FSB FINANCIAL STABILITY BOARD

Revised Policy Recommendations to Address Structural Vulnerabilities from Liquidity Mismatch in Open-Ended Funds

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Executive summary

This report sets out the Revised Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities (the "Revised FSB Recommendations") in relation to liquidity mismatch in open-ended funds (OEFs). The Revised FSB Recommendations supersede Section 2 of the FSB's 2017 Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities (the "2017 FSB Recommendations"). The Revised FSB Recommendations form part of the FSB's work programme on non-bank financial intermediation (NBFI) and should be read in conjunction with the IOSCO Guidance on Anti-Dilution Liquidity Management Tools (LMTs).

The Revised FSB Recommendations are addressed to financial regulatory and supervisory authorities and set out the key objectives that an effective regulatory and supervisory framework should achieve to address the vulnerabilities arising from liquidity mismatch in OEFs, to the extent jurisdictions' liquidity regulations are not yet consistent with the Revised FSB Recommendations. The goal of the Revised FSB Recommendations, combined with the new IOSCO Guidance on Anti-Dilution LMTs, is a significant strengthening of liquidity management by OEF managers compared to current practices. A substantial improvement in addressing the liquidity mismatch in OEFs, greater use of - and greater consistency in the use of - anti-dilution LMTs, and a step change of the status quo are expected.

The Revised FSB Recommendations build on the FSB's December 2022 report on the Assessment of the Effectiveness of the FSB's 2017 Recommendations on Liquidity Mismatch in Open-Ended Funds and address the feedback provided to the FSB's public consultation on proposed revisions to the 2017 FSB Recommendations. While the assessment report suggested that the 2017 FSB Recommendations remain broadly appropriate, it noted that enhancing clarity and specificity on the policy outcomes they seek to achieve would make them more effective from a financial stability perspective. The report also noted that there was material variation in how LMTs were used and suggested that there was room for greater use of LMTs, in particular anti-dilution tools that are intended to pass on the cost of liquidity to redeeming shareholders in both normal and stressed market conditions.

The Revised FSB Recommendation 3 incorporates the assessment report's proposal to provide greater clarity on the redemption terms that OEFs could offer to investors, based on the liquidity of their asset holdings. This would be achieved through a categorisation approach, where OEFs would be grouped depending on the liquidity (e.g. liquid, less liquid, illiquid or comparable categories) of their assets. OEFs in each category would then be subject to specific expectations in terms of their redemption terms and conditions. Authorities should set expectations for OEF managers to use a mixture of quantitative and qualitative factors when determining the liquidity of OEF assets in normal and stressed market conditions within the context of the domestic liquidity framework set out by authorities.

For funds that invest mainly in liquid assets, daily dealing would remain appropriate. For funds that invest mainly in less liquid assets, offering daily dealing to fund investors (without notice or settlement periods) may remain appropriate, subject to the implementation of anti-dilution LMTs, as specified in the Revised FSB Recommendation 5, as for these funds there is a greater likelihood of dilution. If funds in this category do not meet the expectation on the implementation of anti-dilution LMTs as described in Revised FSB Recommendation 5, OEF managers should

consider and use measures to reduce the liquidity offered to fund investors (e.g. by reducing redemption frequency and/or by implementing long notice or settlement periods), as considered appropriate by authorities. Funds that allocate a significant proportion of their assets under management to illiquid assets should create and redeem shares at lower frequency than daily and/or require long notice or settlement periods.

As indicative guidelines, investing more than 50% of assets under management in either liquid assets or less liquid assets is likely to constitute “mainly investing” in that category of assets; investing more than 30% of assets under management in illiquid assets is likely to constitute “allocating a significant proportion” to that category of assets. In instances where a fund does not clearly fall into (only) one of the three main categories, the OEF manager should adopt a prudent approach in determining the category to which the fund should be classified. Authorities will be responsible for establishing the processes and specific criteria within which OEF managers allocate funds to the respective categories in line with the indicative guidelines as well as relevant specificities of the domestic liquidity framework in each jurisdiction. Both authorities and fund managers should seek to avoid threshold/cliff edge effects as a result of moving from one category of funds to another whilst providing investors with certainty around the terms of their investment in the fund.

Revised FSB Recommendation 4 emphasises the need for authorities to ensure the availability of a broad set of anti-dilution and quantity-based LMTs for use by OEF managers in normal and stressed market conditions.

Revised FSB Recommendation 5 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. The overall objective is to mitigate potential first-mover advantage arising from structural liquidity mismatch in OEFs by imposing on investors the costs of liquidity associated with fund redemptions. In this regard, anti-dilution LMTs should impose on redeeming investors the explicit and implicit costs of redemptions, including any significant market impact of asset sales to meet those redemptions.

The expectation is that anti-dilution LMTs would be increasingly used by funds that invest mainly in less liquid assets as part of their day-to-day liquidity management, unless such LMTs not being used is clearly justified, subject to (i) oversight of authorities in line with their supervisory approaches and (ii) implementation of other effective liquidity risk management measures that meet the broader policy intent of reducing material structural liquidity mismatches.

Revised FSB Recommendation 8 replaces previous references to exceptional LMTs with references to quantity-based LMTs and other liquidity management measures that are to be used particularly in stressed market conditions. Such tools and measures include suspensions, redemption gates, in-kind redemptions and side pockets. References to the work that IOSCO is expected to undertake have also been updated. In addition to the new guidance on the use of anti-dilution LMTs, IOSCO is expected to review and, as appropriate, enhance its 2018 Recommendations to provide guidance on the use of quantity-based LMTs and other liquidity management measures, particularly in stressed market conditions.

Some additional changes have been made to the 2017 FSB Recommendations to implement all the assessment report recommendations or refer to work conducted after 2017. This relates in particular to a change to Recommendation 2 to require clearer public disclosures from OEF

managers on the availability and use of LMTs in normal and stressed market conditions. This change aims to enhance investor awareness on the objectives and operation of anti-dilution LMTs. In addition, it has been clarified that the Revised FSB Recommendations do not apply to exchange-traded funds (ETFs), whose structural features and liquidity management distinguish them from other OEFs.

IOSCO plans to operationalise the revised FSB Recommendations, as appropriate, through amendments to the 2018 IOSCO Liquidity Risk Management Recommendations and supporting good practices.

The FSB and IOSCO will both review progress by member jurisdictions in implementing their respective revised Recommendations and guidance. The review process will begin with a stocktake, to be completed by the end of 2026, of the measures and practices adopted and planned by FSB member jurisdictions. This will include bringing together the evidence-based assessments of OEF vulnerabilities arising from liquidity mismatch and policy choices made. IOSCO will aim to coordinate its stocktake of its recommendations and guidance with the FSB's stocktake to provide a comprehensive picture.

This stocktake will be followed up by 2028 with an assessment of the effectiveness of these measures in addressing risks to financial stability. The findings from this exercise will feed into the FSB and IOSCO's assessment of whether implemented reforms have sufficiently addressed these risks, including, if appropriate, whether to refine existing tools or develop additional tools for use by fund managers or authorities.

1. Introduction

In 2017, the FSB published Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities (the "2017 FSB Recommendations").[1] As stated in the 2017 FSB Recommendations, a key structural vulnerability from asset management activities is a potential mismatch between the liquidity of fund investments and daily redemption of fund units in OEFs.

To address the vulnerabilities from liquidity mismatch, the 2017 FSB Recommendations aimed to strengthen regulatory reporting and public disclosure to facilitate assessment of liquidity risk in OEFs; promote liquidity management both at the fund design phase and on an ongoing basis; widen the availability of LMTs and use of LMTs in stressed market conditions; and promote fund-level and system-wide stress testing. IOSCO operationalised most of the FSB Recommendations related to liquidity mismatch by issuing the IOSCO Recommendations in 2018,[2] supplemented with a set of related good practices as a reference guide.[3]

In 2022, as part of its work programme to enhance the resilience of non-bank financial intermediation,[4] the FSB assessed the effectiveness of the 2017 FSB Recommendations from a financial stability perspective.[5] The assessment report concluded that authorities have made meaningful progress in implementing the 2017 FSB Recommendations but that lessons learnt since their publication, including during the March 2020 market turmoil, have produced new insights into liquidity management challenges in segments of the OEF sector. While the assessment suggested that the 2017 FSB Recommendations remain broadly appropriate, enhancing clarity and specificity on the policy outcomes the Recommendations seek to achieve would make them more effective from a financial stability perspective. Based on the findings of the assessment report, the FSB and IOSCO agreed to carry out follow-up analytical and policy work.[6]

On 5 July 2023, the FSB published a consultation report in response to some of the findings of the assessment report. The consultation report proposed revisions to the relevant parts of the 2017 FSB Recommendations to address structural vulnerabilities related to liquidity mismatch in OEFs. The FSB received 25 responses to the consultation, all of which are published on the FSB's website, along with a summary of consultation responses.[7] The Revised FSB Recommendations reflect the consultation feedback.

The Revised FSB Recommendations pertain to Section 2 of the 2017 FSB Recommendations, including Recommendations 1-9 in that section, as presented in this report. The Revised Recommendations should be read in conjunction with the IOSCO Guidance on Anti-Dilution

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1 FSB (2017), *Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities*, January.

2 IOSCO (2018), *Recommendations for Liquidity Risk Management for Collective Investment Schemes: Final Report*, February.

3 IOSCO (2018), *Open-ended Fund Liquidity and Risk Management – Good Practices and Issues for Consideration*, February.

4 FSB (2022), *Enhancing the Resilience of Non-Bank Financial Intermediation: Progress report*, November.

5 FSB (2022), *Assessment of the Effectiveness of the FSB's 2017 Recommendations on Liquidity Mismatch in Open-Ended Funds*, December.

6 These include: revisions to the FSB and IOSCO Recommendations to address structural liquidity mismatch and promote greater inclusion and use of LMTs as well as to clarify the appropriate roles of OEF managers and authorities in implementing these Recommendations; development of detailed IOSCO guidance on the design and use of LMTs; work to enhance the availability of OEF-related data for financial stability monitoring; and steps to promote the use of stress testing.

7 See the FSB webpage with public responses to the consultation report and Summary of consultation responses and changes to address them.

LMTs.[8] IOSCO will also review its 2018 Recommendations to operationalise the Revised FSB Recommendations.

IOSCO plans to operationalise the revised FSB Recommendations, as appropriate, through amendments to the 2018 IOSCO Liquidity Risk Management Recommendations and supporting good practices.

The FSB and IOSCO will both review progress by member jurisdictions in implementing their respective revised Recommendations and guidance. The review process will begin with a stocktake, to be completed by the end of 2026, of the measures and practices adopted and planned by FSB member jurisdictions. This will include bringing together the evidence-based assessments of OEF vulnerabilities arising from liquidity mismatch and policy choices made. IOSCO will aim to coordinate its stocktake of its recommendations and guidance with the FSB's stocktake to provide a comprehensive picture.

This stocktake will be followed up by 2028 with an assessment of the effectiveness of these measures in addressing risks to financial stability. The findings from this exercise will feed into the FSB and IOSCO's assessment of whether implemented reforms have sufficiently addressed these risks, including, if appropriate, whether to refine existing tools or develop additional tools for use by fund managers or authorities.

This report is structured as follows:

- Section 2 provides an overview of the proposed changes to the 2017 FSB Recommendations.
- Section 3 includes the full text of the Revised FSB Recommendations, including the explanatory text for each Recommendation.
- Annex 1 includes a list of the Revised FSB Recommendations.
- Annex 2 compares the Revised FSB Recommendations to the original 2017 FSB Recommendations.

2. Overview of key changes

2.1. Structural liquidity mismatch in open-ended funds

Structural liquidity mismatch can be summarised as the difference between the redemption terms that an OEF offers to investors and the amount of time it may take the OEF's manager to liquidate fund holdings in an orderly manner (e.g. without substantially increasing transaction costs and without substantially impacting prevailing market prices) to satisfy redemption requests. Unmitigated structural liquidity mismatch may amplify shocks by driving 'excess' redemptions that require managers to engage in asset sales larger than in the absence of

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

liquidity mismatch, especially in times of stress. Shock amplification can occur through different channels:

- Liquidity mismatch may produce a first-mover advantage[9] at the fund level when redeeming investors do not bear the full cost of redemptions and these costs instead result in an externality imposed on investors that remain in the fund. A first-mover advantage can drive 'excess' redemptions, especially in times of stress, relative to what might have otherwise been the case.

- In the presence of liquidity mismatch, some investors may misunderstand the liquidity of the underlying assets held by OEFs and may not expect the additional cost or difficulty associated with funds exiting their positions, especially in a stressed environment. If – due to structural liquidity mismatch at a fund level – investors do not internalise the costs of selling portfolio assets, they may be more likely to seek to exit their positions through OEF redemptions than they might have been if they held the same assets directly.

'Excess' redemptions, and associated asset sales to meet those redemptions, could contribute to greater market volatility and additional pressure on asset prices in times of stress. In turn, these dynamics can affect the functioning of core markets (including primary markets) in times of stress, depending on, among other things, the concentration and/or scale of asset holdings by OEFs in particular markets, the size of OEF trades, and the behaviour of other investors in those markets or asset classes. The FSB's work has concentrated on measures and tools to address potential vulnerabilities stemming from an OEF's structure. However, OEFs are only one part of a broader market eco-system, which supports a holistic and proportionate approach to addressing these vulnerabilities.

In its assessment report, the FSB sought to measure the development of structural liquidity mismatch in OEFs based on available data. This analysis was subject to a number of limitations and assumptions and therefore the results should be interpreted cautiously. Nevertheless, the FSB's analysis suggested that there had been no measurable reduction in the degree of structural liquidity mismatch across the OEF sector. Moreover, as the OEF sector has grown in absolute terms, reflecting the increased importance of market-based finance, the potential impact of vulnerabilities that can arise from OEFs' structural liquidity mismatch has also grown. These developments have occurred against a backdrop of lower liquidity supply in certain asset markets in stressed conditions, which may affect the ability of markets to meet increased liquidity demand from OEFs and other investors.

The assessment report concluded that a clearer and more specific articulation of the intended outcome of policies to reduce structural liquidity mismatch in OEFs would strengthen the FSB Recommendations' effectiveness. It noted that the 2017 FSB Recommendation 3 should be revised to provide greater clarity on the redemption terms that OEFs could offer to investors, based on the liquidity of their asset holdings. The report proposed a categorisation approach, where OEFs would be grouped depending on the liquidity (e.g. liquid, less liquid, illiquid or

[9] The concept of first mover advantage is defined in section 3.1 Scope and terminology.

comparable categories) of their assets. OEFs in each category would then be subject to specific expectations in terms of their redemption terms and conditions.

Revised FSB Recommendation 3 introduces the categorisation approach and emphasises the key underlying principle that the redemption terms that OEFs offer to investors should be based on the liquidity of the OEFs' asset holdings. Specifically, the categorisation approach groups OEFs depending on the liquidity (e.g. liquid, less liquid, illiquid or comparable categories) of their assets. OEFs in each category would then be subject to specific expectations in terms of their redemption terms and conditions.

Accordingly, each jurisdiction will need to determine the specifics of the domestic liquidity framework to implement the categorisation approach. There are several quantitative and qualitative factors of asset liquidity that authorities may wish to consider, when determining which assets are "liquid", "less liquid", and "illiquid". In-line with their domestic liquidity frameworks, authorities should determine when a fund may be considered to invest "mainly" in liquid assets; "mainly" in less liquid assets; or may be considered to "allocate a significant proportion" of its assets under management to illiquid assets.

For funds that invest mainly in "liquid" assets (Category 1), daily dealing would remain appropriate. The managers of those funds should continue to enhance their liquidity management practices where appropriate. For funds that invest mainly in "less liquid" assets (Category 2), offering daily dealing to fund investors (without notice or settlement periods) may remain appropriate, subject to OEF managers being able to demonstrate to the authorities (in line with the authorities' supervisory approaches) that they implement anti-dilution LMTs, as described in Revised Recommendation 5. Funds that allocate a significant proportion of their assets under management to "illiquid" assets should create and redeem shares at lower frequency than daily and/or require long notice or settlement periods. The relevant authorities could also consider requiring that such funds be structured as closed-ended funds.

As indicative guidelines, investing more than 50% of assets under management in either liquid assets or less liquid assets is likely to constitute "mainly investing" in that category of assets; investing more than 30% of assets under management in illiquid assets is likely to constitute "allocating a significant proportion" to that category of assets. Authorities will be responsible for establishing the processes and specific criteria within which OEF managers will allocate funds to the respective categories in line with the indicative guidelines, as well as relevant specificities of the domestic liquidity framework in each jurisdiction.

2.2. Liquidity management tools

The assessment report concluded that while most jurisdictions enable OEF managers to implement a broad range of LMTs in normal and stressed market conditions, there remains room for greater use of LMTs. This applies in particular to anti-dilution tools that are intended to pass on the cost of liquidity to redeeming shareholders in both normal and stressed market conditions.

Once an authority has taken steps to make LMTs available to funds under its jurisdiction, managers may choose whether to enable the use of LMTs by incorporating them in the

constitutional documents[10] of OEFs they manage. In the assessment report, the FSB relied on existing data and analysis to assess the extent to which the likelihood that managers choose to include LMTs had changed over time. Available information suggested that, since the publication of the 2017 FSB Recommendations, the inclusion of LMTs in constitutional documents had gradually increased across OEFs. The LMTs most frequently included were quantity-based LMTs, such as gates or suspensions.

The FSB also assessed whether managers – particularly of funds with greater structural liquidity mismatch – were more likely than before the publication of the 2017 FSB Recommendations to have made use of LMTs. However, with the exception of suspensions, data are not available on a consistent basis on the use of LMTs by managers in normal or stressed market conditions. Managers in various jurisdictions do not consistently have to disclose or inform regulators when they use an LMT (apart from suspensions). Lack of consistent data about the use of LMTs is more pronounced than lack of data about the inclusion of LMTs in OEFs' constitutional documents. However, based on the available data there appeared to be material variation in the calibration of anti-dilution LMTs that had been used.

The assessment report concluded that there is scope to strengthen the framework around LMTs at a global level. The objective would be to mitigate potential first-mover advantage arising from structural liquidity mismatch in OEFs, to ensure that investors bear the costs of liquidity associated with fund redemptions and subscriptions, and to arrive at a more consistent approach to the use of LMTs by OEF managers. The report also noted that, even when available, bid-ask spreads do not necessarily capture all explicit and implicit transaction costs.

The 2017 FSB Recommendations 4, 5 and 8 are strengthened to achieve greater inclusion in funds' constitutional documents of anti-dilution LMTs designed to pass on to redeeming investors the explicit and implicit costs of redemptions, including any significant market impact of asset sales to meet those redemptions, to achieve greater use, and consistency in use, of anti-dilution LMTs in both normal and stressed market conditions. To implement these objectives, the FSB has amended these Recommendations as follows:

- Revised FSB Recommendation 4 emphasises the need for authorities to ensure the availability of a broad set of anti-dilution and quantity-based LMTs for use by OEF managers in normal and stressed market conditions, instead of the previous focus on the importance of meeting redemptions under stressed market conditions.

- Revised FSB Recommendation 5 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. Anti-dilution LMTs should impose on redeeming investors the explicit and implicit costs of redemptions, including any significant market impact of asset sales to meet those

[10] These include fund prospectuses, other offering documents and other documents accessible to investors on an ex-ante basis before they make their investment decision.

redemptions.[11] The Revised FSB Recommendation 5 refers to the content of the IOSCO Guidance on Anti-Dilution LMTs.

- Revised FSB Recommendation 8 replaces references to exceptional LMTs with references to quantity-based LMTs and other liquidity management measures that are to be used particularly in stressed market conditions. Such tools and measures include suspensions, redemption gates, in-kind redemptions, side pockets and borrowing to accommodate suspensions. References to the work that IOSCO is expected to undertake have also been updated. In addition, on the IOSCO Guidance on Anti-Dilution LMTs, IOSCO is expected to review and, as appropriate, enhance its 2018 Recommendations to provide guidance on the use of quantity-based LMTs and other liquidity management measures, particularly in stressed market conditions.

2.3. Other revisions

The FSB did not make any other significant changes to the 2017 FSB Recommendations on liquidity mismatch. However, some additional changes were made to implement all the assessment report recommendations and to refer to work conducted after 2017:

- The Revised FSB Recommendations are not to be applicable to ETFs, whose structural features and liquidity management distinguish them from other OEFs.
- Revised FSB Recommendation 2 was amended to require clearer public disclosures from OEF managers on the availability and use of LMTs in normal and stressed market conditions. This is based on the assessment report recommendation to enhance investor awareness on the objectives and operation of anti-dilution LMTs.
- Revised FSB Recommendation 7 was amended to align the language with the changes made to Recommendation 8.
- Revised FSB Recommendations 1 and 6 and 9 were amended to reflect the further work on data availability that will be done by the FSB, in consultation with IOSCO, and work that has been done by IOSCO on fund-level stress testing.

To complement the changes to the text of the 2017 FSB Recommendations, the FSB also defined the key terms used in the Revised FSB Recommendations. Such definitions have been included in the new section on scope and terminology (see Section 3.1).

[11] For further details on determining the estimation of liquidity costs, including significant market impact, see Element (ii) – Calibration of Liquidity Costs of the IOSCO Final Report on Anti-dilution Liquidity Management Tools - Guidance for Effective Implementation of the Recommendations for Liquidity Risk Management for Collective Investment Schemes.

3. Revised FSB Recommendations

3.1. Scope and terminology

The objective of the Revised FSB Recommendations is to address the risks associated with OEF liquidity mismatch. They do not imply a 'one-size-fits-all' approach across all OEFs or all jurisdictions. There is significant variation in the types of assets that OEFs invest in and investment strategies that OEFs adopt. The FSB believes that managers of OEFs have the primary responsibility and are best placed to manage the liquidity of their portfolios. To achieve consistent outcomes across fund types, managers of OEFs should exercise this responsibility within an overall regulatory framework set and supervised by authorities. Therefore, the Revised Recommendations are addressed to financial regulatory and supervisory authorities. They set out the key objectives that an effective regulatory and supervisory framework should achieve but are high-level and flexible so that they can be incorporated into a wide variety of regulatory frameworks, to the extent jurisdictions' liquidity regulations are not yet consistent with the Revised FSB Recommendations.

The Revised FSB Recommendations do not apply to money market funds (MMFs) on which the FSB has issued separate policy proposals.[12]

Liquidity transformation may also be present in ETFs involving less liquid underlying assets. However, the structural features and liquidity management of ETFs distinguish them from other OEFs, and the revised FSB Recommendations are therefore not applicable to ETFs. The specific features and vulnerabilities associated with ETFs have been examined in other fora.[13]

Within a wider liquidity management framework, a wide range of liquidity management measures and tools should be available for use by managers of OEFs in normal and stressed market conditions. Such measures and tools can be broadly categorised as follows:

- *Measures to reduce structural liquidity mismatch* through liquidity risk management and by increasing the liquidity of funds' assets and/or by reducing the liquidity funds offer to their investors (e.g., by lowering redemption frequency and/or lengthening notice/settlement periods). These are ex ante measures that reduce vulnerabilities from structural liquidity mismatch and hence the likelihood of 'excess' redemptions/'excess' asset sales.

- *Measures and tools that reduce shock amplification and transmission arising from structural liquidity mismatch in OEFs* through*:*

  - *Use of anti-dilution/price-based LMTs,* which operate by imposing the cost of liquidity to redeeming investors, i.e. via a price channel (such as swing pricing[14] or

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12 See FSB (2021), *Policy proposals to enhance money market fund resilience: Final report*, October.

13 For example, see IOSCO (2021), *Exchange Traded Funds Thematic Note - Findings and Observations during COVID-19 induced market stresses*, August. See, also, IOSCO (2023), *Final Report on Good Practices Relating to the Implementation of the IOSCO Principles for Exchange Traded Funds*, May.

14 Swing pricing is the process of adjusting a fund's price, derived from its NAV to pass on to redeeming or subscribing investors the costs associated with their trading activity.

anti-dilution levies). Anti-dilution LMTs, if operationalised effectively, can strengthen OEF resilience by reducing redemptions arising from potential first-mover advantage[15] and, through that channel, associated 'excess' asset sales. Moreover, if investors understand how these tools operate and expect them to be used, they may be more likely to incorporate the cost of liquidity into their investment decisions.

- *Use of quantity-based LMTs,* which operate by limiting the amount of liquidity available to redeeming investors, i.e. via a quantity channel. Such tools have typically been activated in stressed market conditions in response to increased redemptions. Exclusive reliance on quantity-based LMTs can entail unintended consequences. For example, investor expectations that an OEF will use quantity-based LMTs may add to excess redemptions in stressed market conditions, if investors seek to anticipate potential restrictions on redemptions. However, quantity-based LMTs continue to have a role to play in certain circumstances. For example, operationalisation of anti-dilution LMTs can be particularly challenging when there is very limited market liquidity or when pricing information is not available. So, quantity-based LMTs are complementary to anti-dilution LMTs, especially in stressed market conditions when OEF assets cannot be valued at an appropriate level of precision. Quantity-based LMTs include suspensions and redemption gates.

- *Use of other liquidity management measures, particularly in stressed market conditions.* Such measures include in-kind redemptions and side pockets. Where a credit facility is available, a fund may also borrow to accommodate redemptions. However, the use of credit facilities to meet redemptions introduces leverage to a fund that is already under stress, which may exacerbate strains if redemptions do not abate. Credit facilities, if provided by banks and other financial institutions, also increase interconnectedness and potential for contagion to the wider financial system.

3.2. Adequacy of information and transparency

Recommendation 1: Authorities should collect information on the liquidity profile of open-ended funds in their jurisdiction proportionate to the risks they may pose from a financial stability perspective. They should review existing reporting requirements and enhance them as appropriate to ensure that they are adequate, and that required reporting is sufficiently granular and frequent.

Any additional reporting requirements should be proportionate to the benefits they bring to authorities to assess potential financial stability risks and/or take needed actions for financial stability purposes. Such additional data reporting should enable authorities to more closely

[15] 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.

monitor and assess the extent of liquidity transformation across OEFs. To achieve this, existing data reporting to the relevant authorities should be carefully assessed, so that reporting requirements are enhanced where data gaps could result in insufficient information relating to funds' liquidity risk that may affect financial stability. Items to be considered include: funds' liquidity risk and management (e.g. assessment of liquidity risk, asset manager's approach to liquidity risk management); portfolio liquidity and liquidity of individual portfolio holdings; valuation procedures and impact on liquidity risk management; and contingent sources of funding (e.g. availability and use of external sources of finance, including inter-fund lending where available, and committed and uncommitted lines of credit). The relevant authorities should consider the frequency of reporting and revise it, as appropriate in light of evolution in market and investor behaviour, so that it is sufficient for financial stability purposes.

Closing identified data gaps would improve authorities' ability to monitor liquidity mismatch and its management from a financial stability perspective. Progressing this work will include a voluntary pilot programme among FSB member jurisdictions for examining how to improve data availability, including the cost and effort needed to expand data coverage and reporting; and prioritising data gaps to close in order to improve the ability of both central banks and securities regulators to monitor key OEF vulnerabilities related to liquidity mismatch.

When reviewing their requirements, authorities are encouraged to give due consideration to reporting requirements in other jurisdictions and, where appropriate, to seek to have consistent requirements in order to facilitate effective monitoring across jurisdictions for financial stability purposes and reduce unnecessary reporting burdens. Where possible, efforts should build on existing data gathering.

Recommendation 2: Authorities should review existing investor disclosure requirements and determine the degree to which additional disclosures should be provided by open-ended funds to investors regarding fund liquidity risk and the availability and use of liquidity management tools, proportionate to the liquidity risks funds may pose from a financial stability perspective. Authorities should enhance existing investor disclosure requirements as appropriate to ensure that the required disclosures are of sufficient quality and frequency. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them.

Any additional disclosure requirements should be proportionate to the benefits they bring to investors about liquidity transformation in OEFs individually and in the aggregate. They should be written and presented in a clear and effective manner so as to inform investors' decisions. For investors and the market, additional disclosures should reduce the perception that daily redemption of fund units equates to liquidity of fund assets and promote market discipline to encourage better liquidity risk management practices, especially among funds that engage in considerable liquidity transformation. To achieve this, the adequacy of existing disclosures to investors should be carefully assessed and enhanced where lack of information may impede sufficient transparency relating to funds' liquidity risk.

Additional disclosure items may include: fund liquidity risk profiles and information about the relationship between liquidity and valuation, such as the potential for rapid declines in asset prices when liquidity is impaired and the challenge around providing daily redemptions when accurate fair valuation is difficult (for example, in case of severe market dislocations). These disclosures should help investors clearly differentiate between different types of funds and their liquidity risks. Additional disclosures should also address the availability and use of LMTs and

their potential impact on investors in normal and stressed market conditions (see also Recommendation 7). Better communication to fund investors on the objectives and operation of anti-dilution LMTs would also enable investors to better incorporate the cost of liquidity into their investment decisions.

Asset managers should disclose the relevant information to investors with sufficient frequency and on a consistent basis as appropriate for financial stability purposes.[16] In determining the content and frequency of disclosure to investors, it is important to consider the potential for unanticipated consequences from public disclosure of detailed information, such as those on parameters governing the use of anti-dilution LMTs. Such unanticipated consequences can include the potential for predatory trading and/or herding behaviour by funds and other market participants. Bearing this in mind, IOSCO should review its 2018 recommendations and, as appropriate, enhance them.

3.3. Adequacy of liquidity management both at the design phase and on an ongoing basis

Recommendation 3: In order to reduce material structural liquidity mismatches in open-ended funds, authorities should have requirements or guidance on funds' liquidity risk management. Such requirements or guidance should state that funds' investment strategies and the liquidity[17] of their assets should be consistent with the terms and conditions governing fund unit redemptions both at the time of designing a fund and on an ongoing basis. The redemption terms that open-ended funds offer to investors should be based on the liquidity of their asset holdings in normal and stressed market conditions. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them.

This recommendation seeks to specify the redemption terms that OEFs could offer to investors based on the liquidity of their asset holdings. Liquidity is a dynamic concept and there are many considerations when measuring liquidity. As such, this recommendation outlines the key elements that authorities should address as part of their domestic liquidity management regulatory frameworks. In doing so, the recommendation aims to provide for a level of international consistency given the cross-border nature of OEFs.

Each jurisdiction will need to determine the specifics of the domestic liquidity framework. Within their respective frameworks, authorities should have requirements or guidance on OEFs' liquidity risk management in normal and stressed market conditions. Recognising that asset liquidity is affected by multiple factors and varies across different markets and jurisdictions, authorities should set out detailed liquidity frameworks within which managers of OEFs are expected to operate. Such requirements or guidance should state that:

(i) At the time of designing an OEF, the terms and conditions governing redemption of fund units should be consistent with the fund's investment strategy and the liquidity (e.g.

[16] Asset managers' concerns related to disclosure of strategies and positions could potentially be mitigated if the data are released on a sufficiently delayed basis so that other market players could not otherwise benefit from this information to the funds' disadvantage.

[17] The references to "liquidity" in this recommendation encompass both current and expected liquidity, i.e. the assessment of portfolio and asset liquidity should consider not only current liquidity but also expected changes to it.

liquid, less liquid and illiquid or comparable categories) of the fund's projected asset holdings;

(ii) On an ongoing basis, the liquidity of the OEF's portfolio and assets in normal and stressed market conditions should be managed to remain consistent with the fund's redemption terms; and

(iii) Reviews of redemption terms should be carried out at appropriate intervals to achieve this.

Within the domestic liquidity frameworks, authorities will need to outline their approach to defining assets as liquid, less liquid or illiquid (or comparable categories). Fund managers would then determine the categorisation of their fund(s) based on the approach as set out by the authorities.

Authorities' requirements or guidance should expect that managers of OEFs classify the funds they manage based on the liquidity of the funds' assets in normal and stressed market conditions. Such classification should be based on portfolio and asset level liquidity and apply a prudent approach in determining the categories to which the funds would be classified.

Managers should be able to demonstrate to authorities how they met the parameters of the domestic liquidity framework. Managers should consider the liquidity profile of the OEF's entire portfolio, the liquidity distribution of the assets (i.e. the proportions of the OEF's assets under management allocated to assets falling in different liquidity buckets)[18] and individual asset liquidity in normal and stressed market conditions. This would include regular analysis of portfolio-level liquidity measures as well as analysis of the distribution of asset-level liquidity measures for the holdings of an OEF. The assessment of asset liquidity should be adjusted considering the funds' stress testing results.

Authorities should conduct regular assessments of how managers have classified the funds based on their jurisdiction's liquidity framework and in line with their supervisory approaches with a view to promoting consistent classification.

There are several factors of asset liquidity that authorities may wish to consider as part of their framework, such as: market depth and turnover; days to trade; the efficiency and effectiveness of the pricing mechanism; the market impact of large transactions; operational features and potential frictions; and valuation certainty. In general, there should be a mixture of quantitative and qualitative factors and the approach should also consider both normal and stressed market conditions.

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[18] In general, OEF managers are well positioned to determine the appropriate level of liquid asset holdings for each OEF they manage. While a requirement to hold a minimum level of liquid assets could complement other elements of a regulatory framework to reduce the need for OEFs to rely on less liquid assets to meet liquidity demands in stressed market conditions, in some settings, it may have unintended consequences. For example, if breaching regulatory thresholds is associated with restrictions on investors' ability to redeem shares, such requirements may prompt investors to react to stressed market conditions in a more pro-cyclical manner to avoid the consequences of a fund's crossing those thresholds and can exacerbate vulnerabilities arising from structural liquidity mismatch. In response, managers may have to sell more assets than otherwise needed to replenish the reduced cash holdings. Therefore, the FSB is not including minimum regulatory requirements for liquid asset holdings across the OEF sector this time. Authorities can explore whether such requirements could be designed to be countercyclical and avoid encouraging pre-emptive runs.

Based on such factors, “liquid” assets are likely to be assets that are readily convertible into cash without significant market impact in both normal and stressed market conditions. “Less liquid” assets are those assets whose liquidity is contingent on market conditions, but they would generally be readily convertible into cash without significant market impact in normal market conditions. In stressed market conditions, they might not be readily convertible into cash without significant discounts and their valuations might become more difficult to assess with certainty. “Illiquid” assets include those for which there is little or no secondary market trading and buying and selling assets is difficult and time consuming (i.e. weeks or months, not days) even in normal market conditions. Individual transactions of “illiquid” assets may, therefore, be more likely to affect market values.

When determining asset and portfolio liquidity, managers should consider the extent to which (i) the liquidity characteristics of asset holdings are more difficult to assess, contingent on market conditions, or asset holdings are difficult to value in stressed market conditions; and (ii) the liquidity characteristics of the portfolio can create a potential incentive for investors to redeem early to the disadvantage of other investors.

Based on domestic frameworks on liquidity determination, the funds can be categorised into the following three main categories.

Category 1: Funds that invest mainly in “liquid” assets

For such funds, daily dealing would remain appropriate. The managers of those funds should continue to enhance their liquidity management practices where appropriate. For these funds, dilution would be expected to be *de minimis*.

Category 2: Funds that invest mainly in “less liquid” assets

Offering daily dealing to fund investors (without notice or settlement periods) may remain appropriate, subject to OEF managers being able to demonstrate to the authorities (in line with the authorities’ supervisory approaches) that they implement anti-dilution LMTs as described in Recommendation 5.

For these funds, there would be a greater likelihood of dilution expected than for funds in Category 1. If funds in Category 2 do not meet the expectation on the implementation of anti-dilution LMTs as described in Recommendation 5, OEF managers should consider and use measures to reduce the liquidity offered to fund investors (e.g. by reducing redemption frequency and/or by implementing long notice or settlement periods), as considered appropriate by authorities.

Category 3: Funds that allocate a significant proportion of their assets under management to "illiquid" assets

Such funds should create and redeem shares at lower frequency than daily and/or require long notice or settlement periods.[19] The relevant authorities could also consider requiring that such funds be structured as closed-ended funds.

When considering the appropriateness of the redemption frequency and the length of a notice or settlement period for funds in Categories 2 and 3, managers should take a holistic approach having due regard to both qualitative and quantitative factors, such as: portfolio composition; reliability of asset valuation; alignment between asset liquidity and redemption frequency or length of notice/settlement period; characteristics of the investor base; potential incentives for early redemptions based on portfolio characteristics; and the outcome of liquidity stress tests by the funds.

Funds that do not clearly fall into (only) one of the three main categories

Funds that do not clearly fall into (only) one of the three main categories (i.e. funds that do not meet the criteria for any of the above three categories or meet the criteria for more than one of the above three categories) should take a prudent approach when determining which of the treatments applicable to the above three categories to apply. Managers of such funds should be able to demonstrate to authorities (in line with the authorities' supervisory approaches) that the determinations are appropriate. If a fund is mainly invested in liquid assets, but also has a significant proportion of the assets under management in illiquid assets, the fund should generally be considered as having invested a significant proportion of its assets in "illiquid" assets.

In-line with their domestic liquidity frameworks, authorities should determine when a fund may be considered to invest "mainly" in liquid assets (Category 1); "mainly" in less liquid assets (Category 2); or may be considered to "allocate a significant proportion" of its assets under management to illiquid assets (Category 3).

As indicative guidelines:

- investing more than 50% of assets under management in either liquid assets or less liquid assets is likely to constitute "mainly investing" in that category of assets;
- investing more than 30% of assets under management in illiquid assets is likely to constitute "allocating a significant proportion" to that category of assets.

Authorities will be responsible for establishing the processes and specific criteria for allocating funds to the respective categories in line with the indicative guidelines as well as relevant specificities of the domestic liquidity framework in each jurisdiction. Both authorities and fund managers should seek to avoid threshold/cliff edge effects as a result of moving from one

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[19] In an OEF that implements a notice period, redeeming investors receive the value of shares sold based on the fund's NAV at the end of the notice period. By contrast, in an OEF that implements a settlement period, redeeming investors receive the value of shares sold based on the fund's NAV on the redemption date but payment is deferred until the end of the settlement period. Notice (settlement) periods expose redeeming (remaining) investors to the market risk of shares to be redeemed.

category of funds to another whilst providing investors with certainty around the terms of their investment in the fund. A prudent approach should be pursued in categorising funds to reduce the likelihood of re-categorisations. In addition, authorities should set out the approach to instances where funds would be expected to move from one category to another. It is not envisaged that such movements would occur frequently, while re-categorisations should be based on a longer-term assessment and provide sufficient time for managers to adapt. Managers should seek to avoid possible re-categorisations as part of their strategic asset allocation and ongoing portfolio management in terms of liquidity.

In regard to this Recommendation, IOSCO should review its 2018 recommendations and, as appropriate, enhance them to introduce more detailed guidance on the application of this Recommendation.

Recommendation 4: Authorities should ensure that a broad set of liquidity management tools and measures is available for use by managers of open-ended funds in normal and stressed market conditions as part of robust liquidity management practices. Authorities should also reduce operational and other barriers that prevent the use of such tools and measures. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them.

Authorities should ensure that a broad set of LMTs and measures is available to managers of OEFs. Such tools should include anti-dilution and quantity-based LMTs and other liquidity management measures to reduce shock amplification and transmission. Where certain jurisdictions have relatively few tools available, authorities should augment the range of available tools to encourage robust liquidity risk management practices and foster resilience in normal and stressed market conditions.

In considering the set of LMTs available in their jurisdictions, authorities should aim at achieving a balance between anti-dilution and quantity-based LMTs. From that perspective:

- If anti-dilution LMTs are operationalised effectively, they can strengthen resilience by reducing redemptions arising from potential first-mover advantage and, through that channel, associated ‘excess’ asset sales. If investors understand how these tools operate and expect them to be used, they may be more likely to incorporate the cost of liquidity into their investment decisions. However, anti-dilution LMTs might not reduce redemptions driven by other factors such as ‘dash-for-cash’ or ‘flight-to-safety’.

- Exclusive reliance on quantity-based LMTs designed to target the effects of ‘excess’ redemptions and ‘excess’ asset sales could entail unintended consequences. For example, investor expectations that an OEF will use quantity-based LMTs may add to ‘excess’ redemptions in times of stress, if investors seek to anticipate potential restrictions on redemptions.

IOSCO should review its 2018 recommendations and, as appropriate, enhance them to introduce more detailed guidance on the application of this recommendation. The revised recommendations should determine the expected framework for the use and oversight of LMTs by fund boards, managers’ boards or depositories rather than a specific calibration of these tools.

Recommendation 5: Authorities should ensure that anti-dilution liquidity management tools are available to managers of open-ended funds. Authorities should also ensure that managers of open-ended funds consider and use such tools to mitigate potential first-mover advantage arising from structural liquidity mismatch in open-ended funds they manage, to ensure that investors bear the costs of liquidity associated with fund redemptions, and to arrive at a more consistent approach to the use of liquidity management tools. Such tools should impose on redeeming investors the explicit and implicit costs of redemptions, including any significant market impact of asset sales to meet those redemptions. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them as well as to prepare guidance on the design of anti-dilution liquidity management tools.

The policy intent underlying this recommendation is to promote greater use and greater consistency in the use of anti-dilution LMTs to mitigate potential first-mover advantage arising from structural liquidity mismatch in OEFs in ways that would also maintain investor protection. Since the financial stability risk arising from liquidity mismatch differs between OEFs, authorities may seek to distinguish within their liquidity frameworks different OEFs on the basis of their overall liquidity mismatch profile and hence the application of measures to achieve greater use and greater consistency in the use of anti-dilution LMTs.

In this regard, authorities should ensure that anti-dilution LMTs are available to managers of OEFs. They should also ensure that managers of OEFs, particularly those falling into Category 2 (less liquid) as described under Revised FSB Recommendation 3, consider and use such tools and that redeeming investors will bear the costs of liquidity associated with fund redemptions in order to arrive at a more consistent approach to the use of anti-dilution LMTs by managers. For Category 2 funds, there would be a greater likelihood of dilution expected than for Category 1 funds. The expectation is that anti-dilution LMTs would be increasingly used by Category 2 funds as part of their day-to-day liquidity management, unless such LMTs not being used is clearly justified, subject to (i) oversight of authorities in line with their supervisory approaches and (ii) implementation of other effective liquidity risk management measures that meet the broader policy intent of reducing material structural liquidity mismatches underpinning the Revised FSB Recommendations.

In line with the above, anti-dilution tools should (i) be included in OEF constitutional documents,[20] (ii) be considered and used in both normal and stressed market conditions, with a view to achieving greater use and greater consistency in their use; and (iii) account for both the explicit and implicit costs of redemptions, including any significant market impact of asset sales. In addition, authorities' requirements or guidance should expect that managers of such OEFs have appropriate internal systems, procedures and controls in place that enable the use of anti-dilution LMTs as part of the day-to-day liquidity risk management of the OEFs they manage, even if such tools would not always be in use.

Anti-dilution LMTs should impose on redeeming investors the explicit and implicit costs of redemptions by adjusting the NAV received by investors (e.g. swing pricing) or by charging a fee on redemptions (e.g. anti-dilution levies). This would put fund unitholders in a similar economic position to investors that opt to invest directly in portfolio securities. When implementing such

[20] These include fund prospectuses, other offering documents and other documents accessible to investors on an ex-ante basis before they make their investment decision.

tools, managers of OEFs should have measures in place to estimate and allocate the explicit and implicit costs of redemptions, including any significant market impact of asset sales[21], to redeeming investors.

IOSCO has developed guidance on the design and use of anti-dilution LMTs, which identifies the factors for managers to consider in employing such tools so that they would impose on redeeming investors the explicit and implicit costs of redemptions, including any significant market impact of asset sales.[22] Guidance on the use of such tools (i) encourages greater use of, and greater consistency in the use of, anti-dilution LMTs by managers in both normal and stressed market conditions, including to avoid threshold effects, (ii) emphasises the importance of robust valuation practices to support estimation of costs of liquidity and calibration of anti-dilution LMTs, (iii) seeks to ensure that the tools are robust to different operational scenarios in normal and stressed market conditions, and (iv) seeks to ensure that the tools are adequately governed and informed by appropriate data and expertise.

Achieving increased use of anti-dilution LMTs may require reducing operational or other barriers that prevent the use of such tools. The guidance developed by IOSCO seeks to address barriers presented by operational challenges, market structure and practice and, to the extent relevant, any legal or regulatory hurdles. It also explores how to mitigate the disincentives (e.g. costs, reputational and competitive concerns) that may affect inclusion and use of anti-dilution LMTs by OEF managers.

Recommendation 6: Authorities should require and/or provide guidance on stress testing at the level of individual open-ended funds to support liquidity risk management to mitigate financial stability risk. The requirements and/or guidance should address the need for stress testing and how it could be done.

Authorities should require and/or provide guidance on OEFs stress testing, to the extent necessary to support liquidity risk management with a view to mitigate financial stability risk. Stress testing should support asset managers' assessment of the impact of changes in asset liquidity and redemptions under stressed market conditions, taking into account to the extent possible the expected behaviour of other market participants (e.g. other funds managed by the same manager) under similarly stressed market conditions. Such stress testing should take into account any known inter-fund relationships, such as inter-fund lending arrangements. In this manner, the use of robust stress testing should strengthen funds' overall liquidity risk management as well as the available fund liquidity under periods of market stress, which would serve as an important component to address potential financial stability risks.

Stress test results should be used by the asset manager to assess the liquidity characteristics of the fund's assets relative to the fund's anticipated redemption flows under stressed market conditions and to tailor the fund's asset composition, liquidity risk management, and contingency planning accordingly. The relevant authorities could also monitor the extent to which stress testing results are being considered as a key input to calibrate holdings of liquid assets, the use

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[21] For further details on the estimation of liquidity costs, including significant market impact, see Element (ii) – Calibration of Liquidity Costs of the IOSCO Report on Anti-dilution Liquidity Management Tools - Guidance for Effective Implementation of the Recommendations for Liquidity Risk Management for Collective Investment Schemes.

[22] IOSCO (2023), *Final Report on Anti-dilution Liquidity Management Tools - Guidance for Effective Implementation of the Recommendations for Liquidity Risk Management for Collective Investment Schemes*, December.

of the fund's LMTs, and contingency plans. Where reported to authorities, stress test results may further provide the relevant authorities with an overview of asset managers' perspective of market conditions under various circumstances, and therefore enhance their ability to detect inconsistencies across funds and asset classes.[23]

3.4. Adequacy of liquidity risk management tools and measures to deal with stressed market conditions

Recommendation 7: Authorities should promote (through regulatory requirements or guidance) clear decision-making processes for open-ended funds' use of quantity-based liquidity management tools and other liquidity management measures, particularly in stressed market conditions. The processes should be made transparent to investors and the relevant authorities. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them.

Greater clarity on the circumstances under which funds may use quantity-based LMTs or other liquidity management measures (e.g. suspensions of redemptions, gates, in-kind redemptions, side pockets) would help investors understand how and when such tools and measures might be used. It may also help reduce stigma related to these tools and measures and increase awareness that their use, while infrequent, is a possibility. Spillover effects to other funds may also be mitigated if investors are able to understand the specific reasons why certain funds have to use such tools and measures.

While removal of practical obstacles to using such tools and measures under stressed market conditions is recommended, their use should be carefully considered in light of the potential spillover effects that may arise from their use. The relevant authorities have an important role to play in setting expectations on how these decisions could be made with respect to fund governance, for example through involvement by the fund board of directors (where relevant) and communication to unitholders and the relevant authorities (see also Recommendation 8). The more prepared asset managers and fund investors are with respect to the use of quantity-based LMTs and other liquidity management measures in stressed market conditions, the more effective such tools and measures are likely to be when used.

Additional assessments may be needed to understand the effectiveness of these tools and measures, the extent to which asset managers are prepared to implement and operationalise them, and consequences such as spillover effects across funds and reputational or other barriers to using them. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance guidance on the use of quantity-based LMTs.

Recommendation 8: While asset managers have the primary responsibility to consider and use quantity-based liquidity management tools and other liquidity management measures, authorities should provide guidance on their use particularly in stressed market conditions. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them. Where jurisdictions consider it appropriate, authorities should also provide direction in stressed

[23] Authorities may consider reporting of stress test results to be provided in a standardised format to facilitate data aggregation and analysis.

market conditions regarding open-ended funds' use of such tools and measures, taking into account the costs and benefits of such action from a financial stability perspective.

Having the relevant authorities provide general guidance regarding the use of quantity-based LMTs and other liquidity management measures, particularly in stressed market conditions, will help clarify how such tools and measures can be deployed while recognising and minimising potential spillover effects. This can also assist asset managers in overcoming any reputational or competitive reluctance to use such tools and measures, where appropriate. At the same time, this approach acknowledges that the decision to use such tools and measures should generally remain with the asset manager because the manager is responsible for evaluating what is appropriate for a particular fund, in light of its investment strategies, the liquidity of its portfolio, current market conditions, and other relevant circumstances.

In exceptional cases, such as when there is a market dislocation or overall market stress or when an asset manager faces operational difficulties in taking appropriate actions, the asset manager may not be best placed to make such determinations. The relevant authorities should, in such cases, consider also providing guidance that is specific to the circumstance concerned to facilitate the application of such tools or measures. Moreover, enhanced regulatory guidance may improve the ability of managers to engage in advance planning regarding the use of quantity-based LMTs and other liquidity management measures in stressed market conditions. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them. In particular, it could consider establishing standards with respect to how and under what conditions such tools and measures might be used.

As an option of last resort, a number of authorities have the ability to require, in specific circumstances, a fund to suspend redemptions Where jurisdictions consider it appropriate for authorities to have the power to direct the use of such quantity-based LMTs and other liquidity management measures in stressed market conditions, consideration should be given to the conditions which would warrant such action, as well as to the costs and benefits of taking such action from a financial stability perspective. To the extent possible, authorities should thus seek to assess the potential costs and benefits of different policy options before stressed market conditions occur.

3.5. Additional market liquidity considerations

Recommendation 9: Where relevant, authorities should give consideration to system-wide stress testing that could potentially capture effects of collective selling by funds and other investors on the resilience of financial markets and the financial system more generally.

Currently, a number of authorities with financial stability mandates, as well as the International Monetary Fund, are conducting, or are seeking to conduct, system-wide stress tests that include the potential impact of the activities of investment funds and other investors. The extent to which the potential impact of different types of investors (e.g. investment funds, pension funds, insurance companies) is included in such stress testing may vary across jurisdictions depending on the relative systemic importance of these participants in each jurisdiction and data availability. Against this background, where authorities believe that the potential impact of the activities of funds and other investors amounts to a level of systemic relevance, it is recommended that they consider whether and how to incorporate such potential impact in system-wide stress testing to

better understand collective behaviour dynamics as well as the impact on financial markets and on the financial system more generally. In some cases, the use of system-wide stress testing models would require closing data gaps. Although such system-wide stress testing exercises are still in an exploratory stage, over time they may provide useful insights that could help inform both regulatory actions and funds' liquidity risk management practices. In addition, when seeking to conduct such system-wide stress tests, it is expected that macroprudential authorities and securities regulators would coordinate among themselves as appropriate.

Annex 1: List of revised FSB policy recommendations to address vulnerabilities from liquidity mismatch in open-ended funds

Recommendation 1: Authorities should collect information on the liquidity profile of open-ended funds in their jurisdiction proportionate to the risks they may pose from a financial stability perspective. They should review existing reporting requirements and enhance them as appropriate to ensure that they are adequate, and that required reporting is sufficiently granular and frequent.

Recommendation 2: Authorities should review existing investor disclosure requirements and determine the degree to which additional disclosures should be provided by open-ended funds to investors regarding fund liquidity risk and the availability and use of liquidity management tools, proportionate to the liquidity risks funds may pose from a financial stability perspective. Authorities should enhance existing investor disclosure requirements as appropriate to ensure that the required disclosures are of sufficient quality and frequency. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them.

Recommendation 3: In order to reduce material structural liquidity mismatches in open-ended funds, authorities should have requirements or guidance on funds' liquidity risk management. Such requirements or guidance should state that funds' investment strategies and the liquidity of their assets should be consistent with the terms and conditions governing fund unit redemptions both at the time of designing a fund and on an ongoing basis. The redemption terms that open-ended funds offer to investors should be based on the liquidity of their asset holdings in normal and stressed market conditions. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them.

Recommendation 4: Authorities should ensure that a broad set of liquidity management tools and measures is available for use by managers of open-ended funds in normal and stressed market conditions as part of robust liquidity management practices. Authorities should also reduce operational and other barriers that prevent the use of such tools and measures. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them.

Recommendation 5: Authorities should ensure that anti-dilution liquidity management tools are available to managers of open-ended funds. Authorities should also ensure that managers of open-ended funds consider and use such tools to mitigate potential first-mover advantage arising from structural liquidity mismatch in open-ended funds they manage, to ensure that investors bear the costs of liquidity associated with fund redemptions, and to arrive at a more consistent approach to the use of liquidity management tools. Such tools should impose on redeeming investors the explicit and implicit costs of redemptions, including any significant market impact of asset sales to meet those redemptions. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them as well as to prepare guidance on the design of anti-dilution liquidity management tools.

Recommendation 6: Authorities should require and/or provide guidance on stress testing at the level of individual open-ended funds to support liquidity risk management to mitigate financial stability risk. The requirements and/or guidance should address the need for stress testing and how it could be done.

Recommendation 7: Authorities should promote (through regulatory requirements or guidance) clear decision-making processes for open-ended funds' use of quantity-based liquidity management tools and other liquidity management measures, particularly in stressed market conditions. The processes should be made transparent to investors and the relevant authorities. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them.

Recommendation 8: While asset managers have the primary responsibility to consider and use quantity-based liquidity management tools and other liquidity management measures, authorities should provide guidance on their use particularly in stressed market conditions. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them. Where jurisdictions consider it appropriate, authorities should also provide direction in stressed market conditions regarding open-ended funds' use of such tools and measures, taking into account the costs and benefits of such action from a financial stability perspective.

Recommendation 9: Where relevant, authorities should give consideration to system-wide stress testing that could potentially capture effects of collective selling by funds and other investors on the resilience of financial markets and the financial system more generally.

Annex 2: Comparison of the revised FSB policy recommendations to address vulnerabilities from liquidity mismatch in open-ended funds to the 2017 Recommendations

~~*Lack*~~Adequacy of information and transparency

Recommendation 1: Authorities should collect information on the liquidity profile of open-ended funds in their jurisdiction proportionate to the risks they may pose from a financial stability perspective. They should review existing reporting requirements and enhance them as appropriate to ensure that they are adequate, and that required reporting is sufficiently granular and frequent.

Any additional reporting requirements should be proportionate to the benefits they bring to authorities to assess potential financial stability risks and/or take needed actions for financial stability purposes. Such additional data reporting should enable authorities to more closely monitor and assess the extent of liquidity transformation across ~~open-ended funds.~~OEFs. To achieve this, existing data reporting to the relevant authorities should be carefully assessed, so that reporting requirements are enhanced where data gaps could result in insufficient information relating to funds' liquidity risk that may affect financial stability. Items to be considered include: funds' liquidity risk and management (e.g. assessment of liquidity risk, asset manager's approach to liquidity risk management); portfolio liquidity and liquidity of individual portfolio holdings; valuation procedures and impact on liquidity risk management; and contingent sources of funding (e.g. availability and use of external sources of finance, including inter-fund lending where available, and committed and uncommitted lines of credit). The relevant authorities should consider the frequency of reporting and revise it, as appropriate in light of evolution in market and investor behaviour, so that it is sufficient for financial stability purposes.

~~IOSCO is currently engaged in an initiative to address data gaps related to funds.[24] To the extent that this initiative addresses data gaps in relation to liquidity risk of funds, authorities may consider referring to this work as appropriate. IOSCO is also encouraged to develop a set of relevant data points by the end of 2017 that can serve to provide transparency to the relevant authorities with respect to funds' liquidity risk.~~ Closing identified data gaps would improve authorities' ability to monitor liquidity mismatch and its management from a financial stability perspective. Progressing this work will include a voluntary pilot programme among FSB member jurisdictions for examining how to improve data availability, including the cost and effort needed to expand data coverage and reporting; and prioritising data gaps to close in order to improve the ability of both central banks and securities regulators to monitor key OEF vulnerabilities related to liquidity mismatch.

When reviewing their requirements, authorities are encouraged to give due consideration to reporting requirements in other jurisdictions and, where appropriate, to seek to have consistent requirements in order to facilitate effective monitoring across jurisdictions for financial stability

purposes and reduce unnecessary reporting burdens. Where possible, efforts should build on existing data gathering.

Recommendation 2: Authorities should review existing investor disclosure requirements and determine the degree to which additional disclosures should be provided by open-ended funds to investors regarding fund liquidity risk and the availability and use of liquidity management tools, proportionate to the liquidity risks funds may pose from a financial stability perspective. Authorities should enhance existing investor disclosure requirements as appropriate to ensure that the required disclosures are of sufficient quality and frequency. In this regard, IOSCO should review its existing guidance2018 recommendations and, as appropriate, enhance itthem.

Any additional disclosure requirements should be proportionate to the benefits they bring to investors about liquidity transformation in open-ended fundsOEFs individually and in the aggregate. They should be written and presented in a clear and effective manner so as to inform investors' decisions. For investors and the market, additional disclosures should reduce the perception that daily redemption of fund units equates to liquidity of fund assets and promote market discipline to encourage better liquidity risk management practices, especially among funds that engage in considerable liquidity transformation. To achieve this, the adequacy of existing disclosures to investors should be carefully assessed and enhanced where lack of information may impede sufficient transparency relating to funds' liquidity risk.

Additional disclosure items may include: fund liquidity risk profiles and information about the relationship between liquidity and valuation, such as the potential for rapid declines in asset prices when liquidity is impaired and the challenge around providing daily redemptions when accurate fair valuation is difficult (for example, in case of severe market dislocations). Additional disclosures could also address the availability of liquidity management tools and their potential impact on investors, for example the activation of redemption gates or suspension of redemptions and their potential impact on an investor's ability to redeem. These disclosures should help investors clearly differentiate between different types of funds and their liquidity risks. Additional disclosures should also address the availability and use of LMTs and their potential impact on investors in normal and stressed market conditions (see also Recommendation 7). Better communication to fund investors on the objectives and operation of anti-dilution LMTs would also enable investors to better incorporate the cost of liquidity into their investment decisions.

Asset managers should disclose the relevant information to investors with sufficient frequency and on a consistent basis as appropriate for financial stability purposes.[25] In determining the content and frequency of disclosure to investors, it is important to consider the potential for unanticipated consequences from public disclosure of detailed information (e.g., such as those on parameters governing the use of anti-dilution LMTs. Such unanticipated consequences can include the potential for predatory trading and/or herding behaviour by funds and other market participants). Bearing this in mind, IOSCO should review its existing guidance2018 recommendations and, as appropriate, enhance it by the end of 2017them.

[25] Asset managers' concerns related to disclosure of strategies and positions could potentially be mitigated if the data are released on a sufficiently delayed basis so that other market players could not otherwise benefit from this information to the funds' disadvantage.

~~Gaps in~~Adequacy of liquidity management both at the design phase and on an ongoing basis

Recommendation 3: In order to reduce ~~the likelihood of~~ material structural liquidity mismatches ~~arising from an~~ in open-ended ~~fund's structure~~funds, authorities should have requirements or guidance ~~stating that~~on funds' ~~assets and investment~~ liquidity risk management. Such requirements or guidance should state that funds' investment strategies and the liquidity[26] of their assets should be consistent with the terms and conditions governing fund unit redemptions both at the time of designing a fund ~~inception~~ and on an ongoing basis ~~(for new and existing funds), taking into account the expected liquidity of~~ . The redemption terms that open-ended funds offer to investors should be based on the ~~assets and investor behaviour during~~ liquidity of their asset holdings in normal and stressed market conditions. In this regard, IOSCO should review its ~~existing guidance~~2018 recommendations and, as appropriate, enhance ~~it~~them.

~~Authorities should~~ This recommendation seeks to specify the redemption terms that OEFs could offer to investors based on the liquidity of their asset holdings. Liquidity is a dynamic concept and there are many considerations when measuring liquidity. As such, this recommendation outlines the key elements that authorities should address as part of their domestic liquidity management regulatory frameworks. In doing so, the recommendation aims to provide for a level of international consistency given the cross-border nature of OEFs.

Each jurisdiction will need to determine the specifics of the domestic liquidity framework. Within their respective frameworks, authorities should have requirements or guidance ~~stating that funds' investment strategy and portfolio composition be consistent with the~~ on OEFs' liquidity risk management in normal and stressed market conditions. Recognising that asset liquidity is affected by multiple factors and varies across different markets and jurisdictions, authorities should set out detailed liquidity frameworks within which managers of OEFs are expected to operate. Such requirements or guidance should state that:

(i) At the time of designing an OEF, the terms and conditions governing redemption of fund units ~~for both new and existing funds. At the time of design of a fund, the redemption features~~ should be ~~designed and calibrated to be~~ consistent with the fund's ~~intended~~ investment strategy and ~~scope of investable assets.~~the liquidity (e.g. liquid, less liquid and illiquid or comparable categories) of the fund's projected asset holdings;

~~This could be achieved in various ways. Funds that offer daily liquidity should invest mainly in liquid assets and have strict limits on their investment in illiquid assets (based on clear guidelines regarding the characteristics of such assets). If a fund's investment strategy involves holding a substantial amount of illiquid assets, the relevant authorities could consider requiring that the fund impose restrictions on redemptions, offer less frequent redemptions or be organised as a closed-ended fund.~~

[26] The references to "liquidity" in this recommendation encompass both current and expected liquidity, i.e. the assessment of portfolio and asset liquidity should consider not only current liquidity but also expected changes to it.

~~Consistency of a fund's redemption terms with its investment strategy and expected overall liquidity of its assets will lessen the risks from liquidity transformation. Setting appropriate parameters on the liquidity of funds' assets holdings, including more explicit and enforceable limits on illiquid assets, may be considered. When assessing the appropriateness of the liquidity of various asset classes relative to redemption terms and conditions, the assessment should take into account expected liquidity in normal and stressed market conditions.~~

~~A fund's liquidity profile should be managed and adjusted on an ongoing basis to ensure that its portfolio composition remains suitable in light of redemption terms and conditions, the evolution of the market environment, and investor behaviour. Measures could include modifying redemption features, such as increasing the notice period for redeeming from a fund, and/or increasing the liquidity of a fund's asset holdings. Authorities should require or have guidance that funds have robust liquidity risk management procedures in place so that asset holdings remain consistent with the terms and conditions governing fund unit redemptions.~~

~~In addition, minimum standards for funds' internal risk management policies could be explored to include the appropriate use of liquidity buffers or targets, and ongoing assessment of asset liquidity through categorising fund assets based on their relative liquidity, i.e. so-called liquidity tiering or bucketing. Liquidity buffers and targets, asset tiering, and limits on illiquid assets should be considered holistically to determine the overall liquidity profile of a fund. A fund's liquidity risk profile should also be adjusted where appropriate in light of the fund's stress testing results to better ensure that the investment profile remains in line with the fund's commitment to its investors.~~

~~IOSCO should review its existing guidance (e.g. Principles of liquidity risk management for collective investment schemes)[27] and enhance it as appropriate by the end of 2017. In particular, IOSCO should further consider whether certain asset classes and investment strategies may not be suitable for an open-ended fund structure.~~

~~Recommendation 4: Where appropriate, authorities should widen the availability of liquidity risk management tools to open-ended funds, and reduce barriers to the use of those tools, to increase the likelihood that redemptions are met even under stressed market conditions. In this regard, IOSCO should review its existing guidance and, as appropriate, enhance it.~~

~~Authorities should, where appropriate, make available a wide range of liquidity risk management tools to open-ended funds to increase the likelihood that redemptions can be met under stressed market conditions.[28] These should include both pre-emptive and post-event measures. Where certain jurisdictions have relatively few tools available, authorities may wish to consider augmenting the range of available tools to encourage liquidity risk management practices that are able both to anticipate, and foster resilience under, stressed market conditions. In that context, consideration should be given to potential spillover effects associated with post-event measures.~~

~~27~~ https://www.iosco.org/library/pubdocs/pdf/IOSCOPD405.pdf
~~28~~ https://www.iosco.org/library/pubdocs/pdf/IOSCOPD517.pdf

There are many different tools that can be used to manage liquidity and redemption risks in order to reduce potential risks to financial stability. These include pre-emptive measures described earlier, such as appropriate liquidity constraints, monitoring fund liquidity, stress testing, and appropriate portfolio composition and diversification. Authorities may also allow funds to make use of notice periods (i.e. requirements that advance notice be provided for a specified time before a redemption will be effected) for redeeming from a fund whose assets, or a material portion of assets, are deemed to be less liquid. Settlement periods (i.e. the time periods after a redemption request within which proceeds must be paid to redeeming investors) could also be altered. Asset managers could also use post-event measures, such as activating different types of gates (or suspension of dealings). For example, investors seeking on-demand withdrawal might only be allowed to withdraw a certain percentage immediately, and would receive the remainder over a pre-defined period. Consideration should be given to how to better inform investors of the various tools that may be invoked by funds and the circumstances in which such tools could be invoked, as well as the implications for investors should the tools be invoked.

In considering the relative merits of different tools, authorities should take into account the effectiveness of each in slowing redemptions from funds that use them. In addition, authorities should consider potential spillover effects on other funds if the use of a post-event liquidity risk management tool in one fund is interpreted by investors as a signal of broader stress and thus may lead to more widespread redemptions from other funds. They should also consider, as appropriate, any operational difficulties to implementing various liquidity risk management tools and make efforts to reduce these difficulties.

The results of the recent IOSCO survey on funds' liquidity management tools,[29] as well as the stocktaking of policy tools through the FSB shadow banking information-sharing exercises in 2014 and 2015,[30] could serve as a useful starting point for IOSCO to complement its principles with guidance on the use of tools under stressed market conditions to address financial stability concerns by the end of 2017.

Recommendation 5: Authorities should make liquidity risk management tools available to open-ended funds to reduce first-mover advantage, where it may exist. Such tools may include swing pricing, redemption fees and other anti-dilution methods. In this regard, IOSCO should review its existing guidance and, as appropriate, enhance it.

Liquidity risk management tools to address first-mover advantage could include swing pricing, redemption fees and other anti-dilution methods. For example, the use of swing pricing or similar mechanisms would impose transaction costs and other costs associated with redemptions on investors who are redeeming from the fund rather than on investors who remain invested. This should help reduce first-mover advantage where it exists, and can be calibrated appropriately depending on the extent of such an advantage.

Authorities should assess which of these tools could be effective in deterring first-mover advantage, and how tools can be designed to mitigate financial stability risks and spillover effects. Implementing some of these tools may result in significant operational challenges. Authorities should consider and work to reduce, as appropriate, any such operational challenges

[29] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD517.pdf

[30] See http://www.fsb.org/wp-content/uploads/shadow_banking_overview_of_progress_2015.pdf.

~~and difficulties in implementing these liquidity risk management tools. Authorities may then consider how these tools would be made available, and communicated to investors, in jurisdictions where such tools do not exist.~~

~~IOSCO is encouraged to develop a toolkit of policy tools that may be effective to deter first-mover advantage, where it may exist, and to incorporate the toolkit into its principles of liquidity risk management by the end of 2017.~~

(ii) On an ongoing basis, the liquidity of the OEF's portfolio and assets in normal and stressed market conditions should be managed to remain consistent with the fund's redemption terms; and

(iii) Reviews of redemption terms should be carried out at appropriate intervals to achieve this.

Within the domestic liquidity frameworks, authorities will need to outline their approach to defining assets as liquid, less liquid or illiquid (or comparable categories). Fund managers would then determine the categorisation of their fund(s) based on the approach as set out by the authorities.

Authorities' requirements or guidance should expect that managers of OEFs classify the funds they manage based on the liquidity of the funds' assets in normal and stressed market conditions. Such classification should be based on portfolio and asset level liquidity and apply a prudent approach in determining the categories to which the funds would be classified.

Managers should be able to demonstrate to authorities how they met the parameters of the domestic liquidity framework. Managers should consider the liquidity profile of the OEF's entire portfolio, the liquidity distribution of the assets (i.e. the proportions of the OEF's assets under management allocated to assets falling in different liquidity buckets)[31] and individual asset liquidity in normal and stressed market conditions. This would include regular analysis of portfolio-level liquidity measures as well as analysis of the distribution of asset-level liquidity measures for the holdings of an OEF. The assessment of asset liquidity should be adjusted considering the funds' stress testing results.

Authorities should conduct regular assessments of how managers have classified the funds based on their jurisdiction's liquidity framework and in line with their supervisory approaches with a view to promoting consistent classification.

There are several factors of asset liquidity that authorities may wish to consider as part of their framework, such as: market depth and turnover; days to trade; the efficiency and effectiveness

[31] In general, OEF managers are well positioned to determine the appropriate level of liquid asset holdings for each OEF they manage. While a requirement to hold a minimum level of liquid assets could complement other elements of a regulatory framework to reduce the need for OEFs to rely on less liquid assets to meet liquidity demands in stressed market conditions, in some settings, it may have unintended consequences. For example, if breaching regulatory thresholds is associated with restrictions on investors' ability to redeem shares, such requirements may prompt investors to react to stressed market conditions in a more pro-cyclical manner to avoid the consequences of a fund's crossing those thresholds and can exacerbate vulnerabilities arising from structural liquidity mismatch. In response, managers may have to sell more assets than otherwise needed to replenish the reduced cash holdings. Therefore, the FSB is not including minimum regulatory requirements for liquid asset holdings across the OEF sector this time. Authorities can explore whether such requirements could be designed to be countercyclical and avoid encouraging pre-emptive runs.

of the pricing mechanism; the market impact of large transactions; operational features and potential frictions; and valuation certainty. In general, there should be a mixture of quantitative and qualitative factors and the approach should also consider both normal and stressed market conditions.

Based on such factors, "liquid" assets are likely to be assets that are readily convertible into cash without significant market impact in both normal and stressed market conditions. "Less liquid" assets are those assets whose liquidity is contingent on market conditions, but they would generally be readily convertible into cash without significant market impact in normal market conditions. In stressed market conditions, they might not be readily convertible into cash without significant discounts and their valuations might become more difficult to assess with certainty. "Illiquid" assets include those for which there is little or no secondary market trading and buying and selling assets is difficult and time consuming (i.e. weeks or months, not days) even in normal market conditions. Individual transactions of "illiquid" assets may, therefore, be more likely to affect market values.

When determining asset and portfolio liquidity, managers should consider the extent to which (i) the liquidity characteristics of asset holdings are more difficult to assess, contingent on market conditions, or asset holdings are difficult to value in stressed market conditions; and (ii) the liquidity characteristics of the portfolio can create a potential incentive for investors to redeem early to the disadvantage of other investors.

Based on domestic frameworks on liquidity determination, the funds can be categorised into the following three main categories.

Category 1: Funds that invest mainly in "liquid" assets

For such funds, daily dealing would remain appropriate. The managers of those funds should continue to enhance their liquidity management practices where appropriate. For these funds, dilution would be expected to be *de minimis*.

Category 2: Funds that invest mainly in "less liquid" assets

Offering daily dealing to fund investors (without notice or settlement periods) may remain appropriate, subject to OEF managers being able to demonstrate to the authorities (in line with the authorities' supervisory approaches) that they implement anti-dilution LMTs as described in Recommendation 5.

For these funds, there would be a greater likelihood of dilution expected than for funds in Category 1. If funds in Category 2 do not meet the expectation on the implementation of anti-dilution LMTs as described in Recommendation 5, OEF managers should consider and use measures to reduce the liquidity offered to fund investors (e.g. by reducing redemption frequency and/or by implementing long notice or settlement periods), as considered appropriate by authorities.

Category 3: Funds that allocate a significant proportion of their assets under management to "illiquid" assets

Such funds should create and redeem shares at lower frequency than daily and/or require long notice or settlement periods.[32] The relevant authorities could also consider requiring that such funds be structured as closed-ended funds.

When considering the appropriateness of the redemption frequency and the length of a notice or settlement period for funds in Categories 2 and 3, managers should take a holistic approach having due regard to both qualitative and quantitative factors, such as: portfolio composition; reliability of asset valuation; alignment between asset liquidity and redemption frequency or length of notice/settlement period; characteristics of the investor base; potential incentives for early redemptions based on portfolio characteristics; and the outcome of liquidity stress tests by the funds.

Funds that do not clearly fall into (only) one of the three main categories

Funds that do not clearly fall into (only) one of the three main categories (i.e. funds that do not meet the criteria for any of the above three categories or meet the criteria for more than one of the above three categories) should take a prudent approach when determining which of the treatments applicable to the above three categories to apply. Managers of such funds should be able to demonstrate to authorities (in line with the authorities' supervisory approaches) that the determinations are appropriate. If a fund is mainly invested in liquid assets, but also has a significant proportion of the assets under management in illiquid assets, the fund should generally be considered as having invested a significant proportion of its assets in "illiquid" assets.

In-line with their domestic liquidity frameworks, authorities should determine when a fund may be considered to invest "mainly" in liquid assets (Category 1); "mainly" in less liquid assets (Category 2); or may be considered to "allocate a significant proportion" of its assets under management to illiquid assets (Category 3).

As indicative guidelines:

- investing more than 50% of assets under management in either liquid assets or less liquid assets is likely to constitute "mainly investing" in that category of assets;

- investing more than 30% of assets under management in illiquid assets is likely to constitute "allocating a significant proportion" to that category of assets.

Authorities will be responsible for establishing the processes and specific criteria for allocating funds to the respective categories in line with the indicative guidelines as well as relevant specificities of the domestic liquidity framework in each jurisdiction. Both authorities and fund managers should seek to avoid threshold/cliff edge effects as a result of moving from one

[32] In an OEF that implements a notice period, redeeming investors receive the value of shares sold based on the fund's NAV at the end of the notice period. By contrast, in an OEF that implements a settlement period, redeeming investors receive the value of shares sold based on the fund's NAV on the redemption date but payment is deferred until the end of the settlement period. Notice (settlement) periods expose redeeming (remaining) investors to the market risk of shares to be redeemed.

category of funds to another whilst providing investors with certainty around the terms of their investment in the fund. A prudent approach should be pursued in categorising funds to reduce the likelihood of re-categorisations. In addition, authorities should set out the approach to instances where funds would be expected to move from one category to another. It is not envisaged that such movements would occur frequently, while re-categorisations should be based on a longer-term assessment and provide sufficient time for managers to adapt. Managers should seek to avoid possible re-categorisations as part of their strategic asset allocation and ongoing portfolio management in terms of liquidity.

In regard to this Recommendation, IOSCO should review its 2018 recommendations and, as appropriate, enhance them to introduce more detailed guidance on the application of this Recommendation.

Recommendation 4: Authorities should ensure that a broad set of liquidity management tools and measures is available for use by managers of open-ended funds in normal and stressed market conditions as part of robust liquidity management practices. Authorities should also reduce operational and other barriers that prevent the use of such tools and measures. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them.

Authorities should ensure that a broad set of LMTs and measures is available to managers of OEFs. Such tools should include anti-dilution and quantity-based LMTs and other liquidity management measures to reduce shock amplification and transmission. Where certain jurisdictions have relatively few tools available, authorities should augment the range of available tools to encourage robust liquidity risk management practices and foster resilience in normal and stressed market conditions.

In considering the set of LMTs available in their jurisdictions, authorities should aim at achieving a balance between anti-dilution and quantity-based LMTs. From that perspective:

- If anti-dilution LMTs are operationalised effectively, they can strengthen resilience by reducing redemptions arising from potential first-mover advantage and, through that channel, associated 'excess' asset sales. If investors understand how these tools operate and expect them to be used, they may be more likely to incorporate the cost of liquidity into their investment decisions. However, anti-dilution LMTs might not reduce redemptions driven by other factors such as 'dash-for-cash' or 'flight-to-safety'.

- Exclusive reliance on quantity-based LMTs designed to target the effects of 'excess' redemptions and 'excess' asset sales could entail unintended consequences. For example, investor expectations that an OEF will use quantity-based LMTs may add to 'excess' redemptions in times of stress, if investors seek to anticipate potential restrictions on redemptions.

IOSCO should review its 2018 recommendations and, as appropriate, enhance them to introduce more detailed guidance on the application of this recommendation. The revised recommendations should determine the expected framework for the use and oversight of LMTs by fund boards, managers' boards or depositories rather than a specific calibration of these tools.

Recommendation 5: Authorities should ensure that anti-dilution liquidity management tools are available to managers of open-ended funds. Authorities should also ensure that managers of open-ended funds consider and use such tools to mitigate potential first-mover advantage arising from structural liquidity mismatch in open-ended funds they manage, to ensure that investors bear the costs of liquidity associated with fund redemptions, and to arrive at a more consistent approach to the use of liquidity management tools. Such tools should impose on redeeming investors the explicit and implicit costs of redemptions, including any significant market impact of asset sales to meet those redemptions. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them as well as to prepare guidance on the design of anti-dilution liquidity management tools.

The policy intent underlying this recommendation is to promote greater use and greater consistency in the use of anti-dilution LMTs to mitigate potential first-mover advantage arising from structural liquidity mismatch in OEFs in ways that would also maintain investor protection. Since the financial stability risk arising from liquidity mismatch differs between OEFs, authorities may seek to distinguish within their liquidity frameworks different OEFs on the basis of their overall liquidity mismatch profile and hence the application of measures to achieve greater use and greater consistency in the use of anti-dilution LMTs.

In this regard, authorities should ensure that anti-dilution LMTs are available to managers of OEFs. They should also ensure that managers of OEFs, particularly those falling into Category 2 (less liquid) as described under Revised FSB Recommendation 3, consider and use such tools and that redeeming investors will bear the costs of liquidity associated with fund redemptions in order to arrive at a more consistent approach to the use of anti-dilution LMTs by managers. For Category 2 funds, there would be a greater likelihood of dilution expected than for Category 1 funds. The expectation is that anti-dilution LMTs would be increasingly used by Category 2 funds as part of their day-to-day liquidity management, unless such LMTs not being used is clearly justified, subject to (i) oversight of authorities in line with their supervisory approaches and (ii) implementation of other effective liquidity risk management measures that meet the broader policy intent of reducing material structural liquidity mismatches underpinning the Revised FSB Recommendations.

In line with the above, anti-dilution tools should (i) be included in OEF constitutional documents,[33] (ii) be considered and used in both normal and stressed market conditions, with a view to achieving greater use and greater consistency in their use; and (iii) account for both the explicit and implicit costs of redemptions, including any significant market impact of asset sales. In addition, authorities' requirements or guidance should expect that managers of such OEFs have appropriate internal systems, procedures and controls in place that enable the use of anti-dilution LMTs as part of the day-to-day liquidity risk management of the OEFs they manage, even if such tools would not always be in use.

Anti-dilution LMTs should impose on redeeming investors the explicit and implicit costs of redemptions by adjusting the NAV received by investors (e.g. swing pricing) or by charging a fee on redemptions (e.g. anti-dilution levies). This would put fund unitholders in a similar economic

[33] These include fund prospectuses, other offering documents and other documents accessible to investors on an ex-ante basis before they make their investment decision.

position to investors that opt to invest directly in portfolio securities. When implementing such tools, managers of OEFs should have measures in place to estimate and allocate the explicit and implicit costs of redemptions, including any significant market impact of asset sales[34], to redeeming investors.

IOSCO has developed guidance on the design and use of anti-dilution LMTs, which identifies the factors for managers to consider in employing such tools so that they would impose on redeeming investors the explicit and implicit costs of redemptions, including any significant market impact of asset sales.[35] Guidance on the use of such tools (i) encourages greater use of, and greater consistency in the use of, anti-dilution LMTs by managers in both normal and stressed market conditions, including to avoid threshold effects, (ii) emphasises the importance of robust valuation practices to support estimation of costs of liquidity and calibration of anti-dilution LMTs, (iii) seeks to ensure that the tools are robust to different operational scenarios in normal and stressed market conditions, and (iv) seeks to ensure that the tools are adequately governed and informed by appropriate data and expertise.

Achieving increased use of anti-dilution LMTs may require reducing operational or other barriers that prevent the use of such tools. The guidance developed by IOSCO seeks to address barriers presented by operational challenges, market structure and practice and, to the extent relevant, any legal or regulatory hurdles. It also explores how to mitigate the disincentives (e.g. costs, reputational and competitive concerns) that may affect inclusion and use of anti-dilution LMTs by OEF managers.

Recommendation 6: Authorities should require and/or provide guidance on stress testing at the level of individual open-ended funds to support liquidity risk management to mitigate financial stability risk. The requirements and/or guidance should address the need for stress testing and how it could be done. ~~**In this regard, IOSCO should review its existing guidance and, as appropriate, enhance it.**~~

Authorities should require and/or provide guidance on ~~open-ended funds~~OEFs stress testing, to the extent necessary to support liquidity risk management with a view to mitigate financial stability risk. Stress testing should support asset managers' assessment of the impact of changes in asset liquidity and redemptions under stressed market conditions, taking into account to the extent possible the expected behaviour of other market participants (e.g. other funds managed by the same manager) under similarly stressed market conditions. Such stress testing should take into account any known inter-fund relationships, such as inter-fund lending arrangements. In this manner, the use of robust stress testing should strengthen funds' overall liquidity risk management as well as the available fund liquidity under periods of market stress, which would serve as an important component to address potential financial stability risks.

Stress test results should be used by the asset manager to assess the liquidity characteristics of the fund's assets relative to the fund's anticipated redemption flows under stressed market

[34] For further details on the estimation of liquidity costs, including significant market impact, see Element (ii) – Calibration of Liquidity Costs of the IOSCO Report on Anti-dilution Liquidity Management Tools - Guidance for Effective Implementation of the Recommendations for Liquidity Risk Management for Collective Investment Schemes.

[35] [(TO INSERT LINK WHEN AVAILABLE) IOSCO (2023), *Final Report on Anti-dilution Liquidity Management Tools - Guidance for Effective Implementation of the Recommendations for Liquidity Risk Management for Collective Investment Schemes*, December.]

conditions and to tailor the fund's asset composition, liquidity risk management, and contingency planning accordingly. The relevant authorities could also monitor the extent to which stress testing results are being considered as a key input to calibrate holdings of liquid assets, the use of the fund's ~~liquidity risk management tools~~LMTs, and contingency plans. Where reported to authorities, stress test results may further provide the relevant authorities with an overview of asset managers' perspective of market conditions under various circumstances, and therefore enhance their ability to detect inconsistencies across funds and asset classes.[36]

~~IOSCO should review its existing guidance on how stress testing should be conducted and enhance it as appropriate by the end of 2017. To this end, IOSCO should consider proportionality from a financial stability perspective, such that stress testing requirements may vary depending on the relative size of individual funds, their investment strategies, and particular asset class holdings. IOSCO should also consider the role of authorities. Items that authorities should consider clarifying include the objective of fund-level stress testing, governance of testing arrangements (e.g. who oversees the stress testing), frequency of stress tests, and related reporting obligations.~~

Adequacy of liquidity risk management tools and measures to deal with ~~*exceptional circumstances*~~stressed market conditions

Recommendation 7: Authorities should promote (through regulatory requirements or guidance) clear decision-making processes for open-ended funds' use of ~~exceptional~~quantity-based liquidity ~~risk~~ management tools~~,~~ and ~~the~~other liquidity management measures, particularly in stressed market conditions. The processes should be made transparent to investors and the relevant authorities. In this regard, IOSCO should review its ~~existing guidance~~2018 recommendations and, as appropriate, enhance ~~it~~them.

Greater clarity ~~by funds~~ on the circumstances under which ~~they~~funds may use ~~exceptional~~quantity-based LMTs or other liquidity ~~risk~~ management ~~tools~~measures (e.g. suspensions of redemptions, gates, in-kind redemptions, side pockets~~), and how these tools may be employed,~~) would help investors ~~appreciate~~understand how and when such tools and measures might be used. It may also help reduce stigma related to these tools and measures and increase awareness that their use, while infrequent, is a possibility. Spillover effects to other funds may also be mitigated if investors are able to understand the specific reasons why certain funds have to use ~~exceptional~~such tools and measures.

While removal of practical obstacles to using such tools and measures under stressed ~~circumstances~~market conditions is recommended, their use~~ of such exceptional liquidity risk management tools~~ should be carefully considered in light of the potential spillover effects that may arise from their use. The relevant authorities have an important role to play in setting expectations on how these decisions could be made with respect to fund governance, for example through involvement by the fund board of directors (where relevant~~),~~) and communication to ~~shareholders~~unitholders and the relevant authorities (see also

[36] Authorities may consider reporting of stress test results to be provided in a standardised format to facilitate data aggregation and analysis.

Recommendation 8). The more prepared asset managers and ~~their~~fund investors are with respect to the use of ~~exceptional tools~~quantity-based LMTs and other liquidity management measures in stressed market conditions, the more effective such tools and measures are likely to be when used.

Additional assessments may be needed to understand the effectiveness of these tools and measures, the extent to which asset managers are prepared to implement and operationalise ~~these tools~~them, and consequences such as spillover effects across funds and reputational or other barriers to using them. In this regard, IOSCO should review its ~~existing guidance~~ 2018 recommendations and ~~enhance it~~, as appropriate ~~by~~, enhance guidance on the ~~end~~use of ~~2017~~quantity-based LMTs.

Recommendation 8: While asset managers have the primary responsibility to ~~exercise exceptional~~consider and use quantity-based liquidity ~~risk~~ management tools ~~regarding the open-ended funds they manage~~and other liquidity management measures, authorities should provide guidance on their use particularly in stressed market conditions. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them. Where jurisdictions consider it appropriate, authorities should also provide direction in ~~extraordinary circumstances~~ stressed market conditions regarding open-ended funds' use of such ~~liquidity risk management~~ tools and measures, taking into account the costs and benefits of such action from a financial stability perspective. ~~In this regard, IOSCO should review its existing guidance and, as appropriate, enhance it.~~

Having the relevant authorities provide general guidance regarding the use of ~~exceptional~~quantity-based LMTs and other liquidity ~~risk~~ management ~~tools~~measures, particularly in stressed market conditions, will help clarify how such tools and measures can be deployed while recognising and minimising potential spillover effects~~, and enabling~~. This can also assist asset managers ~~to overcome~~in overcoming any reputational or competitive reluctance to use such tools and measures, where appropriate. At the same time, this approach acknowledges that the decision to use such tools and measures should generally remain with the asset manager because the manager is responsible for evaluating what is appropriate for a particular fund, in light of its investment strategies, the liquidity of its portfolio, current market conditions, and other relevant circumstances.

In exceptional cases, such as when there is a market dislocation or overall market stress or when an asset manager faces operational difficulties in taking appropriate actions, the asset manager may not be best placed to make such ~~determination.~~determinations. The relevant authorities should, in such cases, consider also providing guidance that is specific to the circumstance concerned to facilitate the application of such tools or measures. Moreover, enhanced regulatory guidance may improve the ability of ~~both authorities and~~ managers to engage in advance planning regarding the use of ~~exceptional tools~~ quantity-based LMTs and other liquidity management measures in stressed market conditions. In this regard, IOSCO should review its 2018 recommendations and, as appropriate, enhance them. In particular, it could consider establishing standards with respect to how and under what conditions such tools and measures might be used.

As an option of last resort, a number of authorities have the ability to require, in specific circumstances, a fund to suspend redemptions.[37] Where jurisdictions consider it appropriate for authorities to have the power to direct the use of exceptionalsuch quantity-based LMTs and other liquidity risk management tools (e.g. suspension of redemptions)measures in extraordinary circumstancesstressed market conditions, consideration should be given to the extraordinary circumstancesconditions which would warrant such action, as well as to the costs and benefits of taking such action from a financial stability perspective. AuthoritiesTo the extent possible, authorities should thus seek to assess the potential costs and benefits of different policy options before stressed market conditions occur to the extent possible.

IOSCO is encouraged to review its existing guidance (e.g. principles for the suspension of redemptions in collective investment schemes[38]), including the scope of direction, and enhance it as appropriate by the end of 2017. In particular, it could consider establishing standards with respect to how and under what conditions exceptional liquidity risk management tools might be used.

Additional market liquidity considerations

Recommendation 9: Where relevant, authorities should give consideration to system-wide stress testing that could potentially capture effects of collective selling by funds and other investors on the resilience of financial markets and the financial system more generally.

Currently, a number of authorities with financial stability mandates, as well as the International Monetary Fund, are conducting, or are seeking to conduct, system-wide stress tests that include the potential impact of the activities of investment funds and other investors. The extent to which the potential impact of different types of investors (e.g. investment funds, pension funds, insurance companies) is included in such stress testing may vary across jurisdictions depending on the relative systemic importance of these participants in each jurisdiction and data availability. Against this background, where authorities believe that the potential impact of the activities of funds and other investors amounts to a level of systemic relevance, it is recommended that they consider whether and how to incorporate such potential impact in system-wide stress testing to better understand collective behaviour dynamics as well as the impact on financial markets and on the financial system more generally. In some cases, the use of system-wide stress testing models would require closing data gaps. Although such system-wide stress testing exercises are still in an exploratory stage, over time they may provide useful insights that could help inform both regulatory actions and funds' liquidity risk management practices. In addition, when seeking to conduct such system-wide stress tests, it is expected that macroprudential authorities and securities regulators would coordinate among themselves as appropriate.

[37] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD517.pdf
[38] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD367.pdf