



ESRB response to the ESMA consultation on draft Regulatory Technical Standards and Guidelines on liquidity management tools

The European Securities and Markets Authority (ESMA) has a mandate to develop Level 2 and Level 3 EU legal acts on liquidity management tools (LMTs) for managers of open-ended investment funds. According to the recently amended Alternative Investment Fund Managers Directive (AIFMD) and Undertakings for Collective Investment in Transferable Securities (UCITS) Directive,¹ managers of open-ended funds need to select at least two appropriate LMTs (such as the extension of notice periods, swing pricing, dual pricing, redemption fees, anti-dilution levies, redemption gates and redemptions in kind), after assessing the suitability of those tools in relation to the fund's investment strategy, its liquidity profile and its redemption policy. ESMA has a mandate to develop draft Regulatory Technical Standards (RTS) to specify the characteristics of LMTs. When developing these draft RTS, ESMA shall take account of the diversity of investment strategies and underlying assets of investment funds. ESMA is also tasked with drawing up Guidelines on the selection and calibration of LMTs by UCITS and alternative investment fund managers (AIFMs) of open-ended alternative investment funds (AIFs) to manage liquidity risk and mitigate financial stability risks.

This document is the ESRB's response to ESMA's consultation on the draft RTS and Guidelines. It builds on the ESRB issues note published in September 2023.² The issues note provided a high-level approach to addressing risks in investment funds that invest in assets which are either inherently illiquid or might become illiquid in times of stress. It also outlined the further work to be carried out by the ESRB in this area. This will focus first on adapting certain policy tools to reflect the revised AIFMD and UCITS Directive and then on assessing the need for new tools to reduce systemic risk in the medium term. This document summarises the first stage of this work. As mentioned in the issues note, it considers three policy tools that can be adapted to better serve financial stability purposes. First, the document sets out how structural liquidity mismatch in real estate funds could be reduced by ensuring closer alignment between the fund's redemption terms and its investment strategy by introducing longer notice periods and a lower redemption frequency. Second, it discusses how financial stability could benefit if investment funds used anti-dilution LMTs to mitigate first-mover advantage. Third, it describes how the liquidity stress testing framework for investment funds could incorporate liquidity risk stemming from margin and/or collateral more effectively. Considerations presented in this note may also inform the development of future relevant national supervisory guidelines.

Notice periods for open-ended real estate investment funds

Vulnerabilities in investment funds can negatively affect the real estate sector. Commercial real estate (CRE) is a systemically important market in many countries.³ A growing subset of this market in the EU is held by real

¹ Directive (EU) 2024/927 of the European Parliament and of the Council of 13 March 2024 amending Directives 2011/61/EU and 2009/65/EC as regards delegation arrangements, liquidity risk management, supervisory reporting, the provision of depositary and custody services and loan origination by alternative investment funds.

² Issues note on policy options to address risks in corporate debt and real estate investment funds from a financial stability perspective.

³ It should be noted that all real estate held by investment funds (as is the case with other institutional investors) is considered to be commercial real estate under Recommendation ESRB/2019/3 even if it is used for residential purposes (e.g. rental housing). This definition is applied throughout this report.

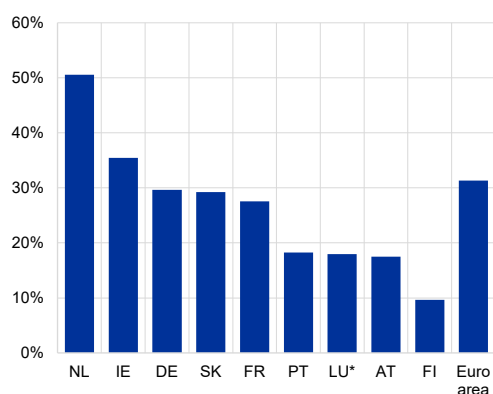
estate investment funds (REIFs)⁴ (Chart 1, panel a). Thus, in situations where liquidity in this market is fragile, it is important that fire sales triggered by outflows from REIFs create no further disruption. Liquidity transformation in REIFs can contribute to procyclical sales that negatively impact the functioning of underlying CRE markets. CRE is by nature an illiquid asset class in normal market conditions and liquidity conditions can worsen during periods of stress. As a result, even if a small number of funds need to sell assets quickly to meet redemption requests or other financial commitments, this could have a material negative effect on CRE valuations, in excess of that which would occur through an orderly market adjustment. Such fire sales could also affect other financial institutions with large exposures to real estate.

Chart 1

In many jurisdictions real estate investment funds have a large market footprint, while portfolio liquidity is lower than the liquidity offered to investors

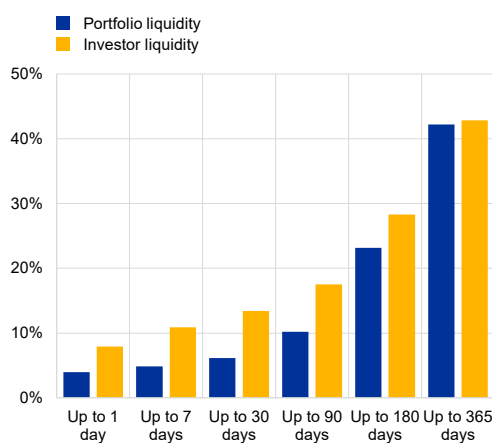
a) Market footprint of open-ended REIFs

(percentage)



b) Portfolio liquidity and investor liquidity for EU-domiciled open-ended REIFs

(percentage)



Sources: Panel a): ECB IVF statistics, Real Capital Analytics, Cushman & Wakefield and Morgan Stanley Capital International. Panel b): AIFMD. Notes: Panel a) shows the net asset value (NAV) of REIFs relative to domestic CRE market size for the fourth quarter of 2021. Note that CRE investments made by REIFs are often not located solely in their country of domicile. This means that the above estimate of the NAV relative to the size of the domestic real estate market may underestimate the market footprint of REIFs in some countries, while overestimating their market footprint in others. This is especially the case for Luxembourg REIFs, which mainly hold CRE in other European countries (see [ALFI Survey, 2022](#)). *For this reason, the footprint for Luxembourg only considers the holdings of CRE in Luxembourg (provided by the Banque centrale du Luxembourg). These holdings only account for 1% of the CRE assets of Luxembourg REIFs. Most of the remaining assets are located in other European countries, so the true footprint of REIF holdings in other countries may be higher than presented above. In panel b), data for EU-domiciled open-ended AIFs are for the end of 2022.

While liquidity transformation is limited by the AIFMD in principle, in practice there is a sizeable mismatch between investor liquidity and portfolio liquidity of EU-domiciled open-ended REIFs. Under Article 16(2) of the AIFMD, “AIFMs shall ensure that, for each AIF that they manage, the investment strategy, the liquidity profile and the redemption policy are consistent”. While the degree of liquidity mismatch varies and depends on specific redemption terms and conditions offered, including LMTs, available data point to a misalignment between these three elements in open-ended REIFs across the EU. Most EU-domiciled REIFs have an open-ended structure and therefore offer to repurchase or redeem the units before the liquidation phase or wind-down starts. At the same time, the liquidity of the assets of open-ended REIFs – as estimated by the funds themselves – is less than the

⁴ See “[The growing role of investment funds in euro area real estate markets: risks and policy considerations](#)”, European Central Bank, 2023.

outflows that can occur over the same period, at all frequencies (Chart 1, panel b).⁵ This indicates a clear misalignment between investor liquidity and asset liquidity.

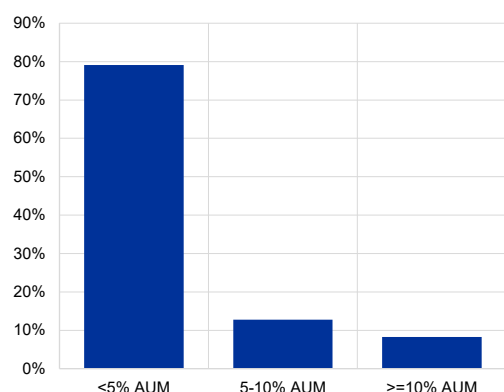
Systemic vulnerabilities of real estate funds should be reduced by better alignment between asset liquidity and redemption terms. Most REIFs have small portions of liquid assets (Chart 2). They therefore fall into “category 3” of the Financial Stability Board (FSB) Recommendations, defined as funds that allocate a significant proportion of their assets under management to “illiquid” assets.⁶ Such funds can benefit from lower redemption frequencies and/or long notice or settlement periods, which help to improve their ex ante resilience. The FSB also recommends that relevant authorities consider requiring these funds to be structured as closed-ended funds. As CRE is an inherently illiquid asset class, the risks deriving from high demand for redemptions could be substantially mitigated by setting up the funds as closed-ended funds.

Chart 2

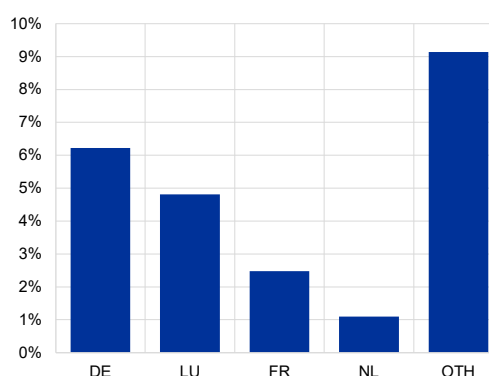
Real estate investment funds often do not hold a large share of liquid assets

a) Proportion of exposures to highly liquid assets in EU REIFs b) Cash and cash equivalents as a share of assets under management of EU REIFs

(percentage)



(percentage)



Source: AIFMD.

Notes: Data for EU-domiciled open-ended AIFs are for the end of 2022. In panel a), highly liquid assets include those reported as assets that can be liquidated (portfolio liquidity) in under seven days. Data in panel b) refer to long positions in cash and cash equivalents.

Notice periods should play a prominent role in ensuring alignment between the liquidity and redemption profiles of open-ended REIFs. Building on the FSB’s recommendations for funds that allocate a significant proportion of their assets to “illiquid” assets, there are three additional points to consider. First, contrary to settlement periods, notice periods can address potential misaligned incentives and first-mover advantage⁷ in REIFs. Second, when defining the overall redemption terms, the notice period and redemption frequency should be considered together. A lower redemption frequency without a meaningful notice period can still result in the

⁵ Under **ESMA’s Guidelines on reporting obligations under Articles 3(3)(d) and 24(1), (2) and (4) of the AIFMD**, when assessing the shortest period within which the invested funds could be withdrawn or investors could receive redemption payments, AIFMs should assume that they would impose gates where they have the power to do so but that they would not suspend withdrawals/redemptions and that there are no redemption fees.

⁶ **“Revised Policy Recommendations to Address Structural Vulnerabilities from Liquidity Mismatch in Open-Ended Funds”**, Financial Stability Board, 20 December 2023.

⁷ See **“Policy Proposals to Enhance Money Market Fund Resilience”**, Financial Stability Board, 11 October 2021. The FSB’s definition of first-mover advantage is as follows: first-mover advantage occurs when, under certain circumstances, investors who redeem their shares first do so on more favourable terms than investors in the same fund who redeem late. It can occur if, for example, the transaction costs for assets sold to meet redemptions are not properly allocated to redeeming investors. Another example of the first-mover advantage occurs if in a scenario of declining values of a fund’s assets, investors can redeem before the fund’s NAV adjusts to fully reflect those declines in value. An investor who redeems solely in anticipation of further market deterioration is not considered as benefiting from a first-mover advantage. First mover advantage may lead to pre-emptive runs.

immediate need for cash to meet the redemption request, albeit on fewer days in a year. Third, notice periods provide additional time to ensure fund valuations accurately reflect current market conditions. Open-ended REIFs could also benefit from more frequent valuations from independent reputable valuers. This can help address valuation uncertainty, which creates a risk of penalising remaining (redeeming) investors by redeeming shares above (below) their fair price. Specifically, it can guard against first-mover advantage if investors in open-ended REIFs feel incentivised to redeem pre-emptively under the assumption that the NAV is lagging the current market prices.⁸

Notice periods help to better align the incentives of investors with the incentives they would have had if they had held real estate directly. It is important for market functioning and price discovery that investors are able to divest assets from their portfolio. But market function is negatively affected if the sale of those assets is not conducted in an orderly manner, as discussed above. Appropriate notice periods provide a signal to managers to sell property in line with their investor's preferences, while also providing them with the time they require to do so in an orderly manner. They can therefore improve the alignment between the liquidity of the portfolio assets and the liquidity of the fund units, without removing the investor's option to divest.

The extension of notice periods is the optimal LMT for most open-ended REIFs. In accordance with the recently amended AIFMD and UCITS Directive,⁹ managers of open-ended funds need to select at least two appropriate LMTs among extensions of notice periods, redemption gates, redemptions in kind, swing pricing, dual pricing, redemption fees and anti-dilution levies. The FSB's Recommendation notes that "operationalisation of anti-dilution LMTs (swing pricing, dual pricing, redemption fees or anti-dilution levies) can be particularly challenging when there is very limited market liquidity or when pricing information is not available", implying that anti-dilution LMTs may be less likely to be effective for REIFs. It is therefore important that REIFs implement at least one LMT that is not an anti-dilution LMT. Redemptions in kind can only be activated to meet redemption requests of professional investors. In addition, as investors can still sell assets redeemed in kind in the same way as funds, the market impact and financial stability implications of such sales might be similar. Gates may be appropriate for some REIFs with very large proportions of liquid assets, even though their activation (or the anticipation of their activation) can lead to unintended consequences under periods of market stress (first-mover advantage). For the remaining REIFs, the extension of notice periods is likely to be the most appropriate LMT.

The extension of notice periods requires an appropriate baseline. Under the revised AIFMD and UCITS Directive,¹⁰ the extension of notice periods is defined as "an extension of the period of notice that unitholders or shareholders must give to fund managers, beyond a minimum period which is appropriate to the fund, when redeeming their units or shares". According to available data, notice periods do not appear to be sufficient in all cases to allow funds to manage outflows (Chart 3, panel a) or to compensate for frequent redemptions (Chart 3, panel b). Open-ended REIFs are therefore collectively vulnerable to potential short and long-term market stress. Guidance on the appropriate baseline notice periods for REIFs should be introduced to complement the forthcoming guidance on extending notice periods provided by ESMA. A longer baseline can be expected to reduce any unintended consequences associated with the extension of notice periods, including increased procyclicality if investors become concerned that such measures will be triggered and attempt to front run their implementation.

⁸ See "On the 2022 CSA on valuation", 24 May 2022 and "Recommendation of the European Systemic Risk Board (ESRB) on liquidity risk in investment funds", ESMA, 12 November 2020.

⁹ See footnote 1.

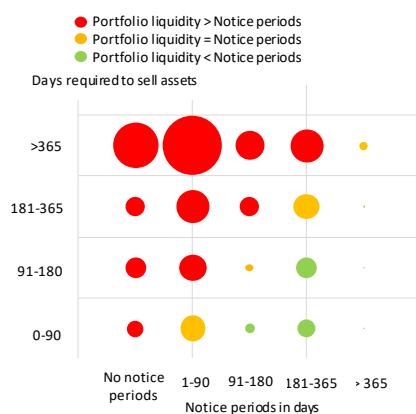
¹⁰ See footnote 1.

Chart 3

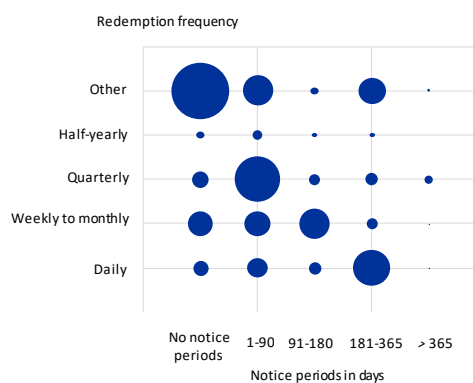
Notice periods do not appear to be sufficient in all cases to allow funds to manage outflows or to compensate for frequent redemptions

a) Investor liquidity and notice periods for EU-domiciled REIFs b) Redemption frequency relative to notice periods for EU-domiciled REIFs

(percentage)



(percentage)



Source: AIFMD.

Notes: Data for EU-domiciled open-ended AIFs are for the end of 2022. Panel a) plots the liquidity of assets held by alternative real estate funds against the notice period of such funds. The size of the bubbles reflects the NAV that can be liquidated by the funds in the given time window. The red bubbles signal assets where the time needed to liquidate is longer than the notice period of the fund, the yellow bubbles denote when they are in the same time window and the green bubbles where the time needed to liquidate the assets is shorter than the notice period of the fund. Panel b) plots the redemption frequency offered to investors in alternative real estate funds against the notice period of such funds. The size of the bubbles reflects the NAV subject to a certain redemption frequency in the given time window.

The calculation of the baseline notice period should reflect the liquidity of the underlying real estate assets.

The scale of individual real estate investments means they tend to require a stable supply of capital for a reasonable period of time. Investors – be they retail or professional – should therefore view investment in REIFs accordingly and not be reliant on the liquidity of REIF investments for their liquidity management purposes. Further, investors should not view investment in real estate via an open-ended REIF (rather than directly) as providing an opportunity to take advantage of liquidity mismatch, especially when there is pre-existing stress in the underlying market. Hence there should be restrictions on the redemption profile to mitigate the risk of open-ended REIFs causing disruptions in real estate markets. Nonetheless, where there is an opportunity for a fund to provide flexible redemptions without endangering the interest of investors or financial stability, this flexibility could be retained.

There is considerable diversity in the liquidity of real estate assets across EU markets. There is considerable variation in estimated time to sell in real estate markets across the EU, with estimates of time to sell in non-crisis periods varying from 12.5 weeks to over 35 weeks depending on the country in which the real estate is located.¹¹ Furthermore, there is significant cross-border activity by REIFs, and REIF investments may extend to properties located in multiple jurisdictions, which may also be outside the EU.

There are a number of different approaches to deal with REIFs’ asset liquidity at present, and these vary across jurisdictions. Even in jurisdictions where time to sell CRE assets is relatively short, notice periods or liquidity timeframes of 12 months have been put in place.¹² In some countries, the illiquidity of the assets is reflected in lock-up periods for REIF investments. In some EU jurisdictions, REIFs that target retail investors may have

¹¹ See “Unravelling Liquidity In International Commercial Real Estate Markets”, Summary Report, Investment Property Forum, January 2016.

¹² See the Central Bank of Ireland’s macroprudential policy framework for Irish property funds. See also Section 255, paragraph 4, sentence 1 of the German Investment Code (Kapitalanlagegesetzbuch) and paragraphs 11 and 43a of the Austrian Real Estate Investment Fund Act, ImmoInvFG – ImmobilienInvestmentfondsgesetz.

stringent liquidity requirements to ensure they are able to meet redemption requests frequently (i.e. in line with the liquidity promise). Such requirements nevertheless imply that the valuation of the physical real estate does reflect the current market conditions. Some EU countries, including Italy, instead require all REIFs to be closed-ended, reflecting the illiquidity of the underlying assets.

Given all of the above considerations, open-ended REIFs should have a notice period appropriate to the general liquidity risk set-up of the fund. For certain REIFs, an open-ended fund structure is not appropriate. This is the case for funds that invest in specific, particularly small, illiquid or sensitive markets. In such cases, based on their judgement, the relevant authorities might require the REIFs to be set up as closed-end funds. Where the relevant authorities consider that REIFs could provide redemption opportunities without endangering the investors' interests or financial stability, these funds should introduce notice periods of sufficient length to increase their resilience.

Building on the approach adopted by certain EU jurisdictions, as well as ESMA's work on developing draft RTS under the revised European long-term investment funds (ELTIF) Regulation,¹³ the ESRB proposes a minimum baseline notice period of 12 months, in the absence of the mitigating factors described in the paragraph below. This should be viewed as a minimum requirement, rather than a target, and individual relevant authorities may also wish to provide more restrictive guidelines. Notice periods should be longer if investments are in markets where the fund manager cannot be reasonably certain of the fund's ability to meet potential redemption volumes during periods of otherwise normal market liquidity (e.g. if market liquidity is structurally low, or transaction processes are particularly complex).

To ensure some flexibility and alignment with the ELTIF regulatory framework, conditional on the supervisor's judgement, the length of the minimum notice period could depend on the minimum proportion of liquid assets held by open-ended REIFs. A shorter minimum notice period for open-ended REIFs could be allowed, if at the same time a minimum level of liquid assets is required. The length of the minimum notice period could be tied to the minimum liquidity requirement, in line with ESMA's proposal for ELTIFs. While such derogations could hamper the effectiveness of the baseline measure, a link with the ELTIF framework might be warranted to prevent potential regulatory avoidance, in case an ELTIF structure is used to circumvent the requirement of a 12-month baseline notice period for open-ended REIFs. When the minimum level of liquid assets is breached, the manager should commit to replenishing it to the required proportion within a specific period as a priority objective. The minimum values should be carefully specified to eliminate the liquidity mismatch, together with an additional buffer to allow the fund to meet any other liquidity demands.

While further work needs to be done to establish a sufficient level of liquid assets, there are three points to note. First, the average liquid assets held by open-ended REIFs differs across the EU (Chart 2) and liquidity mismatch still exists at the EU level. Second, careful calibration of minimum liquidity levels is essential to avoid potential triggering effects. Third, to ensure consistency with the FSB's recommendations, daily-dealing REIFs that fall into the FSB's category 3 should not have an option to hold sufficient liquid assets to reduce their notice period to zero days.

For baseline notice periods of less than a year, in addition to liquid assets requirements, the fund should implement gates as additional LMTs. Gates are an important backstop to mitigate the impact on underlying markets if the fund experiences unexpectedly large withdrawals that exceed its liquid assets. To comply with Article 16 of the AIFMD, funds with higher investor liquidity should consider larger volumes of liquid assets or longer notice periods.

For funds with a single investor, a national authority may allow a different notice period and/or different minimum liquid asset levels, conditional on the fund's risk profile. However, the national authority must first

¹³ See "Final Report – Draft regulatory technical standards under the revised ELTIF Regulation", ESMA, 19 December 2023 and "Opinion on ELTIF regulatory technical standards under the revised ELTIF Regulation", ESMA, 22 April 2024.

be satisfied that the set-up of the fund and the nature of the single investor ensure that liquidity risks are sufficiently limited. In particular, the authority should be satisfied that the single investor is not comprised of multiple underlying investors who can potentially withdraw liquidity (e.g. through a fund-of-funds structure or funds used by unit-linked insurance).

When assessing the application of the notice period, several fund characteristics should be considered.

An open-ended REIF does not have a strict regulatory definition. The following aspects should be taken into consideration when assessing whether a fund is an open-ended REIF and the application of the notice period.

- Not all funds investing in real estate assets list themselves as REIFs in their AIFMD reporting.
- The funds' potential impact on the underlying market is reflected by the value of the assets they hold, not the share of real estate assets in their total assets.¹⁴ However, the share the fund's assets invested in real estate may affect the likelihood of substantial withdrawals.
- Funds may invest via complex structures. For example, the use of profit-sharing arrangements or holding controlling interests in real estate companies can result in rapid sales of properties in the event of substantial withdrawals, even if the fund is not the direct legal owner of the real estate assets.
- Bond and equity funds may – either purposefully or otherwise – temporarily or permanently hold substantial volumes of assets underpinned by real estate, but over which they have no control, and which is extremely unlikely to result in fire sales of the underlying real estate assets.
- Individual countries may specify other definitions of REIFs, e.g. for tax or regulatory purposes.
- Some funds may choose to set up as specific fund types (e.g. ELTIFs), in which case other specific regulation will apply.
- Where there is doubt, an open-ended REIF should be defined as a REIF that allows or may allow redemptions of some kind at some time prior to closure of the fund. For clarity, this definition should not apply to funds that do not allow redemptions but do allow units to be traded on a secondary market.

In addition to having sufficient baseline notice periods, managers of open-ended REIFs with low levels of liquid assets should also implement the option to extend notice periods provided under the AIFMD. The extension of notice periods could be activated when market intelligence or identified transaction volumes indicate that market liquidity has materially fallen relative to its long-term level in one or more markets in which their funds invest, such that the liquidity of the funds' portfolio is likely to be materially affected. In those conditions, fund managers will need a longer time period to sell property in an orderly manner to meet redemptions, and notice periods should consequently be lengthened. Adequate and detailed guidance should be provided to fund managers on the activation of the extension options. Where applicable, open-ended REIFs should act as soon as possible to extend notice periods (and, where practical, seek revised valuations), as delay can result in increased outflows due to first-mover advantage.

Use of anti-dilution liquidity management tools for corporate bond funds

When the underlying assets of investment funds are tradable but at a high cost, this could induce first-mover advantage. Funds that invest in assets that are liquid in normal times but whose liquidity may considerably deteriorate in stressed market conditions, such as corporate bond funds, may be fit for daily dealing in normal circumstances, but their fund structures must be sufficiently resilient when liquidity conditions tighten. Anti-dilution

¹⁴ For example, a small real estate fund in terms of value with 100% of its assets in real estate can have a smaller impact on the underlying market than a large real estate fund with 50% of its assets invested in real estate.

LMTs, such as swing pricing, dual pricing, anti-dilution levies and redemption fees, as part of the day-to-day liquidity management toolkit, can be used to ensure that effective costs of trading are passed on to the redeeming and subscribing investors, thus eliminating (part of) the first-mover advantage.

Financial stability concerns could arise when transacting investors in open-ended funds do not bear the costs of liquidity associated with fund subscriptions/redemptions, which disadvantages existing/remaining investors. Anti-dilution LMTs can address these concerns by passing on the costs of liquidity to transacting investors by adjusting the price at which they transact. These tools form an important part of an overall liquidity risk management framework for open-ended funds.¹⁵ Anti-dilution LMTs are most effective as part of the day-to-day management of the fund, i.e. even during normal market conditions, and where their use is transparent to investors. A dynamic approach in which the calibration of the swing factor, fee, levy or price is dependent on the level of stress in the market would make this tool better suited to financial stability purposes (mitigation of the first-mover advantage issue as defined in the footnote above).

The FSB and IOSCO have pointed out that anti-dilution LMTs are suited to funds that invest in less liquid assets. According to the FSB and IOSCO, in particular, open-ended funds that mainly invest in assets that are liquid in normal times, but in stressed market conditions might not be readily convertible into cash without significant discounts and whose valuations might become more difficult to assess with certainty, should consider and use anti-dilution LMTs. Redeeming investors should bear the costs of liquidity associated with fund redemptions to arrive at a more consistent approach for the use of anti-dilution LMTs by managers. For those funds, a greater likelihood of dilution would be expected than for funds that mainly invest in liquid assets. The expectation of the FSB and IOSCO is that anti-dilution LMTs would be increasingly used by funds that mainly invest in less liquid assets as part of their day-to-day liquidity management, unless not using such LMTs is clearly justified, subject to (i) the oversight of authorities in line with their supervisory approaches and (ii) the implementation of other effective liquidity risk management measures that meet the broader policy intent of reducing material structural liquidity mismatches.

ESMA guidance around anti-dilution LMTs should consider collective actions by fund managers and changing market circumstances. Taking into account the FSB's revised recommendations, specifically Recommendation 5 that seeks to "achieve (i) greater inclusion of anti-dilution LMTs in OEF constitutional documents and (ii) greater use of, and greater consistency in the use of, anti-dilution LMTs in both normal and stressed market conditions", it is important to ensure that IOSCO's guidance on anti-dilution tools is implemented within the EU through ESMA's Guidelines on LMTs. The work by IOSCO is extensive and aims at reducing systemic risk and increasing investor protection. It provides guidance on how to take market impact into account and how to calibrate the activation threshold. Funds that can be categorised as less liquid following the FSB's recommendations, should generally select an anti-dilution tool. ESMA should clearly define the (rare) circumstances/justifications under which less liquid funds may refrain from doing so and select other types of LMTs instead. When selecting the right anti-dilution tool, fund managers should take into account their operational ability to calibrate and apply the tool on an ongoing basis. While ESMA's mandate to develop guidelines specifically mentions the selection and calibration of LMTs, defining minimum expectations and examples of when LMTs should be activated seems necessary to facilitate effective liquidity risk management and mitigate systemic risk.

As the revised AIFMD and UCITS Directive also apply to money market funds (MMFs), it is important that these types of funds also apply anti-dilution tools. As a derogation, MMF managers can select one LMT instead of two. In its 2022 Recommendation on MMFs, the ESRB took the view that all MMFs should have at least one LMT available, such as anti-dilution levies, liquidity fees or, for MMFs with a fluctuating NAV, swing pricing, that can impose redemption (and subscription) costs on departing (or incoming) investors.¹⁶ ESMA expressed a similar opinion, stating that MMFs should have at least one LMT available with the aim of appropriately reflecting

¹⁵ See "Anti-dilution Liquidity Management Tools – Guidance for Effective Implementation of the Recommendations for Liquidity Risk Management for Collective Investment Schemes", IOSCO, December 2023.

¹⁶ Recommendation of the European Systemic Risk Board of 2 December 2021 on reform of money market funds (ESRB/2021/9).

redemption costs for departing investors.¹⁷ MMFs act as a cash management vehicle for investors, as they are open and provide same day or intraday liquidity. As LMTs selected by fund managers should suit the overall nature of these funds, any tool that prevents the cash management function of MMFs by restricting investors' access to liquidity does not seem to fit. Following this reasoning, anti-dilution LMTs are more suitable than outflow restricting tools, as they do not go against the cash management function of an MMF.

Clearer inclusion of margin preparedness in ESMA Guidelines on liquidity stress testing for fund managers

Following the global financial crisis (GFC), margin requirements have played an increasing role in stabilising the financial system. Reforms adopted in the wake of the GFC have aimed at giving a more significant role to central counterparties (CCPs) and imposing minimum requirements on margins for non-centrally cleared markets. While collateralisation and margin requirements are meant to strengthen financial stability by reducing counterparty risks, recent events, such as the market turmoil caused by COVID-19 in March 2020 and the period of elevated market volatility on the energy market in 2022, have illustrated how they may cause liquidity stress. For example, daily variation margin calls on the derivatives exposures of investment funds are estimated to have reached several tens of billions of euro during the coronavirus crisis.¹⁸

Liquidity risks linked to margin calls exhibit three main characteristics:

- **They are procyclical.** There are two types of margin – initial margin and variation margin. The increase in the variation margin of a given derivatives position corresponds to the increase in latent losses which correlates with market price movements. Symmetrically, the variation margin of the counterparty/counterparties of this derivatives position declines as market price movements reflect latent gains. However, high variation margins resulting from a prolonged period of stress in the financial markets may exhaust the liquidity pockets of funds and create contagion risks.¹⁹ Initial margins are also by nature procyclical, as they tend to increase in times of crisis, raising the funding requirements for derivatives holders. These may in turn adapt by altering their portfolios, thereby increasing asset price volatility, which would feed into higher margins, setting in motion a vicious spiral with liquidity implications. While CCPs have been adopting countercyclical measures to mitigate the procyclical effects of initial margin requirements, these have limited effect on the overall level of margin calls. The stress in the UK gilt markets in 2022 illustrates how leverage-driven margin calls can amplify shocks in periods of stress by triggering sales of assets in deteriorated conditions or destabilising already fragile funds.
- **They cannot be mitigated with conventional LMTs.** Recent regulatory work has focused on providing tools for fund managers to manage excessive investor redemptions; for instance, anti-dilution tools such as swing pricing. However, margin calls are not affected by common LMTs.
- **Initial margin calls are difficult to anticipate for funds.** Variation margins can be anticipated straightforwardly based on assumptions about changes in underlying prices. However, changes in initial margin requirements may evolve in a way that is difficult to anticipate, for instance when CCPs use correlation hypotheses (i.e. the initial margins paid for a portfolio of derivatives is inferior to the sum of the margins that would be paid for each position if they were taken separately). According to the most recent review on margining practice by the Bank for International Settlements: “Less than half of intermediaries in the survey (46%) indicated that they have the data and tools available to estimate CCP margin calls prior to the call being

¹⁷ ESMA opinion on the review of the Money Market Fund Regulation.

¹⁸ See “Derivatives-related liquidity risk facing investment funds”, Financial Stability Board, May 2020.

¹⁹ A recent study by Jukonis et al. finds that “up to 33% of euro area funds with sizable derivatives exposures may not have sufficient liquidity buffers to meet margin calls in a prolonged stress scenario and may be forced to redeem shares of MMFs, with potential contagion effects”, Working Paper Series, 24/26, International Monetary Fund, February 2024.

issued to clearing members”.²⁰ This could be partially mitigated through enhancing the transparency and responsiveness of CCP initial margin models.²¹

The importance of taking into account liquidity risks resulting from margin and collateral calls is also acknowledged by the FSB. Specifically, Recommendations 4 and 5 in the recent consultation report on Liquidity Preparedness for Margin and Collateral Calls²² highlight the importance of stress testing to identify sources of liquidity risk caused by margin and collateral calls as well as the need to consider extreme but plausible scenarios involving changes in such calls.

Risks resulting from margin and collateral calls are considered in the regulatory framework for investment funds only to a certain extent. Article 48(2)c of the AIFMD Level 2 regulation mentions that AIFMs should conduct stress tests that also cover margin calls and collateral requirements. The UCITS Directive does not contain a specific reference to margin/collateral requirements. ESMA’s existing Guidelines on liquidity stress testing (LST)²³ mention liquidity risks stemming from margin calls in paragraphs 58 and 59 as examples of factors that may affect liquidity risk (V.1.13 LST on other types of liabilities). Other than that, no specific reference is made to margin calls and collateral requirements. Risks from margin and collateral calls are scarcely taken into account through national recommendations for LST. Some national authorities (e.g. Autorité des Marchés Financiers, Commission de Surveillance du Secteur Financier (CSSF) and Bundesanstalt für Finanzdienstleistungsaufsicht) have issued recommendations complementing ESMA’s guidelines at the national level. However, where these recommendations mention margin and collateral calls as a source of risk, they do not provide specific guidelines on how to take them into account.

To further strengthen the fund risk management framework, it would be beneficial to consider risks arising from margin and collateral calls more thoroughly. To reflect the above points, the following amendments to ESMA’s Guidelines on LST could be considered. Alternatively, to ensure a more detailed consideration of liquidity risks stemming from margin and collateral calls, this topic could be addressed in a dedicated ESMA Questions and Answers exercise.

- V.1.5 Frequency of LST, paragraph 26, on the characteristics that should be taken into account when deciding on the appropriate frequency, mentions that “the nature of the vehicle (closed versus open-ended), the redemption policy and LMTs, such as gates or side pockets, may be additional factors to take into consideration when determining the appropriate frequency of LST”. This paragraph could explicitly mention the risk of margin/collateral calls resulting from the use of derivatives and/or repo financing inherent in the fund’s investment strategy, as this may also be a factor that is relevant for determining the appropriate frequency of LST. Funds with higher exposure to the risk of margin/collateral calls stemming from derivatives should be using LST with a higher frequency. Similarly, the table under paragraph 27, which already mentions that “the extensive use of derivatives may increase the frequency of regular LST”, could benefit from an explicit reference to margin/collateral calls.
- V.1.7. Adapting the LST to each fund, paragraph 30(b), which refers to elements of LST that could be adapted, could be amended as follows: “the types and severity of scenarios to employ to create stressed conditions, which should always be sufficiently severe but plausible and should be based on the liquidity risks arising from the assets and liabilities of the fund’s balance sheet as well as its overall liquidity profile, including from potential margin/collateral calls, as well as its overall liquidity profile”. Alternatively, sub-paragraph c) could include “assumptions regarding margin/collateral calls”.

²⁰ “Review of margining practices”, Bank for International Settlements, 29 September 2022.

²¹ See “Transparency and responsiveness of initial margin in centrally cleared markets: review and policy proposals”, *Consultative report*, BCBS-CPMI-IOSCO, January 2024 and “ESRB response to the consultative report by the BCBS, CPMI and IOSCO”, ESRB, 16 April 2024.

²² “Liquidity Preparedness for Margin and Collateral Calls: Consultation report”, Financial Stability Board, 17 April 2024.

²³ Guidelines on liquidity stress testing in UCITS and AIFs.

- V.1.8. LST scenarios.
 - Paragraph 32, which reads “Historical scenarios for LST could include the global financial crisis 2008-2010 or the European debt crisis 2010-2012. Hypothetical scenarios could include rising interest rates, credit spread widening, or political events”, could be amended to include additional examples that are more focused on margin calls, such as the March 2020 turmoil, the UK gilt crisis in September 2022, or the commodity derivatives episode, also in 2022.
 - Paragraph 33, which reads “Managers using RST [reverse stress testing] should simulate assets being liquidated in a way that reflects how the manager would liquidate assets during a period of exceptional market stress. RST should take into account the treatment of remaining, as well as redeeming, unitholders as well as the role of transaction costs and whether or not fire sale prices would be accepted”, could also include the treatment of margin/collateral calls. Moreover, managers should take into account the correlation between investor redemptions and margin calls. Whereas both sources of liquidity needs can be driven by different factors, they may arise simultaneously. The design of stress scenarios should take this interaction between investor redemptions and margin calls into account, where applicable. Managers should use margin simulation tools provided by central counterparties to assess the possible implications of historical and hypothetical scenarios on the variation margin outflows and initial margin changes for the centrally cleared products of the fund.²⁴ They should also liaise with their clearing member(s) to better understand how margin calls from CCPs are passed on to the funds and whether margin add-ons might be applied by the clearing member(s).²⁵
 - Paragraph 34 could be amended as follows: “Funds that engage in investment strategies exposing them to low-probability risks with a potentially high impact should pay particular regard to the use of RST to assess the consequences of an extreme market event for their liquidity profile, including their ability to meet additional margin/collateral calls”.
- V.1.10. Product development, paragraph 40(b), which mentions the undertaking of an LST which incorporates “the expected investor profile both from the early and late stages of the fund’s existence” could benefit from a reference to the planned use of derivatives/repo financing that may give rise to an additional source of liquidity risk.
- V.1.12. Stress testing fund liabilities to determine the effect on fund liquidity.
 - Paragraph 49 reads “LST should incorporate scenarios relating to the liabilities of the fund, including both redemptions and other potential sources of risk to liquidity emanating from the liability side of the fund balance sheet”. The reference to “other potential sources of risk to liquidity” could be made more explicit by including margin/collateral calls. Moreover, the correlation between different sources of liquidity needs should be taken into account when designing stress scenarios.
 - Paragraph 50, “LST should incorporate risk factors related to investor type and concentration according to the nature, scale and complexity of the fund”, could be extended to risk factors related to derivatives holdings/repo financing, for instance as a separate bullet in section V.1.13.
 - Paragraph 51 starts with “Redemption requests are the most common and typically most important source of liquidity risk for investment funds”. This could be complemented with a disclaimer that for some

²⁴ See policy proposals 1 and 2 on margin simulations in: “**Transparency and responsiveness of initial margin in centrally cleared markets – review and policy proposals**”, *Consultative report*, Bank for International Settlements, January 2024.

²⁵ See policy proposal 9 CM-to-client transparency in: “**Transparency and responsiveness of initial margin in centrally cleared markets – review and policy proposals**”, as well as Section 2.5 on effective practice 8 in “**Streamlining variation margin in centrally cleared markets – examples of effective practices**”, Bank for International Settlements, February 2024.

fund cohorts with certain characteristics, the most important source of liquidity risk comes from margin/collateral calls. For instance, liability-driven investment (LDI) funds, which are held by pension funds with a long-term investment horizon, and for which the UK gilt crisis has shown that liquidity risks from margin/collateral calls can be much more important. Moreover, this paragraph could highlight the fact that redemption requests by investors and margin/collateral calls may coincide and reinforce each other and thus be amended as follows: “Redemption requests are the most common and typically most important source of liquidity risk for investment funds that are not leveraged or do not use derivatives including for hedging purposes”.

- Paragraph 52: “For normal conditions, managers could monitor the historical outflows (average and trends over time, as well as peaks in times of stress), average redemptions of peer funds and information from any distribution network regarding forecast redemptions. Managers should ensure that the time series is long enough to fairly reflect ‘normal’ conditions”. This could be extended to historical margin/collateral calls, for instance, as a separate bullet in section V.1.13.
- V.1.13 LST on other types of liabilities.
 - Paragraph 58 starts with: “Net redemptions may not be the only relevant risk to liquidity coming from the liability side of a fund’s balance sheet and which therefore should be subject to LST”. This could further highlight that different sources of liquidity risk may be correlated and materialise simultaneously or potentially even reinforce each other.
 - Paragraph 59 contains a table with examples of factors that may affect liquidity risk, which could be supplemented with:
 - Collateral calls in the event that repos are used to obtain leverage.
 - The need to liquidate portfolio holdings in order to deleverage. This presents yet another source of liquidity risk that is not mentioned. For instance, during the UK gilt crisis in 2022, UK gilt sales by LDI funds were partly driven by forced deleveraging. Stated differently, if leverage ratios increase mechanically as a result of asset revaluations and subsequently hit the risk limits set by the fund manager, this may also lead to forced asset sales being used to close other positions.

Some examples/national experiences

This section contains some national examples of how authorities have examined or aim to address liquidity risks resulting from margin calls. Because the investment fund sector is significantly heterogeneous in nature, these examples may not be appropriate for other cohorts of funds. As such, the LST guidelines should remain flexible and be representative of the entire fund sector. Nevertheless, the national examples provided below may serve as useful background as they show the factors that have led to liquidity stress in the past.

- Study on liquidity risk in pension funds

The Dutch Authority for the Financial Markets and De Nederlandsche Bank (DNB) conducted a study into the liquidity risks arising from pension funds' derivatives portfolios.²⁶ A number of pension funds and relevant pension administration organisations were asked to consider four stress scenarios. These four scenarios involve interest rate and foreign exchange rate shocks, as well as a partial drying up of the repo market. Table 1 summarises the four scenarios considered in this study.

Table 1
Stress scenarios involving interest rate and currency shocks and a partial drying up of the repo market

| | Adverse scenario (repo market) | Worst-case scenario (repo market) |
|--|--|--|
| Adverse scenario, interest rate and currency shock (two-days horizon) | Scenario 1 | Scenario 2 |
| | Interest rate and currency shock on both days | Interest rate and currency shock on both days |
| | Maximum repo volume per existing trading partner: €325 million | Maximum repo volume per existing trading partner: €100 million |
| | One trading partner unavailable | One trading partner unavailable |
| Worst-case scenario, interest rate and currency shock (one-days horizon) | Scenario 3 | Scenario 4 |
| | Interest rate and currency shock in one day | Interest rate and currency shock in one day |
| | Maximum repo volume per existing trading partner: €325 million | Maximum repo volume per existing trading partner: €100 million |
| | One trading partner unavailable | One trading partner unavailable |

Source: De Nederlandsche Bank

The interest rate and currency shocks have been calibrated based on historical movements and historical pension fund repo transactions are used to calibrate the available volumes in the repo market. Table 2 shows the interest rate and currency shocks considered under each of the four scenarios.

²⁶ See "Dutch pension funds can meet margin calls on derivatives, but depend on functioning money markets", De Nederlandsche Bank, 5 February 2024.

Table 2
Interest rate and currency shocks under the four stress scenarios

Interest rate and currency shock, adverse scenario (scenarios 1 and 2)

| Daily parallel interest rate shocks – absolute changes (basis points) | | Currency shocks – relative change | | |
|---|--------------|-----------------------------------|-----------------|-------------|
| Geographic area | Basis points | Currency | Description | Percentages |
| EU | 18 | USD | EUR 1 per x USD | -2.2 |
| UK | 38 | GBP | EUR 1 per x GBP | -2.3 |
| US | 22 | JPY | EUR 1 per x JPY | -3.8 |
| Japan | 17 | | | |
| Other | 21 | | | |

Interest rate and currency shock, adverse scenario (scenarios 3 and 4)

| Daily parallel interest rate shocks – absolute changes (basis points) | | Currency shocks – relative change | | |
|---|--------------|-----------------------------------|-----------------|-------------|
| Geographic area | Basis points | Currency | Description | Percentages |
| EU | 36 | USD | EUR 1 per x USD | -4.4 |
| UK | 77 | GBP | EUR 1 per x GBP | -4.5 |
| US | 44 | JPY | EUR 1 per x JPY | -7.5 |
| Japan | 33 | | | |
| Other | 42 | | | |

Source: De Nederlandsche Bank.

Because of the high sensitivity of pension funds' derivative portfolios to interest rates and exchange rates, each scenario results in significant margin calls. After quantifying the magnitude of the margin calls, pension funds had to indicate the sources of liquidity that would be used to cover them. Here a distinction is made between readily available liquidity (e.g. deposits, maturing reverse repos) and sources of liquidity that are available with less certainty (e.g. repo transactions, MMF shares, asset sales).

The results show that pension funds are able to meet margin calls under all stress scenarios without substantial asset sales. Nevertheless, the functioning of the repo market and the MMF sector appears to be crucial for the liquidity management of pension funds.

Overall, a similar scenario-based approach could be used for stress testing investment funds with substantial derivatives holdings. An additional ingredient in such a scenario-based approach would be to incorporate investor redemptions, as, in reality, investor redemptions are likely correlated with margin/collateral calls. However, differences in the composition of derivatives holdings of investment funds implies that there is no one-size-fits-all solution for the design of these scenarios.

- Yield buffer for GBP LDI AIFs introduced by the Central Bank of Ireland (CBI) and the CSSF

A large shock in the yields on UK gilts in September 2022 led to significant stress for funds employing LDI strategies. Because of the rise in UK gilt yields, these funds faced large collateral and margin calls resulting

from their repo and derivatives positions, respectively. Moreover, the decrease in the market value of UK gilts led to a mechanical increase in leverage ratios, giving rise to forced deleveraging through selling UK gilts. These sales contributed to further increases in UK gilt yields, triggering a feedback loop of increasing yields, rising collateral/margin calls and forced asset sales. Ultimately, the Bank of England intervened by purchasing UK gilts in order to stabilise the market.

In response to these events, the CBI and CSSF published industry letters containing recommendations on a minimum resilience level for LDI funds in November 2022. Specifically, LDI funds were expected to be resilient to a parallel rise in UK gilts of at least 300 basis points in the sense that their NAV should not drop below zero. In April 2024 the CBI and CSSF imposed a formal measure referred to as the “yield buffer”, specifying that GBP-denominated LDI funds must maintain resilience to a minimum 300 basis point increase in UK yields before their NAV turns negative. Set in accordance with Article 25 of the AIFMD,²⁷ this measure falls into the category of “other restrictions on the management of the AIF” rather than a standard leverage limit. However, the measure restricts leverage indirectly, contingent on the duration of the portfolio.

Whereas the liquidity stress test on Dutch pension funds considered the magnitude of the margin calls faced and the liquidity sources used to cover them, the proposed minimum yield buffer acts as a minimum resilience level and considers the impact of interest rate shocks on funds’ NAV. In the context of LST, an RST that returns the shock required in order to deplete a fund’s NAV could be considered. For LDI funds, the result of this RST would then be compared with the funds’ actual yield buffers or resilience levels.

An alternative to this yield buffer could be to consider the size of a shock required before a fund’s available pocket of liquid assets is depleted in order to cover margin/collateral calls, with clear guidance on which assets classify as “liquid”.²⁸ Again, differences in investment strategies and exposures across funds would need to be taken into account.

- Bank of England (BoE) stress testing exercise

The BoE launched its system-wide exploratory scenario (SWES) in June 2023.²⁹ This new exercise might provide useful insights on how behaviours of market participants can amplify shocks in markets and potentially pose risks to financial stability, including how margin and collateral calls affect the financial system as a whole and how to better measure the related risks. In particular, the SWES will incorporate members from the investment fund sector, alongside the banking, insurance and pension fund sectors and some CCPs. This approach will be particularly useful in identifying transmission channels and how liquidity stress spreads across the system. Compared with other stress test exercises, the SWES will specifically integrate an increase in collateral calls in its scenario, through the variation margin, initial margin or revaluation of collateral. This approach aims to provide a deeper understanding of the funds’ strategies to access liquidity and the role of CCPs in managing the shock. The BoE expects to publish the SWES results in late 2024.

²⁷ See the consultation entitled “[CSSF communication on GBP Liability Driven Investment Funds](#)”, Commission de Surveillance du Secteur Financier, 23 November 2023.

²⁸ See, for instance, Jukonis et al., “The Impact of Derivatives Collateralization on Liquidity Risk: Evidence From the Investment Fund Sector”, *Working Paper Series 24/26*, International Monetary Fund, February 2024.

²⁹ See “[System-wide exploratory scenario](#)”, Bank of England, November 2023.