Gilt market volatility and disruption in LDI funds, serve as examples where the collective actions of investment funds can have systemic risk implications (see Box A). Having said that, there have also been some historical examples when individual entities have also been of systemic concern (see Box A for further details);

Typically, it is the collective actions of investment funds (fund cohorts) that has the potential to generate systemic risk.

The materialisation of systemic risk arises from a shock and the interplay between leverage and liquidity mismatch, and the interconnectedness of the fund cohorts.

Chart 4: Interaction between shock/ trigger event, underlying vulnerabilities and crystallisation of systemic risk



- The **materialisation of systemic risk** from the funds sector comes following a shock or trigger event and the interplay between two factors (see Chart 4 for an overview):
 - **The magnitude of underlying financial vulnerabilities at a fund cohort level, specifically in terms of leverage and liquidity mismatch.** For instance, the growth of the open-ended investment fund sector, among other factors, has changed the dynamics of liquidity demand and supply in certain segments of financial markets, particularly in periods of market stress, making systemic liquidity stresses more likely. The use of leverage, combined with the larger size of the funds sector, also means that shocks can result in rapid deleveraging with wider market impacts;
 - **The interconnectedness of the funds sector,** which can transmit and/or amplify the effects of a shock to other parts of the financial system or real economy. This can happen directly through the counterparty channel, or indirectly through the asset value or collateral channel.

Taken together, the underlying systemic risk posed by the funds sector is its **potential to amplify shocks to other parts of the financial system and/or the real economy, particularly in times of stress.**

2.1 The source of systemic risk and underlying economic frictions

Like in financial markets more generally, economic frictions exist in the intermediation of financing by the funds sector. These economic frictions include:

- **Co-ordination problems**, which arise when individual agents act in an individually-rational manner, but the collective impact of those actions can be sub-optimal in aggregate. In the funds sector, an example of co-ordination problems is the potential that ‘first-mover advantage’ dynamics operate when investors consider whether to redeem their shares in open-ended funds investing in less liquid assets. While individually rational, such ‘first-mover advantage’ dynamics can lead to ‘run-like’ dynamics from certain open-ended funds in periods of stress. Another example stems from the potential externalities associated with selling financial assets in less liquid markets over a short period of time. While individually rational, when done in aggregate across cohorts of funds, this can lead to ‘fire-sale externalities’ which can impair overall market functioning and exacerbate market price adjustments in periods of stress;
- **Informational frictions**, which arise when there is imperfect information amongst economic participants. In the funds sector, an example of informational frictions stems from the potential that end investors do not have a full understanding of the underlying liquidity of funds’ investments. In this example, the open-ended structure of the vehicle can result in investors overestimating the liquidity of funds’ underlying investments, contributing to ‘liquidity illusion’ amongst market participants; and/or
- **Incentive frictions**, which can arise when the incentives of agents are not aligned fully with the principals on whose behalf they are acting. In the funds sector, an example of

incentive frictions is the potential that managers may face incentives to only partially employ liquidity management tools (LMTs), because of potential competitive or reputational concerns. Another example of incentive frictions can stem from expectations of official support in periods of stress, which can contribute to the underpricing of risk among financial market participants. For example, in recent market stresses, central banks have stepped in to restore functioning in core markets (see Box B). While necessary to safeguard financial stability, if market participants expect such interventions in future stress events, they may face lower incentives to self-insure.

The presence of these frictions means that individually-rational decisions can lead to a build-up of financial vulnerabilities in aggregate, with potential adverse impacts for the financial system in times of stress. Co-ordination, information or incentive frictions can result in ‘excessive’ *ex ante* leverage or liquidity mismatch in segments of the funds sector. In turn, excessive leverage or liquidity mismatch can make the sector more fragile in the face of adverse shocks as observed during the COVID-19 shock in March 2020. For instance, in the context of open-ended funds, an initial trigger or shock may lead to a spike in redemption demands from investors. In the presence of significant liquidity mismatches, this can be amplified by ‘first mover advantage’ dynamics, requiring funds to sell less liquid assets to meet excess redemptions. When aggregated across a cohort of funds with similar characteristics, and where other funds in this cohort are also trying to dispose of assets, the impact of this uncoordinated collective behaviour can have wider macro-financial impacts and potentially damaging consequences for the financial system in the form of asset fire sales.

It is the collective actions of funds that typically generate the spillover effects to other parts of the financial system and the real economy. Whilst individual funds can generate concerning spillover effects, for example the Long-Term Capital Management (LTCM) episode, generally speaking fund cohorts with a certain level of critical mass and concentrated market positions are needed to generate the dynamics needed for systemic risk to arise. The underlying systemic risk posed by the fund sector is its potential to spread or amplify shocks to other parts of the financial system and/or

the real economy, particularly in times of stress. This is most likely associated with the collective actions of fund cohorts.

2.2 Underlying vulnerabilities in investment funds

There are two main underlying potential sources of vulnerabilities for investment funds: liquidity mismatch and leverage. These vulnerabilities can increase the fragility of investment funds and, under stressed market conditions, amplify and transmit a shock to other segments of the wider financial system and economy.

Liquidity mismatch

Liquidity mismatch is one of the primary potential vulnerabilities in investment funds. Liquidity mismatch can be summarised as the difference between the redemption terms that a fund offers and the amount of time it may take the fund manager to liquidate fund holdings in an orderly manner (i.e. by not impacting prevailing market prices) to satisfy redemption requests.

Liquidity mismatch can arise when open-ended funds are invested in less liquid assets, while allowing their investors the opportunity to redeem their shares at a higher frequency. A key contributing factor to liquidity mismatch is that often the features of open-ended funds make the liabilities to investors more like call-able equity than traditional shares. In the simplest model, investment funds have fixed dealing days, at which investors can choose to withdraw their funds at the prevailing market valuation of portfolio assets. To accommodate redemption requests, funds hold liquid assets. However, these can prove to be insufficient in the face of large requests or during market stress.

First-mover advantage dynamics in the presence of underlying liquidity mismatches can lead to ‘excess’ redemptions and asset sales in times of stress. Open-ended fund investors may have an incentive to redeem ahead of other investors, especially in periods of stress. One reason this might happen is if funds choose to sell their most liquid assets first in response to redemption requests, leaving remaining investors with the less liquid assets. A second reason this might happen is if investors believe that the net asset value (NAV) of the fund does not accurately reflect the “true” value of a fund’s portfolio of assets. Essentially, this occurs if investors believe that the NAV is stale or dated. This dynamic can be heightened during

times of market stress or volatility, when assets are less liquid and market pricing more volatile.

In addition to first mover dynamics, liquidity illusion among investors can lead to increased redemption requests if they perceive that daily redemption of fund units equates to liquidity of funds' assets. For instance, some fund investors may overestimate the liquidity of the assets held by the funds in which they invest (FSB, 2017). These investors may not anticipate the difficulty and the cost for funds to exit their positions or to rebalance the fund portfolio. In good times, this might lead to increased allocation of investors' portfolios in open-ended funds with less liquid assets, relative to what an allocation in less liquid assets might have been through direct holdings of these instruments. In times of stress, and faced with unanticipated losses, investors might seek redemptions from these funds to minimise negative returns, greater than what they might have done had they been holding these assets directly.

Whilst these dynamics may be manageable at the level of individual funds, when aggregated across a cohort of funds they can have systemic implications. 'Excess' sales of less liquid assets in times of stress can amplify market disruptions, with adverse implications for the rest of the financial system or broader economy. In particular, individual fund managers' liquidity risk management policies may not effectively take the actions of other market participants into account during stress events.

Leverage

Leverage is the other potential vulnerability of investment funds.

"Financial leverage" arises if funds use debt to finance their investments. "Synthetic leverage" arises from derivative instruments or securities financing transactions that can create exposures contingent on the future value of an underlying asset. Excessive leverage increases the underlying fragility of investment funds in times of stress.

Rapid deleveraging in response to adverse shocks can give rise to spillovers across the financial system. For example, in periods of stress, when asset prices fall, investment funds may either seek to keep their leverage at a target level by selling assets, or be forced to do so by creditors. This may lead to forced sales of assets and a

withdrawal of funding from other systemically important sectors. This could impair the functioning of key markets, with ultimate implications for the real economy via wealth and investment effects or through the cost and availability of financing.

In the case of synthetic leverage, price falls can lead to margin calls or increased haircuts on asset valuations, which can also drive excess sales of assets. While the use of margins mitigates counterparty risk, they also increase the demand for liquidity. This is particularly true in times of stress, raising the potential that actions that funds take – in aggregate – in response to margin calls can put pressure on other parts of the funds sector and broader financial system.

There are also important interactions between these aforementioned vulnerabilities, with first-mover advantage or run risk likely greater for funds with high leverage (Jin et al., 2022). During a crisis, funds with high leverage may need to sell assets into a distressed market at lower prices in order to maintain covenants, and/or meet margin calls, prompting investors to exit before the NAV adjusts to reflect this. Such dynamics can lead to further asset sales and feedback spirals.

2.3 Channels of shock transmission to the broader financial system and shocks or trigger events

Vulnerabilities such as liquidity mismatch and high leverage can result in actions by investment funds that have the potential to amplify adverse shocks. The very actions of investment funds in responding to adverse shocks in the presence of high liquidity mismatch or high leverage can transmit and/or amplify shocks to other parts of the financial system and/or real economy.

For such actions to become of systemic concern, the interconnectedness of the funds sector with the real economy or the rest of the financial system is a key consideration. Without this transmission mechanism, vulnerabilities within the funds sector will be largely self-contained and therefore unlikely to represent a wider threat to financial stability. This has implications both for assessing the systemic riskiness of various fund cohorts, but also in formulating policy responses to reduce systemic risk.

The interconnectedness of investment funds can result in the transmission of shocks, both directly and indirectly, to other parts of the financial system and/or the real economy. Two propagation channels for systemic risks from funds arise:

- The first is the **direct channel**. For instance, funds can transmit financial market shocks and volatility to the real economy through the credit or funding it supplies, e.g. by excessively reducing the supply of credit via commercial paper, bonds, direct loans etc. While funds have been able to increase credit supply in times of good market performance, in the presence of financial vulnerabilities, they may withdraw credit supply during periods of stress. For example, during both the global financial crisis and the COVID-19 shock, large redemptions from MMFs led to an abrupt disruption in short-term funding markets. Another example of the direct counterparty channel is where funds finance themselves with debt provided by other parts of the financial system. In the face of adverse shocks, highly-leveraged funds may face difficulties in meeting their obligations, leading to losses for other market participants; and
- The second is the **indirect channel**, through asset fire-sales and falling collateral prices. Sector-wide fire-sales can have market-wide implications and amplify financial instability through downward-spiralling asset prices and impaired market functioning. As outlined above, in the presence of high liquidity or leverage, funds may be forced to sell assets into increasingly illiquid markets. This can lead to selling assets at heavily discounted prices. This is likely to be more pronounced for funds that invest in illiquid assets (Goldstein et al., 2017). When multiple funds engage in this behaviour, the collective behaviour of the industry can lead to a sharp decline in asset values with real economy effects (Mirza et al., 2020). In turn, this can have wealth effects for the rest of the holders of those assets whose value has declined due to the fire-sales. It can also affect the value of collateral posted in secured lending or derivatives transactions, leading to liquidity spirals as declining asset values increase margin requirements. The effects of this behaviour are more pronounced where ownership of the assets is concentrated

among a few holders and where the market itself is systemically important, such as government bonds, corporate bonds or real estate.

The crystallisation of the underlying vulnerabilities in investment funds and the transmission of a shock via direct and/or indirect channels typically requires a trigger or shock. Such shocks observed in recent years include, for example, the war in Ukraine, the COVID-19 shock or the announcement of the medium-term growth plan in the United Kingdom in Autumn 2022. Tackling the root cause of these triggers or shocks is not within the scope of macroprudential policy. Rather, the focus of macroprudential policy is in reducing, ex-ante, vulnerabilities and the potential for contagion within the financial system, in this case relating to investment funds, and thus ensuring that the funds sector does not amplify the initial shock.

Box A: High-level summary of previous fund-related financial instability episodes

There are a number of recent examples where a shock or trigger event was amplified by the collective behaviour of fund cohorts and the interplay between their underlying vulnerabilities and their interconnectedness.

LDI strategies (2022)

Liability Driven Investment strategies – often in the form of LDI-focused funds – were set up for the special purpose of hedging defined benefit pension schemes against long-term inflation and interest rate exposures. These strategies were employed by the UK pension fund industry owing to a number of factors, including changes to accounting rules in the UK as well as the low interest rate environment. As interest rates fell, the present value of defined benefit pensions increased, thus creating greater liabilities for pension funds. To increase assets to match the increase in liabilities, pension funds turned to employing LDI strategies. Using synthetic leverage, LDI funds were set up to provide the investors - pension funds - with increased returns.

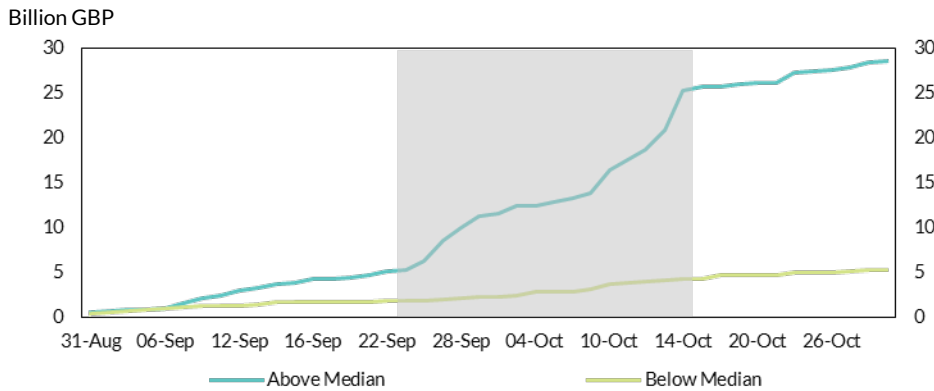
However, the high leverage employed in LDI strategies was exposed in 2022. The unfavourable economic outlook and an uncertain political environment in the UK led to a sharp drop in the price levels of long-dated UK gilts in late September 2022. As a result, LDI funds

were forced to pay increased margin calls – due to equity falling below the minimum maintenance margin - or post more collateral by rebalancing their portfolios. This forced many LDI funds to sell their long-dated UK gilts, leading to further price decreases (Chart A). Analysis by Dunne et al (2023) suggests that solvency may have become an additional or overriding concern for some funds, prompting them to sell gilts to wind down repo positions, where they were not in a position to raise additional capital from investors.

The stress in the gilt market only eased when the Bank of England stepped in with a temporary programme to specifically purchase long-dated UK gilts and thereby provide liquidity to the market for these securities. Between the 28th of September and the 14th of October 2022 the Bank of England purchased nearly £20 billion in gilts through this programme, while LDI funds and pension schemes sold nearly £30 billion in gilts over the same period (Bank of England, 2022). The distress among LDI funds illustrated the risks associated with leverage coupled with concentrated exposures within the funds sector. The LDI episode also highlighted the potential for the collective behaviour of cohorts of funds to amplify shocks.

A number of policy measures have been announced by supervisory authorities which have improved resilience in LDI funds since September 2022. For example, in November 2022, the Central Bank set out a 300-400 basis point (bps) yield buffer as a minimum safeguard to maintain the operational and financial resilience of Irish-resident GBP LDI funds. This measure was introduced in coordination with the Commission de Surveillance du Secteur Financier (Luxembourg’s national competent authority) and followed engagement with ESMA and UK authorities. In March 2023, the Financial Policy Committee (FPC) of the Bank of England published recommendations to improve the resilience of LDI funds. These recommendations aim to ensure that LDI funds maintain a steady-state minimum level of resilience, determined to be resilient to a minimum 250 bps increase in yields, in addition to a buffer that would allow them to operate under normal conditions.

Chart A: Cumulative sale of UK Gilts by Irish-resident LDI funds, £ volumes, 1/9/2022/ - 31/10/2022



Source: Central Bank of Ireland, staff calculations based on industry survey.

Notes: Sale of UK Gilts by Ireland domiciled GBP denominated LDI funds. Funds are split into 2 categories based on their leverage level, below median leverage and above median leverage, based on the leverage level at the end of August 2022. The grey shaded area indicates the crisis period as defined by the Bank of England between 23 September and 14 October.

COVID-19 driven stress of March 2020

Faced with great uncertainty and distress in global financial markets during the onset of COVID-19 lockdowns in March 2020, investment funds started to rapidly sell-off assets. In part this was due to significant outflows by investors in these funds and a dash for cash. Such redemptions forced investment funds to liquidate their positions on a large scale. In Ireland net redemptions at the time amounted to around €72 billion. This was mostly driven by funds with daily redemptions for investors and investments in less liquid assets. Corporate bond funds in particular faced sizable outflows in March 2020, as market liquidity deteriorated at the onset of the COVID-19 pandemic. The pattern of redemptions across different fund segments suggests that funds with exposures to less liquid assets, or assets that became temporarily illiquid, were particularly susceptible to outflows. As a share of assets under management, redemptions were highest amongst corporate bond funds (especially less liquid, high-yield corporate bonds) and emerging market economies (EME) government bond funds and lowest for funds with exposures to more liquid instruments, such as developed market government bonds and equities.

Large redemptions were also observed in the MMF sector internationally. MMFs are typically used by investors for cash management purposes and are active players in short-term funding markets. In March 2020, as the crisis began to unfold, some MMFs globally experienced a substantial increase in redemptions. Within the aggregate picture, there was significant heterogeneity of flows

amongst the different types of MMFs. Some MMFs responded to this period of stress by increasing the liquidity of the fund and reducing the maturity of their assets. While this meant that MMFs were better placed to meet any future redemption pressures, it also implied that MMFs were only willing to provide very short-term funding to the banking system and the real economy. The COVID-19 turmoil primarily impacted US and EU domiciled MMFs although the impact varied by MMF type and currency.

Global Financial Crisis (GFC)

Investment funds also played a role in the amplification of market stress during the GFC. On August 9th 2007 BNP Paribas Investment Partners announced that it would halt trading of equity in three of its MMFs. The funds' NAV had rapidly decreased over the weeks leading up to this point, due to asset valuations declining and as market liquidity deteriorated (Bengtsson 2013). These funds had been heavily involved in the trading of asset backed securities (ABS) which suffered as a result of the of the US housing crisis in 2007.

During the early months of the GFC, MMFs in the United States also experienced large redemptions from investors. Funds were being forced to sell their assets into an illiquid market in order to meet the redemption requests. In particular, the market for asset-backed commercial papers (ABCP) – a type of security held by many US MMFs at the time – became highly illiquid. This led to increased stress in money markets, resulting in further MMF redemptions leading to more forced sales of assets. To prevent this fire-sale mechanism from spiralling further, the Federal Reserve introduced the Asset-Backed Commercial Paper Money Market Mutual Fund Liquidity Facility (AMLF) on September 22nd 2008. The AMLF provided nonrecourse loans the US financial institutions to purchase ABCP from MMFs.

Long Term Capital Management (1998)

LTCM's high use of leverage and subsequent near-collapse in 1998 contributed to losses for its counterparties (Kabir & Hassan, 2005). A "flight-to-quality" triggered by both the 1997 Asian financial crisis and the 1998 Russian financial crisis led to significant losses for LTCM. The fund had taken on short positions in the most secure securities and long positions in those securities which were losing value. The failure of LTCM had the potential to generate broader

contagion effects to the financial sector in the United States, with many financial market actors being principal investors in or counterparties to the activities of LTCM. Subsequently, the Federal Reserve Bank of New York brokered an injection of \$3.6 billion from some of the largest creditors of LTCM (Rubin et al., 1999). This was seen as more favourable than the default of the fund. Without this, LTCM would not have been able to meet its payment obligations by the end of September 1998 (Ruben et al., 1999).

A report by *The President's Working Group on Financial Markets* in 1999 concluded that the unprecedented use of leverage by LTCM had been the cause of the near collapse of the fund (Ruben et al., 1999). The report also concluded that while market discipline should usually constrain the use of leverage by hedge funds such as LTCM, it failed due to a lack of counterparty transparency regarding the risks associated with the positions taken on by LTCM.

Question 1

Do you agree with the above assessment of the potential channels through which investment funds can generate systemic risk?

Question 2

Do you agree with the assessment in this Discussion Paper that it is primarily the collective actions of investment funds that can generate systemic risks?

3. Current regulatory framework for investment funds

The regulatory framework governing investment funds and fund service providers is primarily concerned with the protection of investors in the fund. This includes requirements around disclosure, eligible asset rules, diversification requirements, valuation rules, differentiating between funds suitable for retail investors and those for professional investors, addressing potential conflicts of interest for fund managers; and also ensuring the custody and oversight of assets by depositaries. Some of the provisions contained in the EU regulatory regimes can also have a positive macroprudential impact, even where the original intention behind their inclusion in the regulatory framework may have been for the protection of investors, rather than the reduction of systemic risk.

There are specific examples of this:

In the EU, the Undertakings for the Collective Investment in Transferable Securities (UCITS) Directive and Eligible Assets Directive (EAD) feature measures relating to liquidity mismatch. As a product Directive, the UCITS framework sets out requirements covering dealing requirements, pre-investment due diligence and temporary borrowings. Eligible assets rules are prescribed in further detail in the EAD.⁶ The UCITS framework also sets out detailed requirements for depositaries custody and oversight of assets. The Central Bank has also prescribed additional requirements for UCITS via the Central Bank UCITS Regulation.⁷

In the case of AIFs, the Alternative Investment Fund Manager Directive (AIFMD) harmonises requirements at a European level in relation to fund managers. The AIFMD requires an Alternative

While the current investor protection-focused regulatory framework for the funds sector can help to address some funds-specific elements of systemic risk, it does not fully address them all.

⁶ These requirements have been transposed into Irish law via the Irish UCITS Regulations (S.I. No. 352 of 2011 - European Communities (Undertakings for Collective Investment in Transferable Securities) Regulations 2011) which implement the UCITS Directive and Level 2 Commission Directives (including 2007/16/EC and 2010/43/EU), and the Central Bank UCITS Regulations (S.I. No. 230 of 2019 - Central Bank (Supervision and Enforcement) Act 2013 (Section 48(1)) (Undertakings for Collective Investment in Transferable Securities) Regulations 2019) which incorporate the CESR Guidelines on eligible assets for UCITS.

⁷ The Central Bank UCITS Regulations - S.I. No. 230/2019 - Central Bank (Supervision and Enforcement) Act 2013 (Section 48(1)) (Undertakings for Collective Investment in Transferable Securities) Regulations 2019.

Investment Fund Manager (AIFM) to ensure that, for each AIF that it manages, the investment strategy, the liquidity profile and the redemption policy are consistent. An AIFM must have appropriate liquidity management systems which enables it to monitor the liquidity risk of an AIF and to ensure that the liquidity profile of the AIF's investments complies with those obligations.⁸ Further details are set out in the Annex. The AIFMD also sets out detailed requirements for depositaries custody and oversight of assets.

In addition, in the EU, each Member State may prescribe the product requirements applicable to AIFs. In Ireland, the Central Bank has set out a regulatory framework for both Qualified Investor AIFs and Retail Investor AIFs via the Central Bank's AIF Rulebook.

There are a number of LMTs available for investment funds such as quantity-based tools (suspension of redemptions, redemption gates) and price-based tools, such as anti-dilution levies (ADLs) and swing pricing. If implemented appropriately, the use of such tools, particularly the price-based ones, can help to reduce the impact of liquidity mismatch in a stress period. Price-based tools do this by reducing the incentives for investors to redeem if they ensure that the value of their fund shares received incorporates all the costs borne by the fund in meeting that redemption. Quantity-based tools have a different objective, namely to restrict the access in some form of investors to their investments, either partially or wholly, for a period of time in order to allow the fund to deal with an acute liquidity strain.

Leverage restrictions exist in UCITS. Regulation 103 (3) of the UCITS Regulations provides, inter alia, that a UCITS may borrow not more than 10 per cent of its assets provided that such borrowing is on a temporary basis. Under the commitment approach, UCITS' exposures relating to derivative instruments cannot exceed the total NAV. Eventually a UCITS using both external borrowing and derivatives can thus leverage up to 2.1 times its NAV. For more sophisticated UCITS, the relative value-at-risk (VaR) approach does not measure the leverage of the strategies; rather it allows a UCITS to double the risk of loss compared to a similar but unleveraged

⁸ Relevant obligations are set out in the Irish AIFM Regulations (S.I. No. 257 of 2013 - European Union (Alternative Investment Fund Managers) Regulations 2013) which implement the Alternative Investment Fund Manager Directive (AIFMD).

portfolio. Finally the VaR of a UCITS using the absolute VaR approach cannot be greater than 20 per cent of its NAV. The VaR approaches potentially allow for higher leverage compared to the commitment approach depending on the volatility of the underlying assets.⁹

Article 25 of AIFMD is currently the only specifically-designed ex ante macroprudential tool in EU funds legislation, though the application is limited to funds managed by AIFMs. Whilst AIFs are not subject to the same leverage restrictions as UCITS funds, the AIFM must set a maximum level of leverage for each AIF; set out the extent to which collateral received could be re-used; and demonstrate that the leverage limit is reasonable and complied with at all times. Additionally, they must put in place risk management policies and are subject to stress testing and reporting obligations (ECB, 2015). Substantially leveraged AIFs are also subject to enhanced reporting requirements once their exposure exceeds 300 per cent of their NAV. Nevertheless, the provisions of Article 25 of the AIFMD state that, when this is required in order to ensure the stability and integrity of the financial system, the competent authorities of the home Member State may impose additional limits to the level of leverage that AIFMs can employ. To date, The Central Bank is the only national competent authority in the EU to activate leverage limits under this Article.

UCITS and the money market fund regulation (MMFR) also have requirements that could partially address the amplification mechanisms and/or transmission channels of investment funds. Specifically, they both have requirements for risk management and asset concentration limits. For example, UCITS stipulates that no single asset can represent more than 10 per cent of the fund's assets and holdings of more than 5 per cent cannot in aggregate exceed 40 per cent of the fund's assets.¹⁰

While the tools outlined in this section reduce certain types of risk at the fund level, they have not been sufficient to reduce the propensity of certain fund cohorts to amplify shocks. This is for a variety of reasons:

⁹ For an overview of leverage measures and restrictions, see ECB (2015), "Financial Stability Review, Box 7: Synthetic leverage in the investment fund sector", pp. 92-94, May 2015.

¹⁰ Article 52 of the Directive 2009/65/EC.

- First, in the main, these rules have been designed for the protection of investors, rather than reducing the systemic risk posed by the investment fund sector to the broader financial system and economy. While these are complementary perspectives, they require a different regulatory approach, as has been the case with the banking system through the development of a macroprudential framework for that sector;
- Second, in relation to managing risks stemming from leverage and liquidity mismatch, these frameworks typically provided significant scope for interpretation by asset managers. For instance, as outlined in the FSB's report on the effectiveness of its 2017 recommendations on liquidity risk management in open-ended investment funds, there is significant variability across fund managers in the availability and use of LMTs across the funds they manage. This limits the effectiveness of these rules from a system-wide perspective; and
- Third, there are some features of existing frameworks that may not be optimal from a macroprudential perspective. As an example, fixed, minimum liquidity requirements for MMFs in the current regulatory framework may have prevented the macroprudential value of these requirements. If MMFs have to maintain their regulatory liquidity requirements in times of stress, that reduces the ability of those liquid assets to be used to meet redemptions.

Overall, as the funds sector has continued to grow and become more integral to the wider functioning of several key financial markets, **the regulatory framework also needs to evolve to be better able to mitigate systemic risk.** This could be achieved through repurposing of existing regulatory provisions and tools, but could also entail the potential development of new ones specifically aimed at reducing the systemic risk posed by cohorts of the sector.

Apart from the tools outlined in this section, a number of pieces of EU legislation provide national (and EU) authorities with the powers to intervene in the event of crystallisation of risks to financial stability. These tools are primarily discrete measures empowering authorities to take some form of action in the event that disruptions to financial stability are emerging. The tools are

contained in, for example, the Short Selling Regulation (SSR) and the MiFID/MIFIR as well as others.¹¹

Whilst these tools are useful, they are primarily ex post in nature.

These tools do not limit vulnerabilities before shocks hit, and exist distinct from one another, with little overlap as they are intended for use in very specific, narrow circumstances. As such, their effectiveness as macroprudential measures is limited. These policies do provide for useful ex post, crisis-management style tools, but they do not provide for the type of ex ante, risk mitigation that is at the core of macroprudential policy.

Question 3

Do you agree that the current regulatory framework for funds - which has primarily been designed at a global level from an investor protection perspective - has not been sufficient to reduce the propensity of certain fund cohorts to amplify shocks?

¹¹ Other tools are included in the Transparency Directive; Article 25 AIFMD; Central Securities Depository Regulation (CSDR); Credit Rating Agencies Regulation (CRAR); UCITS; Securities Financing Transaction Regulation (SFTR); European Market Infrastructure Regulation (EMIR); Market Abuse Regulation (MAR); Prospectus Directive; Benchmark Regulation (BMR).

4. Macroprudential policy for investment funds

A key starting point for developing a macroprudential framework for the funds sector would be clarity over its objectives and, depending on that, the key principles underpinning its design. In designing a macroprudential framework for funds, it is important that the approach is not purely an extension or replication of the macroprudential framework applied to the banking sector. Investment funds perform very different economic functions to banks in the financial system and these differences extend to the way in which each sector contributes to systemic risk. The overall approach should, therefore, be designed with the specific systemic risks posed by investment funds in mind and should reflect the diverse set of business models in the sector.

4.1 Objectives of macroprudential policy for investment funds

The aim of macroprudential policy for the funds sector would be to ensure that this growing segment of the financial sector is more resilient to stresses and less likely to amplify adverse shocks. In turn, this would better equip the sector to serve as a resilient form of financing supporting broader economic activity. Macroprudential policy can achieve this by preventing the build-up of excessive vulnerabilities across relevant cohorts of the funds sector and/or limit the potential for the sector to amplify adverse shocks through its interconnectedness with other parts of the financial system.

It is also important to be clear about what macroprudential policy would not be seeking to achieve. Macroprudential policy would not – and cannot – aim to target asset prices. Asset prices are affected by a range of factors, many of which are beyond the limits of macroprudential policy measures. It is also not the aim of macroprudential policy to replace or substitute for funds' or investors' own risk management practices. Macroprudential policy would therefore be focused on mitigating financial stability risks; that is, risks arising from the collective behaviour of segments of the funds sector that can affect the real economy and/or other parts of the financial system.

The objective of macroprudential policy for the funds sector would be to ensure that this growing segment of the financial sector is more resilient and less likely to amplify adverse shocks.

The rationale for macroprudential policy intervention stems from the need to address risks that are not covered by other parts of the regulatory framework. Macroprudential policy encourages a system-wide perspective in financial regulation. By contrast, microprudential supervision focuses on the financial soundness of individual financial institutions. Although financial entities may be individually financially stable, their collective actions may create imbalances within the financial system and make the sector vulnerable to negative shocks, particularly in times of stress (as outlined in Section 2).

Developing and operationalising macroprudential policy for the funds sector is therefore important as it is not appropriate to rely on individual fund managers to fully address the build-up of systemic risk. As outlined in Section 2, coordination problems, incentive frictions as well as information asymmetries for asset managers mean they are not in a position to fully address systemic risks in the funds sector, particularly where the collective actions of funds leads to the potential amplification of shocks.

Macroprudential policy would not operate in isolation, but complement other policy interventions, for instance structural measures and/or crisis management tools. Structural interventions may be required to address market-wide issues, for instance measures to strengthen the resilience of liquidity supply in certain asset classes during stressed market conditions. A macroprudential framework for the funds sector could not be used as a solution to wider, structural concerns in certain markets. Instead, it should be used to mitigate the systemic risk generated by the specific characteristics, structures and incentives within the funds sector itself, taking the broader market structure into account. More broadly, macroprudential policy for the funds sector cannot entirely eliminate the possibility of future stresses. For those instances specifically, a robust crisis management framework is required.

4.2 Key principles of a macroprudential framework for funds – options for consideration

Before assessing the relative merits of different policy interventions, it is important to consider key principles that could underpin the design of a macroprudential framework for funds. The

proposed principles outlined in this section will be core to informing the specific design and operation of the macroprudential framework for investment funds. These should reflect the nature of the systemic risk posed by cohorts the funds sector, as well as setting out the pillars upon which policy tools (and risk assessment) can be designed. A number of potential key principles are outlined below:

- In the case of investment funds, **resilience-enhancing measures need to work on a collective or aggregate basis, aimed at fund cohorts;**
- It is important that **resilience be built *before* crisis conditions occur.** Sufficient ex ante policies should be in place targeted at the identified sources of systemic risk, though ex post tools nevertheless remain important as part of a wider toolkit;
- Policy measures could **either seek to limit underlying vulnerabilities and/or be targeted at the interconnectedness of the sector,** reducing contagion risk;
- As the nature and magnitude of systemic risks evolves, it is important that **policies have a degree of flexibility over time;**
- Policy intervention should be the result of a **careful balance between costs and benefits for the broader economy;** and
- **Global co-ordination is a critical enabler** when designing a macroprudential policy framework for the funds sector. It is also important that macroprudential measures take a system-wide perspective and guard against the possibility that risks shift to other parts of the financial system.

Policies operate on a cohort basis

A macroprudential framework for the funds sector should seek to focus on fund cohorts in the main. As noted above, the underlying systemic risk posed by the funds sector is its ability to spread or amplify shocks to other parts of the financial system and/or the real economy, particularly during market stress. This is most associated with the collective actions of fund cohorts. There are thousands of funds, which – individually – may have quite limited macro-financial impacts for the rest of the financial system or the economy. But the collective impact of correlated behaviour across a cohort of funds, especially in the face of similar underlying vulnerabilities, can have a

material impact on market outcomes. In addition, given the diversity of the funds sector, a ‘one size fits all’ approach across the sector is not appropriate. Indeed, some cohorts of funds may display limited underlying vulnerabilities, such as liquidity mismatch or leverage. Policy interventions which seek to build resilience in the funds sector, therefore, need to appropriately target fund cohorts and the potential for the collective actions of fund cohorts to amplify shocks.

Building of resilience ex ante

Ex ante policy interventions aim to build resilience and reduce risk in the financial system prior to onset of stressed market conditions.

Such interventions may be structural, or always in force, or activated in response to increasing risks in parts of the financial system. Ex-ante tools enable the build-up of resilience in the sector, thereby reducing the propensity of the funds sector to propagate or amplify shocks in times of stress.

Ex post interventions, on the other hand, are used after the onset of stressed market conditions, aimed at reducing its severity, duration and impact. In contrast to ex ante measures, they are usually only activated specifically in response to the occurrence of market stress.

Ex ante measures appear more consistent with the overall aims of macroprudential policy. This suggests a focus on their development and use in the macroprudential framework for investment funds. However, ex post policy interventions have a specific role to play and should be considered as part of a comprehensive financial stability toolkit. Whilst the focus of macroprudential policy may be on ex ante interventions, the value of ex post interventions in response to an episode of financial system stress should not be discounted.

Targeted policy interventions to address vulnerabilities and/or channels of contagion

The funds sector is diverse, and not all cohorts display the same degree of vulnerabilities or interconnectedness. This means that policy interventions need to be targeted and proportionate, guided by an assessment of the magnitude of systemic risks. The description of the nature, sources and crystallisation of systemic risk as outlined in Section 2 suggests policy interventions may either focus on limiting underlying vulnerabilities (leverage and liquidity mismatch)

or on the interconnectedness of the funds sector, thereby seeking to reduce contagion risk.

Flexibility to reflect the changing risk environment over time

A key feature of the financial system is that the nature and magnitude of risks evolves over time. This could be for either structural or cyclical reasons. For example, a gradually growing importance of the funds sector in a given core market would be a structural factor that implies that a disruption in that form of financing could have a greater impact on the functioning of that market in times of stress. From a cyclical perspective, history points to periods of time when financial market participants tend to under-price risk, only for that to reverse very sharply in periods of stress.

In that context, there would be benefits to considering time-variation in some macroprudential policy measures. For example, the concept of ‘usability’ of accumulated resilience would be an important principle to incorporate in a macroprudential approach, to ensure that resilience can be drawn upon in times of stress to allow the sector to better withstand adverse shocks. However, not all macroprudential tools would need a time-varying dimension - certain interventions could be mainly structural in nature, designed to raise the baseline level of resilience in certain fund cohorts and therefore may not need adjustment over time.

Balancing benefits and costs

Like all policy interventions, the design and calibration of specific interventions should seek to balance the benefits and costs for society. Any binding form of regulation is likely to have some degree of impact on the behaviour of the funds sector. Resilience is not costless and the costs of policy interventions should be taken into account. Interventions should also be conscious of any potential cliff-effects associated with the introduction or adjustment of a policy. These can be mitigated by using adequate transition times or phased implementations.

International engagement and coordination

It would be optimal that any macroprudential framework for funds has a high degree of consistency internationally, given the cross-border nature of capital markets. This is important from a risk

assessment perspective, given that developing a complete picture of the systemic footprint of the funds sector in different core markets requires international co-ordination amongst authorities. But it is also critical from a policy perspective. Given the global nature of the funds sector, actions taken in one jurisdiction could lead to funds re-domiciling elsewhere, limiting effectiveness. As such, it would be optimal for the macroprudential policy framework to be constructed and applied consistently and in a coordinated manner across key global jurisdictions to avoid adverse spillovers and leakages.

Question 4

Do you agree with the key proposed objectives and principles of macroprudential policy for funds as set out in this Discussion Paper? Are there additional principles, which need to be considered?

5. Potential macroprudential tools for investment funds

Having explored the objectives of, and a number of principles regarding the potential design of, a macroprudential policy framework for investment funds, it is also necessary to consider issues pertaining to potential specific macroprudential tools themselves. The aim of this Discussion Paper is not to be definitive about which tools are optimal or not, or to be exhaustive in terms of identifying the potential tools. Rather, the purpose is to explore some of the relative merits of potential tools as well as pose questions as to whether new tools may be required. Macroprudential interventions could be structured as the re-purposing of existing regulatory measures and tools, or the development of new bespoke macroprudential tools for the funds sector.

Vulnerabilities - Liquidity management

To be effective, macroprudential liquidity measures for investment funds should limit the extent to which liquidity mismatch contribute to 'excess' asset sales in times of stress. Relatedly, it should also limit the potential associated disruption in core markets, including direct spillovers to other financial institutions and disruption to credit intermediation. This can be achieved primarily in two ways: via measures that reduce the underlying liquidity mismatch itself; or via measures that reduce the effects of that mismatch.

Measures that reduce the underlying liquidity mismatch are designed to narrow any misalignment between the liquidity of the assets and the redemption frequency offered by the fund. Such measures can broadly operate in two ways:

- **Reducing the liquidity of liabilities.** This could be achieved, for example, by reducing the dealing frequency of the fund, for instance moving from daily to weekly, weekly to monthly, etc. This can reduce the possibility for destabilising 'excess' investor redemption requests to emerge, as investors have reduced opportunity to withdraw from the fund and hence the fund is less likely to require large-scale asset disposals and the risk of fire-sale dynamics is reduced overall. If done on an ex

Macroprudential tools for the funds sector could target vulnerabilities such as liquidity mismatch and leverage of fund cohorts as well as the spillover and contagion risk generated by their interconnectedness. This could include the re-purposing of existing tools or potentially the development of new, bespoke macroprudential tools.

ante basis, this measure reduces substantially the vulnerability of funds to the effects of triggers or shocks. However, dealing frequency is only one dimension of the redemption terms of investment funds that determine the degree of liquidity mismatch. For example, if a monthly dealing fund still allows investors to provide short notice periods, there may be still be incentives to redeem early around the monthly dealing date. An alternative means of reducing the liquidity of liabilities is to introduce a notice period. This requires advanced notice from investors before redemption requests can be formally submitted. This advanced notice allows the fund more flexibility in managing its overall liquidity position, allowing for a smoother redemption cycle and a lower probability of fire-sale dynamics emerging; or

- **Increasing the liquidity of assets.** This can be achieved, for example, through liquid asset buffers (LABs). These are liquid assets held by a fund for the purposes of meeting investor redemption demand, not for investment. LABs can help funds withstand periods of increased investor redemption requests without having to resort to the selling of less liquid assets. However, unless accompanied by vertical slicing and an appropriate method for allocating costs of redemptions to redeeming investors, they may also potentially increase incentives for investors to redeem during early signs of financial market stress, as investors may fear that remaining in the fund could leave them with the less liquid assets if the liquid asset buffer is exhausted.

In contrast, measures that are designed to reduce the effects of the liquidity mismatch do not reduce the mismatch itself, but rather aim to limit the economic frictions it can generate. This can be achieved through **LMTs**. These are tools and techniques that fund managers can employ to assist with the day-to-day management of the liquidity of the fund. They include price-based liquidity management tools and quantity-based LMTs. Specifically:

- **Price-based LMTs** operate by impacting the value of the investment received by subscribing or redeeming investors by accounting for the associated transaction costs (i.e.

purchasing new assets on behalf of subscribing investors, selling assets to fund redemptions). Transaction costs may be explicit, for instance broker fees, tax charges etc, or implicit, such as the market impact of assets sales to meet redemptions. Examples of price-based LMTs include swing pricing, which adjusts the NAV of a fund based on the transaction costs associated with subscribing or redeeming investors; or anti-dilution levies (ADLs), which have the same aim as swing pricing but the levy is applied directly to the investor and not as part of the calculation of the NAV. If used as part of the day-to-day liquidity risk management in funds, price-based LMTs can be effective at reducing first-mover dynamics and hence reduce the impact of liquidity mismatch in funds. However, they can be operationally complex and depend on access to market and transaction data to work effectively. For less liquid assets, in crisis scenarios, relying on market pricing information can become more challenging.

- **Quantity-based LMTs** on the other hand work to reduce the amount of the investment received by redeeming investors. For example, redemption gates set limits on the amount of investments that can be redeemed in a given day, for instance up to a given percentage of the amount requested. Suspension of redemptions remove the ability of investors to redeem from the fund at all for a given period of time. Quantity-based LMTs are normally used on an ex post basis only and in response to the onset of stressed market conditions. Quantity-based LMTs can help to slow the impact of increased redemption requests from investors by delaying or even pausing them, but they do not deal with the underlying causes for the increases in redemption requests. Additionally, their use is normally associated with periods of market strain, so their introduction may be taken as a signal by other investors to redeem before further restrictions on accessing their investments are introduced. This can reinforce the first-mover dynamic. Their use may also exacerbate certain economic frictions, for instance the wholesale introduction of redemption gates or suspensions may constrain investors' own liquidity and simply shift the liquidity challenge from the fund cohort to another part of the financial system.

In practice, given the diversity of the sector, a ‘one-size fits all’ approach is unlikely to be effective and a mix of the above measures is likely to be required from a macroprudential perspective. The sector includes a wide breadth of activities and business models, ranging from funds that provide cash-management services to investors (MMFs) to funds that act as vehicles for investments in long-term, inherently illiquid assets (e.g. property or infrastructure). In that context, policy measures will need to be tailored to specific fund cohorts. For example, there is some evidence supporting the implementation of liquidity buffers for MMFs, given their cash management function. In particular, Dunne and Guiliana (2021) argue for the use of countercyclical liquidity buffers with the objective of making liquidity buffer requirements for MMFs more usable in times of stress, to guard against potential first-mover advantage dynamics. Having said that, liquid asset buffers may not be most effective interventions from a macroprudential perspective for other parts of the funds sector, given the different economic function that non-MMF investment funds perform.

The FSB has put forward proposals to enhance the liquidity management of open-ended funds and MMFs. In its 2022 report on the effectiveness of policy recommendations from 2017 on liquidity management in investment funds, the FSB has put forward a series of policy proposals to enhance the resilience of the fund sector by improving liquidity management (FSB, 2022c; 2023). Specifically, the FSB has proposed measures to reduce the underlying structural mismatch in investment funds and to enhance the international framework around the consideration and use of LMTs, particularly price-based LMTs. In addition, in October 2021, the FSB published a set of policy proposals to enhance the resilience of MMFs (FSB 2021). This included a broad range of policy options to address MMF vulnerabilities. The policy toolkit included mechanisms to impose on redeeming fund investors the cost of their redemptions; address regulatory thresholds that may give rise to cliff effects; and reduce liquidity transformation.

The FSB’s proposals will strengthen the macroprudential lens to the regulatory framework for investment funds. The Central Bank is supportive of these proposals and believes they would introduce a necessary baseline level of resilience for liquidity management across the funds sector. These policy proposals constitute a targeted

set of measures that, once implemented, would represent a significant strengthening of the current framework and liquidity management practices among OEF managers. Depending on the precise implementation of the proposals, that baseline level of resilience may need to be enhanced in certain circumstances, especially in cases where investment funds form a particularly important part of the ecosystem for core, systemically-important markets. This could be for a number of reasons. For instance, depending on the operationalisation of the policy proposals, fund managers may still not fully take into account the externalities of their actions, such as asset disposals in stressed markets. More broadly, given that the structure of markets changes over time, including in terms of the importance of investment funds as part of the broader ecosystem of capital markets or due to changes in factors that determine the supply of liquidity in markets, there may need to be time variation in the degree of resilience of segments of the funds sector.

In that context, further exploration of macroprudential policy options for liquidity mismatch to build resilience in fund cohorts on an ex ante basis may be warranted. This could take the form of an enhanced and more consistent approach to the use of existing tools, for instance:

- a more prescriptive regulatory framework governing the use of price-based LMTs, covering swing factors and thresholds;
- wider use of notice periods for certain less liquid funds, including via more prescriptive regulatory requirements;
- calibrating liquid asset buffers for specific fund cohorts; or
- more granular requirements in the context of stress testing, including to take into account the actions of other market participants.

Moreover, new, bespoke macroprudential tools targeted at liquidity mismatch may need to be developed.

Vulnerabilities - Leverage

Leverage measures would seek to limit vulnerabilities stemming from the degree of leverage employed by segments of the funds sector. The objective of macroprudential measures targeting

leverage would be to guard against unsustainable levels of leverage across segments of the funds sector, to ensure that funds are better equipped to withstand adverse shocks, rather than amplify them.

Leverage limits would be a key tool to address this risk, where relevant, but they entail operational challenges that need to be overcome. Issues such as the calibration of the limits or whether they should be time-varying are important dimensions of the design of potential leverage limits. Two specific issues raise particular operational challenges:

- **Measuring leverage**, particularly synthetic leverage, where it can be challenging to identify pockets of excessive leverage, but also to distinguish between derivatives transactions that may be generated for the purposes of reducing risks or hedging (e.g. via interest rate swap derivatives) or leverage that is generated for magnifying returns, thereby increasing risk-taking; and
- **'Leakage'**, meaning that limits applied to cohorts of funds may be circumvented by funds establishing new entities, regulated or otherwise, that may not be subject to the leverage limit at inception. Leakage, while relevant generally for the implementation of policy measures, is a particular concern in the case of leverage limits applied to specific cohorts of funds, as the risk of circumvention is higher. In such circumstances, the migration of assets and activities to these entities may simply shift the leverage-related risk from the fund cohorts to these new entities.

The Central Bank has recent experience in implementing leverage limits for a cohort of funds. In November 2022, the Central Bank announced the phased implementation of a leverage limit of 60 per cent on a total-debt-to-total-assets basis using Article 25 of AIFMD to address the excessive build-up of leverage in Irish-domiciled property funds. This represented the culmination of several years of policy and analytical work and was focused on a cohort of investment funds whose business model is, in many respects, simpler than many other types of investment fund given that these property funds are not extensive users of derivatives or repos.

The use of regulatory stress testing focusing on leveraged-related risks could also be enhanced from a macroprudential perspective, either as a policy measure or a risk assessment tool. In order to be a useful policy tool, it would need to be accompanied by tangible actions by market participants to manage leverage-related risks and, where needed, reduce them. Even if not used as a policy tool as such, enhancing the understanding at a fund and system-wide level as to the risks generated by high levels of leverage in the fund sector will ultimately better inform macroprudential policy discussions, and the calibration and introduction of leverage limits.

It may also be worth exploring options for further tools that target leverage beyond the imposition of limits. This may involve different, more nuanced applications of limits (e.g. based on types and magnitude of shocks that funds should be in a position to withstand); the role of different tools but with similar outcomes, e.g. margin requirements; or newly developed tools.

Interconnectedness

Policy tools targeting interconnectedness would differ conceptually from those targeting the vulnerabilities in funds.

Instead of aiming to enhance the resilience of fund cohorts, tools covering the interconnectedness of funds would, instead, aim to limit material spillovers from fund cohorts to other parts of the financial system. In other words, they would target the amplification channels, not the underlying vulnerabilities.

Policy tools targeting the interconnectedness of funds have received comparatively less attention and remain underdeveloped vis-à-vis tools targeting vulnerabilities. The focus of the international debate on systemic risk and investment funds has, to date, been on the vulnerabilities of fund cohorts and how to reduce them. However, there are existing tools which could be adapted to limit the spillover and contagion risks from the interconnectedness of funds. In the EU, a form of concentration limit already in place could be worth exploring for its macroprudential relevance. Article 57 of the MiFID II Directive imposed EU-wide rules to restrict the size of certain positions market participants can take in commodity derivatives, in order to limit the market share and size that any single counterparty or groups of counterparties can gain. Whilst Article 57 operates to limit the market positions of individual entities, a form of

such limit could be adapted, whereby it were applied to groups or cohorts of entities, such as certain types of investment funds. This would seek to reduce the impact that distress in a given cohort of funds could have on the wider market, and not seek to reduce the susceptibility of that cohort to an external shock in the first place. Concentration limits may have drawbacks for the market in which they are applied, however, as such quantity restrictions could alter the dynamics in such markets and could reduce market liquidity. Their impact on wider market functioning would thus need to be examined in greater detail.

Another area that could be considered for spillover and contagion-targeting macroprudential tools is the practice of margining.¹²

Following the GFC, policy measures were introduced to require the posting of margin (initial and variation) on certain OTC derivative contracts. Measures with a similar effect were introduced in relation to haircut levels in non-centrally cleared securities financing transactions (SFTs). The net effect of both was to reduce counterparty credit risk and overall leverage in the system. Applied to the case of funds, margin requirements could be triggered or increased if the systemic risk posed by particular cohorts of funds was deemed to be increasing. In 2017, the ESRB published a paper on the *Macroprudential Use of Margins and Haircuts* that considered a number of relevant issues, including potential macroprudential tools in this area (ESRB, 2017a).

One of the potential drawbacks of the use of margins in this way, beyond the operational complexity, is whether they reduce counterparty credit risk at the cost of increasing liquidity risk.

Liquidity squeezes have become more common in recent years, for instance in certain markets following the initial COVID-19 shock; in commodities markets following Russia's invasion of Ukraine in February 2022; and specifically in the UK in September and October 2022 when large one-day movements in the UK Gilt market caused margin requirements to increase sharply. A joint review of margin practices from the Basel Committee on Banking Supervision (BCBS)-the Committee on Payments and Market Infrastructures (CPMI)-IOSCO from 2022 highlighted some of the issues in relation to margins and liquidity risk, to be explored further with the FSB (BIS &

¹² See CGFS (2010) and ESRB (2017a).

IOSCO, 2022). Further clarity on how to address some of the issues would likely be required before substantial progress on using margins (and haircuts) as macroprudential tools could be achieved.

As an alternative to targeting interconnectedness directly, an assessment of interconnectedness risk could be incorporated as a key factor in the application of other measures to reduce vulnerabilities. Everything else equal, a highly interconnected segment of the funds sector would likely pose more significant risks to the functioning of the overall financial system than a segment of the funds sector with fewer linkages. This would imply that the levels of resilience for highly interconnected fund cohorts may need to be greater from a systemic risk perspective. That assessment of the interconnectedness of funds could therefore also inform the application of measures around liquidity mismatch and leverage of funds.

On the whole, interconnectedness-targeting tools may be useful complements to, or even substitutes for, measures targeted at reducing vulnerabilities in fund cohorts. In practice, their use would depend on the specific nature of the risk posed by a given fund cohort. Conceptually, such tools remain comparatively under-developed, with limited existing evidence and empirical analysis on their deployment and efficacy. However, future exploration of such tools could be a useful area for further analysis in advancing the macroprudential framework generally, including as applied to investment funds.

Question 5

Do you agree with the analysis and the issues highlighted pertaining to the design of potential specific macroprudential tools for the funds sector? Are there any additional potential tools that could be explored?

Question 6

Do you agree that tools could target the interconnectedness of funds as well as/instead of their vulnerabilities?

6. Operationalising a macroprudential framework for funds – key considerations

There would be a number of important practical dimensions in developing a macroprudential policy framework along the lines discussed in previous sections. These include the approach to international co-ordination, the role of regulatory authorities and data requirements.

International co-ordination

The funds sector, similar to capital markets more generally, is inherently global. A number of investment fund ‘hubs’ exist internationally, including Ireland, from where funds sell to customers and invest in markets all over the world. The global nature of the industry – which reflects the global nature of capital markets – may therefore make the task of implementing macroprudential policy more difficult, especially when compared to the macroprudential framework for banks. This reflects the fact that the funds sector is inherently cross-border in nature, with the consequent challenges that this raises from a regulatory governance perspective.

The governance of any macroprudential framework for the funds sector will need to entail arrangements for international co-ordination, reflecting the global nature of capital markets.

International bodies, such as the FSB and IOSCO, have been developing recommendations and standards for the funds sector, including to strengthen the macroprudential lens of regulation in recent years. Globally co-ordinated standards are a necessary starting point for developing a macroprudential framework for the funds sector. In addition, international coordination and cooperation would be optimal in the context of specific policy or supervisory interventions, given the cross-border nature of capital markets. For example, the interventions to strengthen resilience of LDI funds last year required significant co-ordination between authorities in Europe. Developing such arrangements for co-ordination at a global

In order to function effectively, the macroprudential framework for funds would ideally have a high degree of consistency internationally, including a reciprocation framework, and be based on a more consistent international data framework.

level would be an important enabler for an effective macroprudential framework.

Regarding governance, and in order to function effectively, a macroprudential framework would ideally have a high degree of consistency internationally, including a reciprocation framework.

This relates to the design and availability of different macroprudential tools across jurisdictions, but also a consistency in the understanding across different regulatory authorities as to the underlying objectives of those policy tools. Without this, there is the risk of a fragmented macroprudential frameworks for investment funds which could limit effectiveness and unnecessarily increase costs for industry and, potentially, its customers.

From an operational perspective, the introduction and calibration of specific macroprudential tools in one jurisdiction can have impacts in other jurisdictions. The activation of measures in one jurisdiction without reciprocation in others, or different approaches to implementation across jurisdictions, may generate regulatory arbitrage, which could lead to a shift of underlying vulnerabilities and limit the effectiveness of any interventions. However, in practice, some degree of flexibility will also likely be needed to account for different conditions and circumstances across jurisdictions.

Role of regulatory authorities

In the context of this Discussion Paper, regulatory authorities is taken to mean any public body charged with an element of oversight of the financial system. For example, this could include central banks; securities regulators; financial stability and macroprudential authorities; or ministries of finance. The precise make-up of this group may differ from jurisdiction-to-jurisdiction, depending on the regulatory architecture in place.

The role of these authorities is multi-faceted. They range from setting detailed regulatory requirements (within an overall legislative context); supervising and enforcing regulatory requirements; addressing the build-up of risks across the financial system; and, if necessary, interventions to prevent and/or manage crisis situations.

The degree of prescription by regulatory authorities has been a key area of focus and a sensitive element of the global discourse on this

subject. Opinions on the nature of policy interventions vary, from regulatory authorities' main role being to set out the broad desired outcomes in the regulatory framework to a more active role by authorities by setting more prescriptive rules to achieve those outcomes.

A key principle of any framework should be that it is not the role of regulatory authorities to replace risk management by the funds sector. However, as outlined earlier, there are economic frictions (e.g. uncoordinated actions, externalities such as fire sales) which justify some form of regulatory interventions with a macroprudential purpose. This raises a key question as to the nature of any regulatory interventions where investment fund cohorts may have the potential to amplify the effects of a trigger or shock event. Specifically, the nature of any interventions by public authorities needs to be balanced against the need to maintain ultimate responsibility for the management of individual investment funds by the relevant fund manager.

Box B: Central Bank interventions in markets

Central banks' toolkit for liquidity provision has its origins in – and still largely remains focused on – lending to banks. Through those operations, central banks can also affect broader financial market conditions, as banks play a key role in channelling liquidity to the wider market. Nevertheless, as the financial sector has evolved over time, central banks across the world have increasingly intervened more directly in markets, including to ensure the smooth transmission of monetary policy and to restore the functioning of certain core markets in times of stress.

The two most recent episodes of such markets interventions were in light of significant market dysfunction at the onset of the COVID-19 shock in 2020 and the Gilt market disruption in the UK in 2022. During the COVID-19 shock, and in the context of a sudden 'dash for cash' in global markets, a number of central banks internationally engaged in large asset purchases programmes. In the case of the US, there were also direct interventions by the Federal Reserve to provide liquidity to MMFs, through the introduction of the Money Market Mutual Fund Liquidity Facility (MMLF). Many of these operations were aimed, in part, and at least initially, at restoring

market functioning. During the UK Gilt market episode, the Bank of England commenced an asset purchase programme, to safeguard UK financial stability in light of risks stemming from a dysfunction in the Gilt markets. The operation was time-limited and targeted on those assets that were particularly relevant to the ongoing market dysfunction.

In the broader context of an evolving financial system, arguments have been put forward for the role of central banks as lenders of last resort (LOLR) to be expanded to include certain non-bank entities and/or to act as or market makers of last resort (MMLR). For instance, a report by the Advisory Scientific Committee of the ESRB outlines a set of desirable attributes for an effective enhanced LOLR and MMLR (ESRB, 2017b).

However, central bank interventions are not cost-free. They entail risks to public sector balance sheets; depending on their design, they can interact with the monetary policy stance; and, more broadly, they can also affect the incentives of market participants. For example, if market participants expect that central banks interventions may limit some of the downside risks they face in times of stress, this can result in incentives to take on excessive risks ('moral hazard').

As such, the evolution of the regulatory frameworks to strengthen resilience of non-banks active in financial markets is a necessary starting point to strengthening market functioning. The wider debate about the evolving role of central banks in stabilising markets during stress, could not – and would not – be a first port of call. Intervening in markets ex post, without sufficient regulatory interventions ex ante to strengthen resilience of financial market participants, including investment funds, can entail significant costs.

Data requirements

Beyond governance issues, another key challenge in operationalising a macroprudential framework for investment funds relates to data issues. Data acts as a key enabler for any macroprudential policy framework, facilitating risk identification, policy design and evaluation. The importance of high-quality data to inform macroprudential analysis and policy making means that regulatory authorities and policymakers require an internationally consistent data framework. The data framework should seek to be clear on the key data needed for investment funds, including measuring their leverage, liquidity mismatch and interconnectedness. It would be optimal for data collected by authorities to be based on internationally-consistent definitions to facilitate risk assessments and data sharing as well as reducing costs to industry of inconsistent data requirements. There would also be merits in developing a framework that facilitates data sharing between national authorities that require access for macroprudential risk assessment, be they securities regulators, central banks or other macroprudential or financial stability authorities.

When designing a data framework, ensuring good data quality and data sharing processes should be at the forefront of considerations, relative to the volume of data. This will require coordination at international level as well as at the national and regional level to ensure good data quality, especially in the EU, where data requirements are generally agreed at a European level and implemented locally. It may also require data sharing agreements between collectors of statistical and regulatory information, who may not be situated in the same institution. In addition, where existing data is missing or insufficient, new collections may be needed while ensuring the usability and high standards of data quality for existing data collections is also important.

A consistent data framework internationally would facilitate data sharing. The globalised nature of the funds sector gives rise to an additional need for cross-border consistency to facilitate data sharing. Consistent data standards, levels of data granularity and definitions of key metrics would facilitate better cross-country comparisons and understanding of foreign exposures of funds. Absent progress in this area, domestic authorities will face barriers

to assessing fully the risk posed by investment funds not domiciled in their jurisdictions. An internationally consistent data framework could ensure the availability of common identifiers, such as Legal Entity Identifiers (LEIs), which can be used to facilitate cross-border data sharing and consistent risk assessments. Other areas a consistent data framework could target is understanding the ultimate investors or counterparties in funds, rather than first counterparty investors, which can also facilitate deeper assessments on cross-border interconnectedness.

Question 7

Do you agree with the governance and data considerations highlighted in this Discussion Paper when operationalising macroprudential policy for funds?

Question 8

Beyond governance and data considerations, are there additional issues that need to be considered when operationalising macroprudential policy for funds?

7. Conclusion and List of Questions

Reflecting the changing nature of financial intermediation, the Central Bank recognises that a macroprudential framework needs to be developed and operationalised for the funds sector internationally. In light of ongoing international work on funds, the Central Bank is seeking stakeholder views on a number of issues raised within the Discussion Paper which can potentially inform further analysis and policy work in this area.

This Discussion Paper has set out a range of issues that need to be considered when developing and operationalising such a framework. In particular:

- The funds sector, both globally and in Ireland, is diverse and is increasingly relevant for the functioning of the financial system and the financing of the real economy;
- Typically, it is the collective actions of investment funds (fund cohorts) that have the potential to generate systemic risk;
- The materialisation of systemic risk arises from a shock and the interplay between leverage and liquidity mismatch, and interconnectedness of the fund cohorts;
- While the current investor protection-focused regulatory framework for the funds sector can help to address some funds-specific elements of systemic risk, it does not fully address them all;
- The objective of macroprudential policy for the funds sector would be to ensure that this growing segment of the financial sector is more resilient and less likely to amplify adverse shocks;
- Macroprudential tools for the funds sector could target vulnerabilities such as liquidity mismatch and leverage of fund cohorts, as well as the spillover and contagion risk generated by their interconnectedness. This could be achieved through repurposing of existing tools or, potentially, the development of new, bespoke macroprudential tools; and

- In order to function effectively, the macroprudential framework for funds would ideally have a high degree of consistency internationally, including a reciprocation framework, and be based on a more consistent international data framework.

The Central Bank invites stakeholders' written responses to the issues discussed and the list of questions outlined in this Discussion Paper. Beyond the specific questions, stakeholders are also invited to provide observations and commentary on any aspect of the Discussion Paper.

Question 1

Do you agree with the above assessment of the potential channels through which investment funds can generate systemic risk?

Question 2

Do you agree with the assessment in this Discussion Paper that it is primarily the collective actions of investment funds that can generate systemic risks?

Question 3

Do you agree that the current regulatory framework for funds - which has primarily been designed at a global level from an investor protection perspective - has not been sufficient to reduce the propensity of certain fund cohorts to amplify shocks?

Question 4

Do you agree with the key proposed objectives and principles of macroprudential policy for funds as set out in this Discussion Paper? Are there additional principles, which need to be considered?

Question 5

Do you agree with the analysis and the issues highlighted pertaining to the design of potential specific macroprudential tools for the funds sector? Are there any additional potential tools that could be explored?

Question 6

Do you agree that tools could target the interconnectedness of funds as well as/instead of their vulnerabilities?

Question 7

Do you agree with the governance and data considerations highlighted in this Discussion Paper when operationalising macroprudential policy for funds?

Question 8

Beyond governance and data considerations, are there additional issues that need to be considered when operationalising macroprudential policy for funds?

Central Bank of Ireland request that written responses are submitted via www.centralbank.ie/fundsurvey by 15 November 2023. Unless requested otherwise, the intention is to publish written contributions submitted.

Annex: Liquidity Management Features of UCITS, AIFMD and MMFR¹³

UCITS

Dealing frequency: A UCITS must repurchase or redeem its units at the request of any unit-holder. This means that a UCITS must permit redemptions at least twice a month¹⁴, although most UCITS permit redemptions on a daily or weekly basis.¹⁵

Dealing procedures: The UCITS Directive does not specify the dealing procedures to be used by UCITS. In practice, a dealing deadline for the receipt of applications will be set at a time – which could be hours or, sometimes, days - prior to the valuation point. Further, a UCITS will generally pay out redemption monies three to five days after the valuation point. As a result of these dealing procedures, there is a period of time between the cut-off time for receipt of applications and the deadline for payment of redemption monies. This gives the UCITS management company time to sell investments and generate cash to pay redemption monies if needs be.

Eligible assets: UCITS are subject to detailed eligible assets rules which mean that they must invest in liquid assets. These include listed liquid transferable securities and money market instruments, exchange traded-derivatives and bank deposits which are repayable on demand or have the right to be withdrawn and mature in no more than 12 months. To further support liquidity, there are criteria about the markets on which eligible assets must be listed or traded.

Pre-investment due diligence: Before making an investment, a UCITS management company must analyse inter alia the

¹³ This overview is based on the requirements of the UCITS and AIFMD - and MMFR - frameworks as at the date of publication of this paper. There are discussions underway within the EU to amend elements of both the UCITS and AIFMD frameworks with respect to liquidity management.

¹⁴ NCAs can permit a UCITS to reduce the frequency to once a month "on condition that such derogation does not prejudice the interests of the unit holders".

¹⁵ See Article 76 of Directive 2009/65/EC.

investment's contribution to the UCITS portfolio composition, liquidity and risk and reward profile.¹⁶

Risk management: As part of its risk management process, a UCITS management company must employ an appropriate liquidity risk management process in order to ensure that each UCITS it manages is able to comply in all foreseeable circumstances including stressed conditions with its obligation to redeem units at a unit-holder's request. Where appropriate, a UCITS management company must conduct stress tests to assess the liquidity risk of the UCITS in exceptional circumstances.¹⁷

Temporary borrowings: A UCITS is permitted to borrow up to 10 per cent for temporary purposes.¹⁸ These borrowings can be used where there is a temporary mismatch of cash flows. For example, where redemption monies need to be paid out in advance of monies being received into the UCITS following the sale of investments.

Netting of subscriptions and redemptions¹⁹: Where a UCITS receives subscriptions and redemptions for the same dealing day, it will use the subscription monies received to pay redemption requests. This lessens or removes the need to sell investments to generate cash to pay redemption proceeds.

AIFMD

Liquidity management: The AIFMD requires an AIFM to ensure that, for each AIF that it manages, the investment strategy, the liquidity profile and the redemption policy are consistent.²⁰ An AIFM must have appropriate liquidity management systems which enable them to monitor the liquidity risk of the AIF and to ensure that the liquidity profile of the investments of the AIF complies with its underlying obligations. Further, an AIFM must regularly conduct stress tests, under normal and exceptional liquidity conditions, to assess and

¹⁶ Article 23(4) of Commission Directive 2010/43/EU.

¹⁷ Article 40(3) of Commission Directive 2010/43/EU.

¹⁸ Article 83(2) of Directive 2009/65/EC.

¹⁹ Whilst not an explicit tool in UCITS, may be considered a portfolio management technique within the UCITS framework.

²⁰ Article 16(2) of Directive 2011/61/EU.

monitor the liquidity risk of the AIFs.²¹ These obligations are supplemented by detailed level 2 rules on liquidity management.²²

Dealing procedures: Similar to UCITS, the AIFMD does not specify the dealing procedures to be used in relation to AIFs. An AIFM will design dealing procedures which are appropriate for its AIFs under management and which afford any necessary period of time during which it can sell investments to generate cash to pay redemption monies if needs be.

Netting of subscriptions and redemptions: Similar to UCITS, an AIFM can net subscriptions and redemptions in an AIF.

Temporary borrowings: The AIFMD does not set a limit on temporary borrowings. Accordingly, an AIFM can establish such credit lines as it deems appropriate to deal with mismatches of cash flows.

Risk management: Article 15 of the AIFMD contains similar provisions to those for pre-investment due diligence in UCITS (outlined above). This article requires, as part of AIFMs' risk management, that risks associated with each investment position of the AIF and their overall effect on the AIF's portfolio can be properly identified, measured, managed and monitored on an ongoing basis, including through the use of appropriate stress testing procedures.

MMFR

Eligible assets: Eligible assets under the EU Money Market Funds Regulation (MMFR)²³ include the following:

- money market instruments, subject to certain conditions in Article 9(1)(a);
- eligible securitisations and asset-backed commercial paper ("ABCPs")
- deposits;
- repurchase agreements that fulfil the conditions set out in Article 14 MMFR

²¹ Article 16(1) of Directive 2011/61/EU.

²² Articles 46 to 49 of Commission Delegated Regulation (EU) No 231/2013.

²³ Regulation (EU) 2017/1131 (EU Money Market Funds Regulation) (MMFR).

- reverse repurchase agreements that fulfil the conditions set out in Article 15 MMFR
- units/shares of other MMFs; and
- certain financial derivative instruments.

Liquidity management: Under MMFR, MMFs are required to comply with a number of portfolio requirements relating to maturity and liquidity.²⁴ Firstly, MMFR imposes requirements around maturity such as the maximum allowable weighted average maturity (WAM) and weighted average life (WAL). Generally, portfolios of short-term MMFs require a WAM of no more than 60 days, with a WAL of no more than 120 days. Portfolios of standard MMFs are required to have at all times a WAM of no more than 6 months and a WAL of no more than 12 months.

Secondly, MMFs must have certain liquidity management thresholds in place under MMFR:

Public Debt Constant NAV (“CNAV”) MMF:

- 10 per cent held in daily maturing assets
- 30 per cent in weekly maturing assets (17.5 per cent can be held within government securities classified as highly liquid and which can be redeemed and settled within one working day and have a residual maturity of up to 190 days);

Low Volatility NAV (“LVNAV”) MMF:

- 10 per cent held in daily maturing assets
- 30 per cent in weekly maturing assets (17.5 per cent can be held within government securities classified as highly liquid and which can be redeemed and settled within one working day and have a residual maturity of up to 190 days);

²⁴ Article 24 of Regulation (EU) 2017/1131 (EU Money Market Funds Regulation) (MMFR).

Variable NAV (“VNAV”) MMF:

- 7.5 per cent held in daily maturing assets
- 15 per cent in weekly maturing assets (of which 7.5 per cent can be held within money market instruments or other MMFs)

Liquidity Fees, Redemption Gates and Suspensions²⁵: Public Debt CNAV MMFs and LVNAV MMFs must have in place provisions for liquidity fees and redemption gates and suspensions to ensure investor protection and prevent a ‘first mover advantage’. The liquidity fee must adequately reflect the cost to the MMF of achieving liquidity and must not amount to a penalty charge that would offset losses incurred by other investors as a result of the redemption.

Whenever the proportion of weekly maturing assets of a Public Debt CNAV MMF or LVNAV MMF falls below 30 per cent and net daily redemptions on a single business day exceed 10 per cent, the board of that MMF is required to undertake a document assessment of the situation and where necessary, apply liquidity fees and redemption gates.

Whenever the proportion of weekly maturing assets of a Public Debt CNAV MMF or LVNAV MMF falls below 10 per cent, the board of that MMF is required to undertake a document assessment of the situation and apply liquidity fees or suspension of redemptions (for 15 working days).

In addition to the above requirements around eligible assets and liquidity management, MMFR also includes rules regarding diversification²⁶ and concentration limits.²⁷ Under Article 19, MMF are required to apply credit quality assessment procedure for determining the credit quality of money market instruments, securitisations and asset-backed commercial paper (ABCP). Under Article 28 MMFR, MMFs are required to run stress-testing procedures, on at least a bi-annual basis.

²⁵ Article 34 of Regulation (EU) 2017/1131 (EU Money Market Funds Regulation) (MMFR).

²⁶ Article 17 of Regulation (EU) 2017/1131 (EU Money Market Funds Regulation) (MMFR).

²⁷ Article 18 of Regulation (EU) 2017/1131 (EU Money Market Funds Regulation) (MMFR).

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