FSB FINANCIAL STABILITY BOARD

Consultative Document

Proposed Policy Recommendations to Address Structural Vulnerabilities from Asset Management Activities

22 June 2016

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Introduction

The asset management sector has experienced strong growth in assets under management (AUM) over the past decade. Global AUM rose from $50 trillion in 2004 to $76 trillion in 2014, or 40% of global financial system assets.[1] This includes $31 trillion invested in open-ended mutual funds. The trend towards greater market-based intermediation through asset management entities should enhance the efficiency, and contribute to the overall resilience, of the financial system by providing new sources of credit and investment, promoting international flows of capital, reducing reliance on bank funding and increasing competition in the financial system. Moreover, evidence suggests that most open-ended funds have been generally resilient. They have not created financial stability concerns in recent periods of stress and heightened volatility, with the exception of some money market funds (MMFs).[2]

At the same time, it is important to ensure that any financial stability risks associated with the asset management sector are properly understood and addressed. For example, growth in the asset management sector has been accompanied by increased investment in particular asset classes, including some less actively traded markets, through open-ended funds that offer daily redemptions to their unit holders. If market prices were to drop sharply and liquidity were to deteriorate, investors in less liquid asset classes through open-ended funds could experience greater and more sudden losses than expected, which could result in a significant number of fund investors attempting to exit these asset classes at the same time. The action of these fund investors could amplify downward repricing of assets and increase the severity of liquidity strains in the affected asset classes. It could also increase the potential for contagion across asset classes.

In light of the need to understand and address potential financial stability risks from structural vulnerabilities associated with asset management activities, the Financial Stability Board (FSB) launched in March 2015 work to address such vulnerabilities.[3] This work has focused on: assessing recent changes in the structure of asset management activities; identifying and prioritising potential structural sources of vulnerability that could affect the global financial system; evaluating the role that existing policy measures could play in mitigating potential risks; and making policy recommendations as necessary. Separately, in July 2015, the FSB announced that it had decided to wait to finalise the assessment methodologies for non-bank non-insurer global systemically important financial institutions (NBNI G-SIFIs) until its work on structural vulnerabilities from asset management activities was completed. This would allow further analysis of potential financial stability issues associated with asset management entities and activities to inform the revised assessment methodology.[4]

In September 2015, the FSB reviewed the initial findings from the work on asset management structural vulnerabilities and identified the following five areas for further analysis: (i)

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1 $ refers to US dollars unless otherwise specified.

2 Money market funds (MMFs) are excluded from the scope of this document. In light of the policy recommendations developed by the FSB and IOSCO, regulatory reforms with respect to MMFs have been implemented (or are currently in process of being implemented) in many jurisdictions to address financial stability issues that arose during the 2007-09 global financial crisis. For details, see, for example, http://www.fsb.org/wp-content/uploads/shadow_banking_overview_of_progress_2015.pdf and https://www.iosco.org/library/pubdocs/pdf/IOSCOPD502.pdf.

3 http://www.fsb.org/wp-content/uploads/Press-Release-FSB-Plenary-Frankfurt-final-26Mar15.pdf

4 http://www.fsb.org/wp-content/uploads/NBNI-G-SIFI-Next-Steps-Press-Release.pdf

mismatch between liquidity of fund investments and redemption terms and conditions for fund units; (ii) leverage within investment funds; (iii) operational risk and challenges in transferring investment mandates in stressed conditions; (iv) securities lending activities of asset managers and funds; and (v) potential vulnerabilities of pension funds and sovereign wealth funds (SWFs).[5] Based on further analysis, the FSB developed proposed policy recommendations to address financial stability risks associated with the first four areas and decided to publish these recommendations for public consultation.[6] The proposed policy recommendations for liquidity mismatch focus on open-ended funds. Those for leverage are meant to apply to all types of funds that may use leverage. Meanwhile, recommendations for operational risk focus on asset managers that are large, complex, and/or provide critical services, and those for securities lending activities focus on asset managers that provide indemnifications to clients.

As for the fifth area identified in September 2015, although certain types of pension funds and SWFs may potentially pose financial stability risks, these risks vary by the size, nature, and legal settings of the individual entity. Therefore, they may be better assessed when the FSB revisits the scope of NBNI G-SIFI assessment methodologies, which will be conducted jointly with the International Organization of Securities Commissions (IOSCO) after the recommendations in this document are finalised.[7] The focus, in the case of asset management, will be on any residual entity-based sources of systemic risk from distress or disorderly failure that cannot be effectively addressed by market-wide activities-based policies.[8]

After considering the responses on this document, the FSB intends to finalise the recommendations by the end of 2016, some of which will then be operationalised by IOSCO and the relevant FSB working groups. The FSB will regularly review progress in the operationalisation of the recommendations.

This document sets out for public consultation the proposed policy recommendations to address risks to global financial stability associated with the relevant structural vulnerabilities from asset management activities. The document begins with an overview of recent trends in the asset management sector and potential structural vulnerabilities from asset management activities (Section 1). This is followed by detailed discussion on each of the four structural vulnerabilities: liquidity transformation by investment funds (Section 2); leverage within funds (Section 3); operational risk and challenges in transferring investment mandates in stressed conditions (Section 4); and securities lending activities of asset managers and funds (Section 5). Within each Section, the document describes the nature of the vulnerability, reviews the range of existing mitigants to address the vulnerability, identifies residual risks to the global financial system that warrant policy responses, and sets forth the proposed policy recommendations to address those residual risks. The proposed policy recommendations set out in this document are also listed in Annex 1.

The FSB welcomes comments on this document. Comments should be submitted by **21 September 2016** by email to fsb@fsb.org or post (Secretariat of the Financial Stability Board,

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5 http://www.fsb.org/wp-content/uploads/September-Plenary-press-release.pdf

6 http://www.fsb.org/wp-content/uploads/Tokyo-plenary-press-release.pdf

7 See Annex 2 for a discussion of potential vulnerabilities of pension funds and SWFs.

8 http://www.fsb.org/wp-content/uploads/NBNI-G-SIFI-Next-Steps-Press-Release.pdf

c/o Bank for International Settlements, CH-4002, Basel, Switzerland). All comments will be published on the FSB website unless a commenter specifically requests confidential treatment.

General questions (Please provide any evidence supporting your responses, including studies or other documentation as necessary.)

Q1. Does this consultative document adequately identify the structural vulnerabilities associated with asset management activities that may pose risks to financial stability? Are there additional structural vulnerabilities associated with asset management activities that the FSB should address? If there are any, please identify them, as well as any potential recommendations for the FSB's consideration.

Q2. Do the proposed policy recommendations in the document adequately address the structural vulnerabilities identified? Are there alternative or additional approaches to risk mitigation (including existing regulatory or other mitigants) that the FSB should consider to address financial stability risks from structural vulnerabilities associated with asset management activities? If so, please describe them and explain how they address the risks. Are they likely to be adequate in stressed market conditions and, if so, how?

Q3. In your view, are there any practical difficulties or unintended consequences that may be associated with implementing the proposed policy recommendations, either within a jurisdiction or across jurisdictions? If there are any, please identify the recommendation(s) and explain the challenges as well as potential ways to address the challenges and promote implementation within a jurisdiction or across jurisdictions.

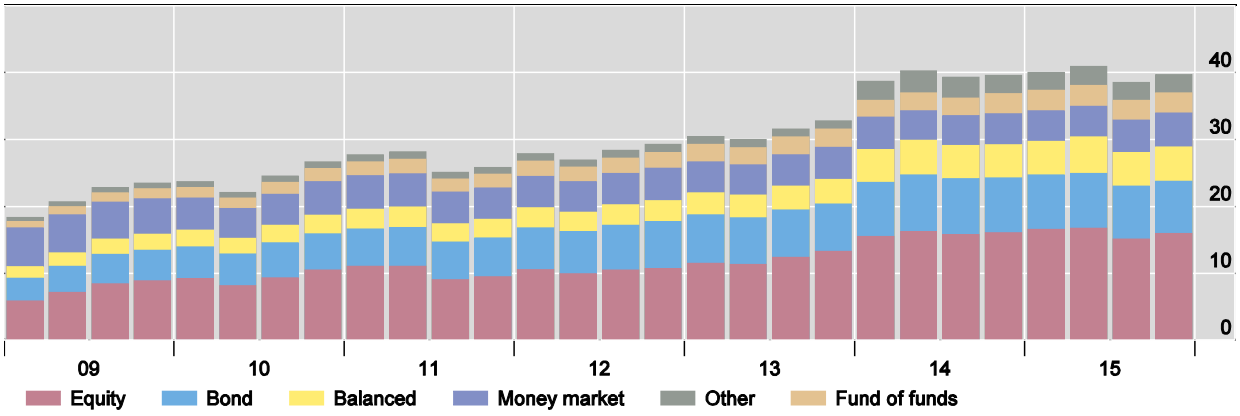
1. Background

1.1 An overview of recent trends in the asset management sector

The asset management sector has experienced strong growth in AUM over the past decade, surpassing levels reached before the 2007-09 global financial crisis (see Chart 1). Global AUM rose from $50 trillion in 2004 to $76 trillion in 2014,[9] or 40% of global financial system assets, of which $37 trillion was invested in regulated open-ended funds[10] and $3.0 trillion in hedge funds.[11] At the end of 2015, roughly the same amount was invested in regulated open-ended funds, while hedge fund assets under management grew to $3.2 trillion.[12] A pronounced dip in global AUM occurred in the wake of the financial crisis and has since been reversed. AUM has grown in all regions, but the bulk of assets continue to be managed from the United States (US) and Europe.

Total net assets of regulated open-ended funds

In trillions of US dollars — Chart 1



Note: Data from 2014 Q1 to 2015 Q4 reflect an expanded dataset.

Source: International Investment Funds Association (IIFA)

Global AUM of the open-ended mutual fund segment, that excludes exchange-traded funds (ETFs) and institutional funds, has increased from $18 trillion in 2009 to $31 trillion in 2015. The growth has been accompanied by an increased concentration of funds managed in the US, and to a lesser extent in Europe. These two markets represent almost one-half and one-third, respectively, of the mutual fund industry. Equity funds have experienced strong growth in

[9] See http://www.imf.org/external/pubs/ft/gfsr/2015/01/pdf/c3.pdf. These data include assets managed through collective investment vehicles (or investment funds) and separately managed accounts (SMAs). An investment fund is a pooled investment vehicle in which investors may choose to invest depending on the fund's characteristics, such as investment objective, subscription and redemption policy, and costs. In the case of an SMA, the appointed manager invests the client's assets in accordance with investment guidelines defined by the investor. SMAs are generally used by sophisticated investors (e.g. SWFs, pension funds, other institutional investors) and are tailored to meet specific investment objectives and constraints.

[10] This includes open-ended mutual funds (including MMFs), ETFs and institutional funds. http://www.iifa.ca/documents/1458354061_IIFA%202015%20Q4%20Public%20Statistics%20Report.pdf

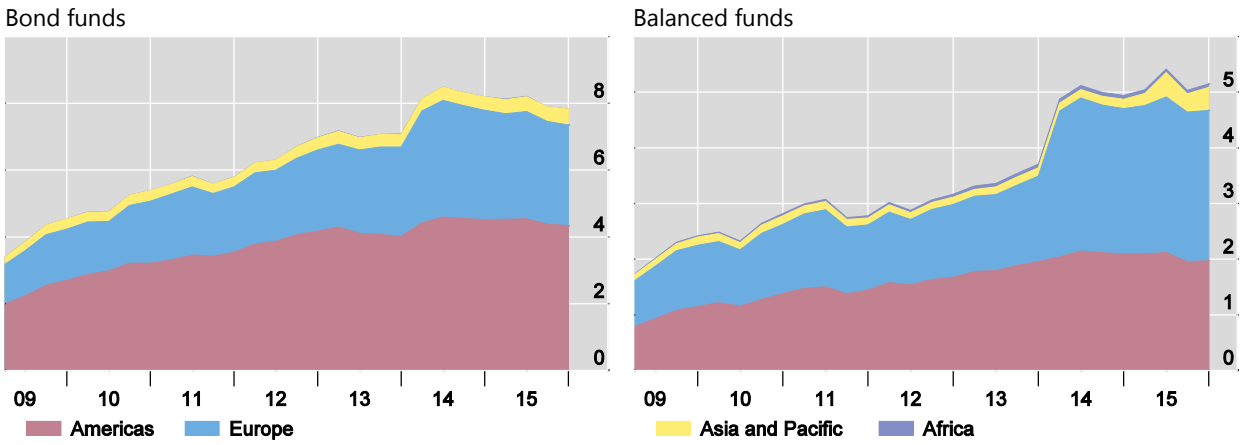
[11] See 2015 Prequin Global Hedge Fund Report.

[12] https://www.preqin.com/docs/samples/2016-Preqin-Global-Hedge-Fund-Report-Sample-Pages.pdf?rnd=1

AUM reflecting valuation gains associated with rising equity prices reinforced by positive net inflows into those funds.[13] The AUM of fixed income funds has also registered strong growth (see Chart 2), and fixed income fund AUM stood at $8 trillion at the end of 2015.[14] Notably, this growth has been driven largely by strong net inflows, particularly in the past two years (three times higher than inflows into equity funds). Valuation gains arising from the decline in interest rates over the period as central banks in major jurisdictions undertook quantitative easing operations have also played a role in supporting the growth in AUM of these funds.

Total net assets by fund type and region[1]

In trillions of US dollars — Chart 2



[1] Data from 2014 Q1 to 2015 Q4 reflect an expanded dataset.

Source: IIFA.

In general, the rate of growth of AUM in fixed income funds does not appear to be expanding faster than the pace at which the bond markets are expanding.[15] There are, however, asset types where the proportion of open-ended investment fund ownership has increased. In the US, the share of corporate bonds owned by mutual funds has grown from less than 8% to 24% over the past decade, while dealer holdings of corporate bonds have declined.[16]

Investment funds may obtain leverage through borrowing, i.e. financial or balance sheet leverage. They also may use derivatives that can give rise to synthetic leverage, which appears to be a more significant source of leverage in investment funds (e.g. private/alternative funds).[17] In the case of hedge funds, the use of leverage through derivatives appears to be

[13] According to IIFA estimates, AUM invested in equity funds stood at $15.9 trillion at the end of 2015.

[14] http://www.iifa.ca/documents/1458354061_IIFA%202015%20Q4%20Public%20Statistics%20Report.pdf

[15] For example, the net inflows of bonds funds, as a proportion of the new bond issuance, are relatively low. For details, see https://www.iosco.org/library/pubdocs/pdf/IOSCOPD527.pdf.

[16] http://libertystreeteconomics.newyorkfed.org/2015/10/redemption-risk-of-bond-mutual-funds-and-dealer-positioning.html

[17] See, for example, https://www.iosco.org/library/pubdocs/pdf/IOSCOPD515.pdf.

concentrated among a small number of large hedge funds.[18] It appears that most open-ended funds do not use derivatives extensively, although some do.[19]

The evolution of the asset management sector reflects some of the broader trends that have affected financial markets as a whole, notably the impact of extraordinary monetary policy operations. As investors have reached for yield in an environment of exceptionally low interest rates, they have sought out asset managers and funds that offer exposures to higher yielding, less actively-traded asset classes.[20] Similarly, exceptionally low interest rates have also been accompanied by more investor focus on costs and have thus spurred more demand for low-cost funds like ETFs.

As the asset management sector has grown, some individual firms have emerged and become large players within the industry. This sector has been concentrated in a small number of firms that are much larger than others for some time. The identities of the largest firms have changed over time, however, with changes in the prevalence of different investment strategies. More than 80% of the money invested in funds is managed by asset managers located in either the US or Europe, and a handful of individual players each manage more than $1 trillion in AUM (see Chart 3). The increase of these firms' AUM is partly due to the significant growth of funds and ETFs with passive investment strategies that seek to track rather than exceed the performance of benchmarks associated with particular markets or sectors.[21] The large amount of assets managed by the largest firms has raised questions, for example, about the potential impact on the financial system if operational difficulties arose in transferring investment mandates or client accounts from one manager to another in times of stress. Some large asset managers are also active in providing non-traditional or auxiliary services to their funds and/or to wider market participants. For example, a very limited number of large asset managers act as agent lenders in securities lending markets and may provide indemnifications to their clients' securities lending programmes. Similarly, some asset managers provide auxiliary services such as pricing, risk management and back-office functions.

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[18] For example, UK Financial Conduct Authority (FCA)'s Hedge Fund Survey 2015 states that "the top 10 funds account for 63% of gross leverage (aggregate GNE as percentage of aggregate NAV) in the current sample, showing gross leverage is highly concentrated. The mean is skewed by a few large funds (mainly macro funds) that make significant use of leverage, whilst the median shows that the majority of hedge funds tend to use relatively low levels of leverage". For details, see http://www.fca.org.uk/static/documents/hedge-fund-survey.pdf.

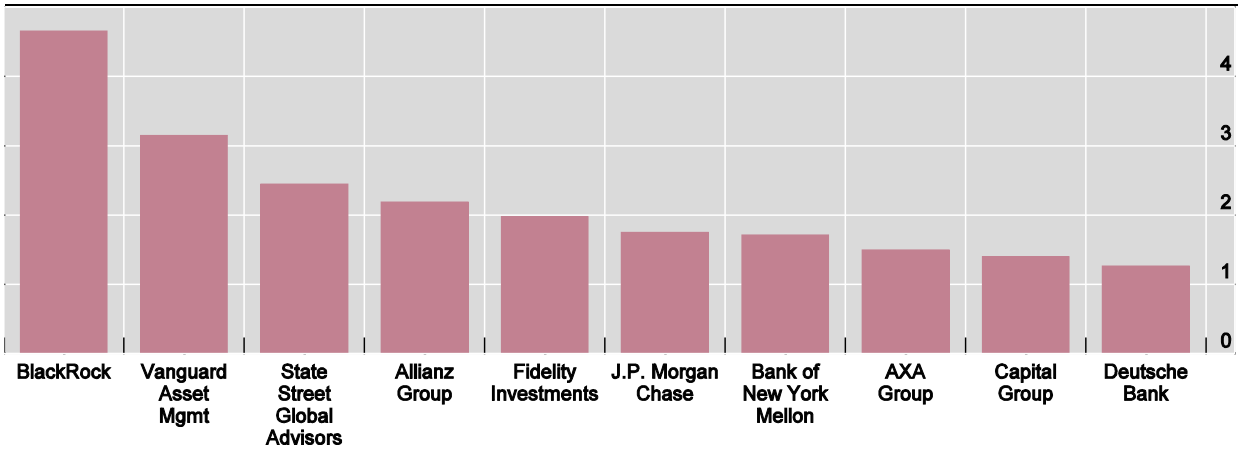
[19] See, for example, http://www.sec.gov/dera/staff-papers/white-papers/derivatives12-2015.pdf.

[20] One area which has attracted attention in the wake of the tightening of prudential rules for banks (i.e. Basel III) has been the emergence of some investment funds that supply loans to corporate borrowers. Although the market seems to be still small, different models have emerged. Some investment funds merely purchase existing loans originated by banks, while others have begun originating these loans in competition with banks.

[21] https://www.bcgperspectives.com/Images/BCG-Sparking-Growth-with-Go-to-Market-Excellence-July-2015_tcm80-192166.pdf

Largest assets managers by AUM

In trillions of US dollars Chart 3



Source: Towers Watson[22]

It is also important to note that most financial market participants prefer to manage their investments on their own without the help of third-party asset managers. Many sophisticated investors have their own asset management capacities in house. In fact, according to one source, third-party asset managers as a group only manage about one-third of the total financial assets of pension funds, SWFs, insurance companies and high net worth individuals.[23] The remaining assets are managed by the investor or asset owner without the help of independent asset managers.[24]

1.2 Identifying potential structural vulnerabilities

In considering potential structural vulnerabilities associated with asset management activities, this document focuses on those vulnerabilities inherent in the design of different types of funds and/or services offered by asset managers that potentially could pose a risk to financial stability. In other words, the focus of this document is on ensuring that the structure of asset managers and their funds (or separately managed accounts (SMAs)) does not contribute to undue risk in the global financial system.

It is also important to acknowledge that asset managers and their funds pose very different structural issues from banks and insurance companies. In contrast to banks and insurance companies, which act as *principals* in the intermediation of funds, asset managers usually act as *agents* on behalf of their clients and are subject to fiduciary duties to act in the best interests of investors. Asset managers are appointed by investors to manage their money in accordance with pre-defined investment strategies. They are intermediaries between the investors (ranging

[22] https://www.towerswatson.com/en/Insights/IC-Types/Survey-Research-Results/2015/11/The-worlds-500-largest-asset-managers-year-end-2014

[23] https://www.pwc.com/gx/en/asset-management/publications/pdfs/pwc-asset-management-2020-a-brave-new-world-final.pdf

[24] McKinsey indicates that the percentage of assets managed by third party asset managers relative to total financial assets (including those managed internally by institutional investors) has fallen from 25% in 2007 to 22% in 2011. http://www.mckinsey.com/~/media/mckinsey%20offices/france/pdfs/the_hunt_for_elusive_growth_am_in_2012.ashx

from sophisticated institutional investors, SWFs, pension funds, and insurance companies to charities, endowments and individual retail investors) and the markets. It is the clients, and not the managers, who own the assets and reap the investment returns while bearing the investment risks.[25]

This different structure of the asset management sector offers some important stabilising features to the global financial system. Asset managers usually do not use their balance sheets in transactions between their clients and the broader marketplace, since an asset manager itself generally does not enter into financial market transactions as a principal. Given that an asset manager's balance sheet is generally very small relative to the size of assets managed, distress at the level of the asset manager should generally pose less of a risk to the financial system than distress across its funds.[26]

There are, however, some notable examples of asset management structural issues that have posed important challenges to the global financial system. For example, the 1998 collapse of Long-Term Capital Management, a leveraged hedge fund, disrupted the functioning of many important debt markets. Furthermore, structural weaknesses in the design of certain MMFs were an important contributor to the global financial crisis in 2008. Although there is little historical evidence of systemic risks arising from investment funds, concerns about such risks have been growing given the increasing investment in less liquid assets held by investment funds.

The FSB has identified the following four important structural vulnerabilities associated with asset management activities that pose potential financial stability risks and which the FSB considers should be addressed through policy responses:

(i) liquidity mismatch between fund investments and redemption terms and conditions for open-ended fund units;

(ii) leverage within investment funds;

(iii) operational risk and challenges in transferring investment mandates in stressed conditions; and

(iv) securities lending activities of asset managers and funds.

Among these, issues associated with (i) liquidity mismatch and (ii) leverage are considered key vulnerabilities on which to focus. Each of these vulnerabilities is described below, together with an analysis of existing mitigants, residual risks related to global financial stability, and proposed policy recommendations to address those residual risks.

The proposed policy recommendations for *liquidity mismatch* focus on open-ended funds (public and private, including ETFs but excluding MMFs). Those for *leverage* are meant to apply to all types of funds (public and private, closed- and open-ended, including ETFs) that may use leverage (through borrowings or that may arise through the use of derivatives).

[25] An exception to this is the case where asset managers serve as securities lending agents and provide indemnities to their clients, notably their funds for securities lending operations. This issue is discussed in greater detail in Section 5 where potential vulnerabilities in the asset management sector are described. Other examples include situations where an asset manager uses its own funds to provide seed money to launch a new fund.

[26] This excludes cases where the distress of an asset manager parent company would have significant impact on services provided by the manager (including services provided by its subsidiaries).

Meanwhile, recommendations for *operational risk* focus on asset managers that are large, complex, and/or provide critical services, and those for *securities lending activities* focus on asset managers' agent lender activities, in particular their provision of indemnities to clients.[27]

[27] Both of these two recommendations apply to asset managers independently of whether they manage investment funds or SMAs.

2. Liquidity mismatch between fund investment assets and redemption terms and conditions for fund units

2.1 Liquidity mismatch of open-ended funds as a potential structural vulnerability

A key structural vulnerability from asset management activities is the potential mismatch in open-ended funds between liquidity of fund investments and daily redemption of fund units. Some fund investors may overestimate the liquidity of the assets held by the funds in which they invest, and may not expect the high cost or difficulty associated with funds exiting their positions or rebalancing their portfolios in a stressed environment. As a result of unanticipated large losses in such a situation, investors may make significant redemptions from underperforming funds to minimise further negative returns. Funds' sale of portfolio assets required to meet these redemptions could result in greater market volatility with the potential to result in negative spillovers. During prolonged periods in which highly accommodative monetary policies affect asset valuations, investors may reach for yield and under-price credit and liquidity risks. This could interact with a decline in secondary market liquidity, so that a shift in market expectations could produce repricing of assets, liquidity strains in certain markets, and the potential for contagion across asset classes.

Although historical evidence suggests that non-money-market open-ended funds have not created global financial stability concerns in recent periods of stress and heightened volatility, developments in the sector and the increasing holdings of fixed income assets by investment funds suggest that risks may have increased in recent years. Some open-ended funds have increased their exposures to a broader range of asset classes in response to investor demand, including some found in less actively traded markets. They have also increased investment in asset classes that, while liquid under current market conditions, may become less liquid as risk perceptions and underlying credit conditions change. These developments may amplify fragilities that, if left unaddressed, may in turn amplify market stress as funds sell across asset classes to meet unanticipated large redemptions. To this end, there is some evidence that phenomena such as investor herding and momentum trading can contribute to the amplification effects.[28]

There may also be cases in which open-ended funds could create incentives for investors to redeem ahead of others (i.e. create a "first-mover advantage").[29] This could occur in situations where the redeeming investors do not bear the full cost of redemptions, and instead these costs are borne by remaining unit holders. However, there are several countering factors that may mitigate any first-mover advantage. Such factors include: investment strategy constraints on what assets a fund may sell; many investors' long-term investment horizon and relatively firm investment allocations; application of liquidity management tools to address or mitigate first-mover effects; fund operator fiduciary duty considerations; and other stronger catalysts for redemptions in stressed markets that may overwhelm any first-mover advantage considerations (e.g. rapidly falling asset prices).

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[28] See https://www.imf.org/external/pubs/ft/wp/2011/wp1192.pdf; https://www.imf.org/external/pubs/ft/wp/2004/wp04131.pdf; or http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/2012/05/16/000158349_20120516171524/Rendered/PDF/WPS6072.pdf

[29] See https://www.imf.org/External/Pubs/FT/GFSR/2015/01/pdf/c3.pdf and http://finance.wharton.upenn.edu/~itayg/Files/bondfunds.pdf.

There are a number of contingencies that would need to occur for the liquidity transformation in open-ended funds to have an amplifying effect on risks to financial stability. There would need to be significant redemptions from funds (and greater redemptions than would be the case if investors had invested directly in the markets) accompanied with significant asset sales by those funds (particularly sales of less liquid assets). Finally, those asset sales would need to be significant enough, either relative to total assets or normal trading volume in particular market segments, to lead to material price declines or increases in price volatility in the secondary markets that would be serious enough to impair market access by borrowers. Furthermore, when myriad market participants sell assets, the amplification can become more acute when it also prompts leveraged investors (e.g. hedge funds, banks, broker-dealers) to unwind risk positions in markets. If this occurred, it could affect other financial institutions and the ability of corporations and sovereigns to raise money in the capital markets and subsequently could spill over to the real economy.[30]

The changes in the market structure have also affected the environment in which open-ended funds operate. Those funds now play a relatively larger role in financial intermediation in some particular markets, such as US corporate bonds. There is some evidence that dealers have more constrained balance sheet capacity and have less risk tolerance for warehousing riskier fixed income assets, which may be contributing to the shift in intermediation.[31] In this changing market environment, the vulnerabilities associated with liquidity transformation in open-ended funds could have a greater impact on financial stability.

2.2 Overview of existing mitigants to address vulnerabilities

Liquidity risk management is a key area of concern for both asset managers and authorities. A wide range of policy measures and tools currently exists to reduce the liquidity risk associated with open-ended funds. These vary considerably, however, across jurisdictions. Some are established by legislation or regulation, while others are permitted by the funds' offering documents. Use of the latter is usually subject to approval by a fund's board of directors. Many of these policy measures and tools are focused on investor protection and maintaining general market integrity (e.g. fairness and transparency). However, their use may also help to mitigate financial stability risks in certain circumstances.

In particular, regulators generally impose an overarching obligation on asset managers of open-ended funds to ensure that their funds can meet redemption requests in accordance with their defined redemption policy. This is further reinforced by the fiduciary duty imposed on asset managers more generally to act in the best interest of unit holders, which in practice translates into an obligation to treat all of their unit holders fairly. Additionally, and depending on the jurisdiction, regulatory frameworks generally restrict the type of assets in which an open-ended fund may invest, impose limits on investments in illiquid assets, and require adequate risk management processes and procedures including with regard to liquidity management. Requirements to have adequate liquidity management processes include: know your investor

[30] While in most cases price disruptions in the secondary market are short-lived, under some circumstances abnormal flows can cause a long lasting price impact (http://www.people.hbs.edu/estafford/papers/afs.pdf; http://papers.ssrn.com/sol3/papers.cfm?abstract_id=2235923 and http://www.sciencedirect.com/science/article/pii/S0304405X11000857). Shocks to corporate credit spreads, namely to the excess bond premium, lead to declines in consumption, investment and output (https://www.aeaweb.org/articles?id=10.1257/aer.102.4.1692).

[31] https://www.federalreserve.gov/econresdata/notes/feds-notes/2013/dealer-balance-sheet-capacity-and-market-liquidity-during-the-2013-selloff-in-fixed-income-markets-20131016.html

type rules; regular stress tests; requirements to hold a minimum amount of cash or quasi-cash in the portfolio at all times; and the availability of liquidity risk management tools (e.g. swing pricing or anti-dilution levies, side pockets, gates, redemption in kind, suspension of redemptions).

During the information-sharing exercises under the FSB Policy Framework for Shadow Banking Entities in 2014 and 2015, the FSB took stock of the availability of policy tools to address funds' susceptibility to runs.[32] Likewise, IOSCO has summarised the wide range of liquidity management tools available to funds and regulators based on a survey of 26 jurisdictions and developed case studies of the use of various tools during normal and stressed market conditions.[33] From these sources, the FSB reviewed a range of policy tools that are generally used by investment funds under normal conditions, as well as those used in an ad hoc manner to address unforeseen liquidity challenges. Some general observations regarding existing mitigants are as follows:

- *Pre-emptive measures* are those that are part of day-to-day liquidity risk management and include internal risk management (including specifying appropriate liquidity constraints and monitoring fund liquidity), stress testing, and portfolio composition and diversification rules. A key requirement in many jurisdictions is that open-ended funds invest most of the funds received in assets deemed to be liquid under normal market conditions. In many jurisdictions, this is done by limiting investment in illiquid assets to between 10 and 15% of total assets. Other than the constraints that may be specified by regulations, a fund manager typically has the flexibility and latitude to adopt appropriate measures in dealing with liquidity in normal and stressed market conditions. Some pre-emptive measures such as swing pricing may reduce the incentive to redeem when funds are incurring large liquidity costs because of redemptions. Others such as stress testing, diversification rules, and setting appropriate redemption frequencies help to improve the ability of a fund to cope with liquidity issues when they arise. Pre-emptive liquidity measures may address a number of issues that asset managers may encounter and take account of the likely investor profile and behaviour, explicitly considering prospective redemption rates as well as the liquidity profile of fund assets.
- *Post-event measures* are those liquidity management tools that are available to funds once market disruptions or other events result in significant outflows or the prospect thereof. For example, the manager can initially limit redemptions from investors with redemption gates or withdrawal limits, and may even suspend redemptions altogether, if permitted by the applicable jurisdiction. Other post-event measures include in kind redemptions and side pockets. Where a credit facility is available, a fund may also borrow to accommodate redemptions. The use of these tools may address financial stability risks in situations of general market stress, especially if they allow funds to await better functioning markets in order to conduct an orderly disposal of assets and reduce the risk of asset fire sales in the best interest of investors in the funds. However,

[32] http://www.fsb.org/wp-content/uploads/shadow_banking_overview_of_progress_2015.pdf and http://www.fsb.org/2016/05/fsb-publishes-thematic-review-on-the-implementation-of-its-policy-framework-for-shadow-banking-entities/.

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

the tools could potentially have spillover effects, particularly if they contribute to liquidity strains for investors or give rise to speculation of further measures and contribute to runs from other funds. In addition, the use of credit facilities to meet redemptions introduces leverage to a fund that is already under stress and may exacerbate strains if redemptions do not abate.

2.3 Residual risks that warrant policy responses

Existing mitigants are often designed primarily to protect investors, and therefore may not sufficiently take into account system-wide aspects of financial stability. Pre-emptive supervisory intervention powers may also be limited in some jurisdictions and thus supervisors may not always be well positioned to take into account the build-up of sector-wide risks. Thus, there is a legitimate question around the effectiveness of existing mitigants to address stressed market conditions.

The FSB's analysis of the materiality of vulnerabilities in light of existing policy tools identified a number of potential residual risks. These residual risks can be viewed at three different levels: whether existing regulatory information and public disclosures are sufficient to assess the degree of liquidity transformation and its systemic implications; whether the liquidity risk management practices are appropriately calibrated to address potential risks; and whether the tools in place would be sufficient to deal with stressed market conditions.

(i) **Where fund regulatory reporting does not provide information to authorities sufficient to assess risks to financial stability, and public disclosures lack transparency regarding funds' assets and underlying liquidity, the relevant authorities and investors may find it difficult to assess the extent of liquidity mismatch and/or liquidity risk of funds.** For example, detailed information that could help assess liquidity risk in funds (e.g. detailed asset holdings, liquidity buffers, use of credit lines) is not published on a regular basis by asset managers, and in some cases is neither published at all nor provided to authorities. This makes it difficult for investors and authorities to assess the extent of liquidity risks in funds. Whether or not liquidity transformation in open-ended funds was problematic in the past, the situation may need to be reassessed given changes taking place in markets.

(ii) **Gaps may exist in both ex ante (pre-emptive) and ex post (post-event) fund liquidity risk management** to mitigate the effects of market shocks on fragilities arising from structural features of funds. Many jurisdictions have available a range of tools to address liquidity risks associated with activities of open-ended funds. However, their availability and effectiveness vary considerably across jurisdictions.

As described earlier, most jurisdictions have in place specific requirements for open-ended funds, such as limits on illiquid assets and other portfolio composition and diversification rules that address day-to-day liquidity risk management.[34] In addition, most jurisdictions have high-level principles for liquidity risk management and place the responsibility on the asset manager and/or board of directors of a fund to ensure that the fund is able to meet redemption requests. Like other market participants such as banks

[34] In some jurisdictions, such requirements often do not take into account the size of a fund's position or potentially lengthy settlement times, which could delay a fund's ability to convert securities into cash, and funds may invest in less-liquid securities that would not be subject to existing limits.

and insurance companies, asset managers may not be well placed to adequately incorporate in their liquidity planning the likely actions of other market participants during market stress. As a result, an individual asset manager's stress tests and liquidity risk management programme may not effectively take the actions of other market participants into account during actual stress events. Furthermore, stress testing practices seem to vary widely. Some large fund complexes appear to engage in highly sophisticated liquidity and redemption stress testing on a frequent basis, while it is possible that a portion of the industry does not have the scale to allocate sufficient resources to engage in stress testing.

A first-mover advantage may exist for some open-ended funds, which may exacerbate the level of redemptions that funds experience in stressed market conditions. The regulatory regimes of some jurisdictions include mechanisms that can help address first-mover advantage to the extent it may exist. These mechanisms work by mitigating advantages associated with early redemptions from funds in situations where market events cause a deterioration in market liquidity. In practice, however, it is difficult to disentangle investors' various motivations for redeeming from funds.

(iii) **Discretionary liquidity management tools to deal with exceptional circumstances (e.g. in stressed market conditions) may not function effectively in a manner that addresses financial stability risks, and may result in unanticipated outcomes**.

While the availability of post-event measures such as suspensions and in-kind redemptions appears widespread, experience with their use varies. Their effectiveness may be conditional on the nature of the stress events and unanticipated outcomes may also result from their use at individual fund and fund type levels. The use of redemption gates and suspensions may have spillover effects on investors and on other funds. Furthermore, asset managers may face reputational issues and other impediments to using such tools. In practice, it may be difficult for asset managers to implement in-kind redemptions, particularly for retail investors. However, some asset managers have indicated they would be willing to use such tools if certain criteria are met.

2.4 Proposed policy recommendations to address residual risks

The following proposed policy recommendations are intended to address the above residual risks associated with open-ended fund liquidity mismatch. Liquidity transformation may also be present in ETFs involving less liquid underlying assets. The proposed recommendations may require tailoring to address the circumstances of ETFs (see Annex 3).

2.4.1 Lack 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. 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; 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.[35] 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. Regulators may wish to have additional information, including information that can be compared across jurisdictions for financial stability purposes. 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 profiles, 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 guidance and, as appropriate, enhance it.

Any additional disclosure requirements should be proportionate to the benefits they bring to investors about liquidity transformation in open-ended funds individually and in the aggregate. 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 sufficiency 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 those that have been highlighted with respect to reporting to authorities (see Recommendation 1), with additional consideration to competitive issues that may render the content and frequency of regulatory reporting less appropriate for disclosure to investors in some cases. In addition, authorities may want to consider whether disclosure to investors should differ (in format or content) from reporting to authorities in order to more effectively facilitate investor understanding of liquidity risk. Asset managers should disclose the relevant information to investors with sufficient frequency and on a consistent basis as appropriate for

[35] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD533.pdf

financial stability purposes.[36] IOSCO should review its existing guidance and, as appropriate, enhance it by the end of 2017.

2.4.2 Gaps in liquidity management both at the design phase and on an ongoing basis

Recommendation 3: In order to reduce the likelihood of material liquidity mismatches arising from an open-ended fund's structure, authorities should have requirements or guidance stating that funds' assets and investment strategies should be consistent with the terms and conditions governing fund unit redemptions both at fund inception and on an ongoing basis (for new and existing funds), taking into account the expected liquidity of the assets and investor behaviour during normal and stressed market conditions. In this regard, IOSCO should review its existing guidance and, as appropriate, enhance it.

Authorities should have requirements or guidance stating that funds' investment strategy and portfolio composition be consistent with 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.

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-end fund.

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 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 programmes 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 as a whole to determine the overall liquidity profile of a fund. A

[36] Asset managers' concerns over competition challenges 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.

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)[37] 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.[38] 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.

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. Consideration should be given to how to better inform investors of the legal notice periods and the right of funds to invoke them. Settlement periods (i.e. the time periods after redemption transactions 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.

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 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.

The results of the recent IOSCO survey on funds' liquidity management tools,[39] as well as the stocktaking of policy tools through the FSB shadow banking information-sharing exercises in

[37] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD405.pdf

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

[39] See footnote 33.

2014 and 2015,[40] 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. In addition, authorities should consider, as appropriate, any operational difficulties to implementing various 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.

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 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

[40] See footnote 32.

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, 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.[41] Furthermore, there might be scope for offering guidance to encourage funds to reflect in their stress testing scenarios the likely actions of other market participants during stressed market conditions.

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.

2.4.3 Adequacy of liquidity risk management tools to deal with exceptional circumstances

Recommendation 7: Authorities should promote (through regulatory requirements or guidance) clear decision-making processes for open-ended funds' use of extraordinary liquidity risk management tools, and the processes should be made transparent to investors and the relevant authorities. In this regard, IOSCO should review its existing guidance and, as appropriate, enhance it.

Greater clarity by funds on the circumstances under which they may use extraordinary liquidity risk management tools (e.g. suspensions of redemptions, gates, in-kind redemptions, side pockets), and how these tools may be employed, would help investors appreciate how and when such tools might be used. It may also help reduce stigma related to these tools 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 extraordinary measures.

While removal of practical obstacles to using such tools under extraordinary circumstances is recommended, use of such extraordinary 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 and the regulator (see also Recommendation 8). The more prepared asset managers and their investors are with respect to the use of extraordinary tools, the more effective such tools are likely to be when needed.

Additional assessments may be needed to understand the effectiveness of these tools, the extent to which asset managers are prepared to implement and operationalise these tools, and consequences such as spillover effects across funds and reputational or other barriers to using

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

them. In this regard, IOSCO should review its existing guidance and enhance it as appropriate by the end of 2017.

Recommendation 8: Authorities should provide guidance and, where appropriate and necessary, provide direction regarding open-ended funds' use of extraordinary liquidity risk management tools. In this regard, IOSCO should review its existing guidance and, as appropriate, enhance it.

Having the relevant authorities provide guidance regarding the use of extraordinary liquidity risk management tools in stress events will help clarify how such tools can be deployed while minimising potential spillover effects and how asset managers can overcome any reputational or competitive reluctance to use such tools where clearly appropriate. At the same time, this approach acknowledges that the decision to use such tools should generally remain with the asset manager because the manager is best placed to evaluate what is appropriate for a particular fund, in light of its investment strategies, liquidity of its portfolio, current market conditions, and other relevant circumstances. In addition, the relevant authorities could be granted the right to direct the application of such tools in exceptional cases where the manager is not best placed to make this evaluation. Moreover, enhanced regulatory guidance may improve the ability of both authorities and managers to engage in advance planning regarding the use of extraordinary tools in stressed market conditions.

IOSCO is encouraged to review its existing guidance (e.g. principles for the suspension of redemptions in collective investment schemes[42]) 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 such extraordinary tools might be used.

2.4.4 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 institutional investors on the resilience of financial markets and the financial system more generally.

Currently, a number of macroprudential authorities, as well as the International Monetary Fund, are conducting, or are seeking to conduct, system-wide stress tests that include asset managers and other institutional investors. The extent to which institutional investors (e.g. asset managers, pension funds, insurance companies) are included in such stress testing may vary across jurisdictions depending on the relative systemic importance of these participants in each jurisdiction. Such system-wide stress testing exercises over time may provide useful insights that could help inform both regulatory actions as well as funds' liquidity risk management practices. Authorities may wish to consider whether and how to incorporate funds and other institutional investors in system-wide stress testing to better understand collective behaviour dynamics and the impact on financial markets.

[42] https://www.iosco.org/library/pubdocs/pdf/IOSCOPD367.pdf

Q4. In your view, is the scope of the proposed recommendations on open-ended fund liquidity mismatch appropriate? Should any additional types of funds be covered? Should the proposed recommendations be tailored in any way for ETFs?

Q5. What liquidity risk management tools should be made available to funds? What tools most effectively promote consistency between investors' redemption behaviours and the liquidity profiles of funds? For example, could redemption fees be used for this purpose separate and apart from any impact they may have on first-mover advantage?

Q6. What characteristics or metrics are most appropriate to determine if an asset is illiquid and should be subject to guidance related to open-ended funds' investment in illiquid assets? Please also explain the rationales.

Q7. Should all open-ended funds be expected to adhere to the recommendations and employ the same liquidity risk management tools, or should funds be allowed some discretion as to which ones they use? Please specify which measures and tools should be mandatory and which should be discretionary. Please explain the rationales.

Q8. Should authorities be able to direct the use of exceptional liquidity risk management tools in some circumstances? If so, please describe the types of circumstances when this would be appropriate and for which tools.

3. Leverage within funds

3.1 Leverage within funds as a potential structural vulnerability

Investment funds' use of leverage is another potentially important structural vulnerability in the asset management sector. While the majority of investment funds are subject to regulatory limitations on traditional balance sheet leverage, this type of leverage is nevertheless used by some investment funds, such as hedge funds, to boost expected investment returns. In addition, many investment funds of all types make use of financial derivatives transactions, which can result in the creation of synthetic leverage.[43] The reasons for the use of derivatives are numerous and include hedging risks and establishing cost-effective investment positions with the same economic characteristics as holding the underlying asset. In some circumstances, derivatives are used to leverage specific exposures within a portfolio.

The use of leverage by funds can create and/or amplify risks to the global financial system through direct and indirect channels. First, it can increase the risk of a fund encountering financial distress, which could be transmitted to the fund's counterparties and then to the broader financial system (i.e. counterparty channel). Those counterparties could include banks or brokers that have direct trading linkages with, or have extended financing to, a leveraged fund, such as a hedge fund.[44] A leveraged fund can also spread risks to the global financial system through interconnections with its investors and its funding of other financial intermediaries and businesses (i.e. interconnectedness channel).[45] Leveraged funds are also more sensitive to changes in asset prices. Adverse movements in asset prices, margin calls and higher haircuts may force them to sell assets in order to obtain liquidity and deleverage, affecting other market participants through declining asset prices and increased margin calls (i.e. asset sales channel). Also, leverage may closely interact with liquidity risk as investors may be more inclined to redeem from leveraged funds that experience stress because these funds may be perceived to be riskier than unleveraged funds.

Leverage within funds may also contribute to procyclicality when funds reduce exposures during business cycle downturns or engage in automatic asset sales triggered by increases in market volatility. For example, quantitatively-oriented alternative asset managers often automatically adjust their leverage in inverse proportion to the realised volatility of the underlying strategy. Measures that are taken to address risk transmission through the counterparty channel, such as margin requirements, may exacerbate procyclicality through the asset sales channel by, for example, necessitating asset sales to meet margin calls.

3.2 Overview of existing mitigants to address vulnerabilities

Both investment funds and their bank counterparties use a variety of internal risk management techniques to control the risks associated with funds' borrowing and derivatives transactions,

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43 See, for example, https://www.sec.gov/dera/staff-papers/white-papers/derivatives12-2015.pdf.

44 As was shown by the failure of LTCM in 1998, the counterparty channel can be very important for highly leveraged hedge funds given that major global banks typically supply the financing for these funds and serve as the main counterparties for their derivatives transactions.

45 In relation to interconnectedness, the collapse of two highly-leveraged Bear Stearns funds in 2007 showed that leveraged funds may induce other financial intermediaries (notably banks) to support them during stressed condition due to reputational risk, although such financial intermediaries may not have any ownership control over the funds. This may also transmit risks through the supporting financial intermediaries (for example, in the 2007 Bear Stearns funds case, Bear Stearns' support contributed to its cash shortages and reputational damage).

which helps to forestall a significant transmission of fund distress through the counterparty channel. For example, the legal agreements among the counterparties governing derivatives transactions generally require that counterparty exposures be marked to market on a daily basis and that these exposures be controlled through netting agreements and collateralisation requirements.

A number of regulatory measures are also in place to address risks associated with leverage. For example, the regulation of open-ended funds often provides for balance sheet leverage limits, although their levels and scope vary across types of funds as well as jurisdictions. For hedge funds, there is generally no cap on leverage;[46] and instead, there is a requirement to report and/or disclose leverage levels to enable monitoring by regulators and/or foster market discipline. Moreover, in the wake of the financial crisis and in line with the G20 commitments to supervise hedge funds or their managers, many jurisdictions have required hedge fund managers to be registered with the relevant authorities and have introduced standardised reporting on key exposures. These regulatory disclosure and reporting requirements capture leverage created through borrowings as well as synthetic leverage arising from derivatives positions. However, their details vary by jurisdictions.

In addition, there are other measures (or planned measures) that may help limit the build-up of risks relating to leverage within funds as well as the potential for risks to be transmitted to other market participants, such as new requirements for central clearing and margin requirements for non-centrally cleared derivatives. Similarly, the FSB's regulatory framework for haircuts on non-centrally cleared securities financing transactions will help limit the build-up of excessive leverage by investment funds through such transactions after its implementation by the end of 2018.[47] Finally, there have been significant changes in banking regulation since the failure of LTCM in 1998 that, among other things, help ensure that bank derivatives exposures to, and equity investments in, investment funds are well capitalised.[48] The Basel III framework will also reduce risks from interconnectedness between banks and funds.[49]

3.3 Residual risks that warrant policy responses

The use of leverage by funds can create and/or amplify risks to the global financial system through direct and indirect contagion channels. Most jurisdictions have regulatory and supervisory measures that set limits on leverage for certain types of funds, or disclosure and reporting requirements to monitor the risks for investors generated by leverage in individual funds. However, these regulatory limits and requirements may not always serve to mitigate risks from a financial stability perspective. In most jurisdictions, supervisory intervention

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[46] In the European Union (EU), the alternative investment fund managers directive (AIFMD) grants to each national competent authority and the European Securities and Markets Authority, taking account of any advice from the European Systemic Risk Board, the right to intervene to cap leverage should it be deemed to represent a threat to financial stability in the EU. This tool however has not been used to date.

[47] http://www.fsb.org/wp-content/uploads/SFT_haircuts_framework.pdf

[48] Other regulatory measures also may help reduce risks associated with banks' exposures to or investments in funds. For example, in the US, section 619 of the Dodd-Frank Act, commonly known as the Volcker Rule, also limits banks' investments in, and relationships with, certain funds.

[49] For example, the Basel Committee on Banking Supervision (BCBS) established a more consistent and risk-sensitive approach for computing regulatory capital requirements for banks' investments in the equity of funds that are not held for trading purposes, by appropriately reflecting both the risk of the funds' underlying investments and their leverage. The new treatment is expected to be implemented by 1 January 2017. For details, see http://www.bis.org/publ/bcbs266.pdf.

powers focus on breaches of regulatory requirements by individual funds without providing for intervention when leverage builds-up across all or a segment of funds.

(i) **The lack of consistent and accessible data on leverage** acts as a significant barrier to assessing the extent to which funds' use of leverage could contribute to global financial instability and whether existing mitigants are appropriate in addressing such financial stability risks. The lack of consistent and accessible data on investment fund leverage appears to be the consequence of the following factors or gaps:

- ***The absence of consistent standards for measuring leverage, both within and across jurisdictions***. Leverage can be measured in numerous ways, and requires assumptions about the extent to which funds' off-balance sheet exposures should be considered in the leverage calculation (e.g. netting and hedging effects of off-balance sheet exposures). One approach is to focus on a fund's *on-balance sheet leverage* which is defined as the ratio of a fund's total on-balance sheet assets to net asset value (NAV), i.e. "total balance sheet assets/NAV". This metric can be calculated using basic balance sheet data readily available from fund financial statements. However, it does not take into account synthetic leverage that can arise from off-balance sheet transactions such as derivatives transactions. Other approaches take into account fund's off-balance sheet exposures in various ways. These make assumptions about the extent to which netting and hedging effects should be recognised in the calculation of leverage.

  Most jurisdictions require funds to measure their leverage based on one or more such metrics, in order to demonstrate compliance with regulatory leverage limits, for disclosure and reporting purposes, or both. However, these metrics may not be ideal for measuring the potential impact of such leverage on financial stability. Moreover, a single jurisdiction might permit multiple approaches for measuring leverage within a type of fund, while allowing still other approaches for other types of funds. Although these different approaches may be appropriate in light of the purposes and structure of the overall regulatory scheme for funds in a particular jurisdiction, the absence of uniform standards for measuring leverage hinders the analysis of fund leverage as a potential contributor to financial instability especially across jurisdictions.

- ***The need for improved systems for aggregating and analysing information provided to supervisory authorities.*** Most regulatory frameworks appear to recognise the need for a risk-based approach in terms of detail and frequency of reporting and disclosure. However, some jurisdictions appear to collect information in a manner that cannot be systematically analysed. For example, many jurisdictions require funds to report leverage metrics in periodic reports that are filed with supervisory authorities, but do not receive such information in a structured format that would facilitate aggregation of data and comparisons of different funds, especially across jurisdictions. This may limit the ability of authorities to identify excessive build-up of leverage in funds for the financial system as a whole, especially across jurisdictions for the global financial system as a whole.

(ii) ***Limits on financial and synthetic leverage vary widely across jurisdictions.*** Particularly for synthetic leverage limits, jurisdictions seem to apply different measures of leverage and thus the regulatory limits are not directly comparable.

3.4 Proposed policy recommendations to address residual risks

The following proposed policy recommendations are intended to address the residual risks associated with leverage within all types of funds that use leverage (both financial and synthetic).

Recommendation 10: IOSCO should develop simple and consistent measure(s) of leverage in funds with due consideration of appropriate netting and hedging assumptions. This would enhance authorities' understanding of risks that leverage in funds may create, facilitate more meaningful monitoring of leverage, and help enable direct comparisons across funds and at a global level. IOSCO should also consider developing more risk-based measure(s) to complement the initial measure(s) and enhance the monitoring of leverage across funds at a global level.

The development of simple and consistent measure(s) of leverage that can be applied across jurisdictions and different types of funds is of great interest to authorities. In this regard, IOSCO is currently engaged in an initiative to address data gaps related to funds that includes leverage of funds. Taking into account the data gaps identified in this initiative, IOSCO should develop simple and consistent measure(s) of leverage by the end of 2018, with due consideration of appropriate netting and hedging assumptions. This would enhance understanding of the risks that leverage in funds may create, and facilitate meaningful monitoring of leverage by authorities for financial stability purposes. Such simple and consistent measure(s) of leverage would contribute to enabling aggregation as well as direct comparisons across all or most funds and at a global level. It may also be helpful if these simple and consistent measure(s) are comparable to those used by other types of financial entities (e.g. banks), taking into account differences in regulatory settings, business models, and activities.

Since such simple and consistent measure(s) may have limitations in measuring actual risk associated with funds' leverage, IOSCO should also consider developing more risk-based measure(s) to complement the initial measures and enhance the monitoring of leverage across funds and at a global level. IOSCO is expected to report its findings on the development of more risk-based measure(s) by the end of 2018.

In developing these measures, IOSCO should refer to the following principles:

(i) *Synthetic leverage* - Measuring synthetic leverage from derivatives warrants particular attention, given the wide variety of purposes for which derivatives can be used and the inherent leverage in most derivative instruments. The measurement ideally should attempt to capture the risk from derivative exposures changing in the future, distinguish between positions in different derivative markets, and take into account instrument-specific characteristics.

(ii) *Netting and hedging* - The netting and hedging assumptions that underpin leverage metrics require careful consideration in order to avoid underestimating (especially in times of stress when the assumptions on which the metrics are based may be most fragile)

or overestimating (especially if the assumptions are too narrowly defined) true economic leverage.

(iii) *Directionality of positions* - If warranted, consideration might be given to the directionality of a position, for example, through distinguishing between long and short positions in instruments that entail asymmetric payment obligations (such as purchased versus written credit default swaps).

(iv) *Model risk* - To the extent possible, leverage measures should be designed with a view toward limiting model risk in the methods used to compute leverage (e.g. in computing spread or basis risks).[50]

Recommendation 11: Authorities should collect data on leverage in funds, monitor the use of leverage by funds not subject to leverage limits or which pose significant leverage-related risks to the financial system, and take action when appropriate.

Authorities should establish a monitoring framework that allows them to collect data on leverage in funds under their oversight, monitor in particular the use of leverage by individual funds and groups of funds not subject to limits on either financial or synthetic leverage[51] or which may pose significant leverage-related risks to the financial system, and take action when appropriate. Among other things, this would likely require authorities to develop systems for aggregating and analysing information provided to authorities where those systems either do not exist or need to be improved. This may include, for example, providing for the filing of such information in a structured format that would facilitate aggregation of data and comparisons of different funds.

Recommendation 12: IOSCO should collect national/regional aggregated data on leverage across its member jurisdictions based on the simple and consistent measures(s) it develops.

To enable authorities to monitor fund leverage at the global level, IOSCO, in coordination with the FSB, should collect national/regional aggregated data on leverage across their member jurisdictions by the end of 2019. Such data collection at the global level should be based on the simple and consistent measure(s) of leverage IOSCO develops, building upon existing data collection processes where appropriate.

Q9. In developing leverage measures (Recommendation 10), are the principles listed above for IOSCO's reference appropriate? Are there additional principles that should be considered?

Q10. Should simple and consistent measure(s) of leverage in funds be developed before consideration of more risk-based measures, or would it be more appropriate to proceed in a different manner, e.g. should both types of measure be developed simultaneously?

[50] This may mean, for example, avoiding overly granular specifications for inputs and the use of estimated parameters and sensitivities based on risk models which may be fragile.

[51] For funds that are involved in off-balance sheet transactions (e.g. derivatives), such leverage limits should include synthetic leverage measure(s).

Q11. Are there any particular simple and consistent measures of leverage or risk-based measures that IOSCO should consider?

Q12. What are the benefits and challenges associated with methodologies for measuring leverage that are currently in place in one or more jurisdictions?

Q13. Do you have any views on how IOSCO's collection of national/regional aggregated data on leverage across its member jurisdictions should be structured (e.g. scope, frequency)?

Q14. Do the proposed policy recommendations on liquidity and leverage adequately address any interactions between leverage and liquidity risk? Should the policy recommendations be modified in any way to address these interactions? If so, in what ways should they be modified and why?

4. Operational risk and challenges in transferring investment mandates or client accounts

4.1 Operational risk in transferring investment mandates or client accounts as a potential structural vulnerability

Transferring investment mandates (or client accounts) between asset managers can give rise to a series of operational challenges. While these challenges have been infrequent in the past and have not raised financial stability issues, operational difficulties could potentially become a financial stability concern if they were to materialise during stressed market conditions, particularly if they affect an asset manager (or managers) of sufficient scale or complexity. If an asset manager's difficulties are serious enough and disruptions sufficiently prolonged, investors (or clients) may lose confidence in the funds and/or SMAs managed by the asset manager facing operational difficulties, potentially leading to redemptions or the transfer of accounts to another manager. Redemptions at a large manager(s) or at a manager(s) that plays a significant role in certain markets can potentially affect the market prices of investment assets (i.e. asset sales channel), particularly during a period of market stress. Like other financial service providers that face operational difficulties, an asset manager that faces operational difficulties may also suffer from reputational risk associated with operational disruptions. An asset manager that suffers damage to its reputation in one business may suffer damage to its other business lines or business lines of its affiliates, potentially leading to redemptions across multiple investment vehicles or negative effects to other business functions. It may also further affect other asset managers or entities that provide similar services if the causes of operational difficulties at an asset manager are seen to also reside in them.

These operational difficulties may also have systemic implications if an asset manager is providing a range of critical services to other financial institutions, such as pricing models or information technology (IT) platforms that might be challenging for other financial institutions to replace in a timely manner especially when markets are under stress. Such systemic implications become larger if critical services provided by an asset manager are integral to other market participants' daily operations, risk management, and/or investment decision-making.[52]

Operational difficulties with transferring client accounts in stressed conditions may occur through the following:

(i) *Termination of derivative contracts* - When client accounts (funds and SMAs) are transferred from one asset manager to another, the derivatives contracts associated with these accounts are typically terminated and replaced with new contracts.[53] The original (legacy) manager or the new manager may face operational challenges in closing-out or re-establishing derivatives contracts in stressed market conditions, particularly for over-the-

[52] Similarly, there is a risk that disruptions at a non-asset manager third party service provider utilised by one or more asset managers could also cause operational challenges for an asset manager or other financial institutions.

[53] Transitioning OTC derivatives contracts and related collateral without terminating the contracts involves operational difficulties (for instance, the positions to be transferred must be fully understood and the balances reflected on the books of the manager, custodian, and accounting agent must be reconciled, and pricing methodologies employed should be consistent or, if changed, the impact understood). These operational difficulties are usually addressed by unwinding the contracts and then re-establishing them under the new manager.

counter (OTC) instruments (e.g. swaps, currency forwards) that are bilaterally negotiated with counterparties.[54]

(ii) *Operational challenges in replacing ancillary services* - When an asset manager has to be replaced especially in stressed conditions, ancillary services provided to clients may also have to be replaced quickly such as: pricing and valuation services; portfolio risk model and compliance platforms; trade order managing and trading platforms; securities lending agents; and custodial services. IT systems, processes, and data formats may be incompatible, and the new manager may offer a different set of services. If a change in custodian is required (for example, due to the clients' decision or the absence of an agreement between the new asset manager and the existing custodian), more time may be required to ensure proper agreement on the timing and accountabilities during the transition, or to find a substitute custodian.

(iii) *Legal and regulatory difficulties associated with transferring client accounts* - The new asset manager may not satisfy all legal and regulatory requirements that are needed for the transfer of client accounts (e.g. registration, account openings at foreign depositories, reporting to investors, authorisation by the relevant authority, reconciling valuations, and capturing outstanding receivables such as interest claims). This may be more relevant if client accounts or assets are located in foreign jurisdictions where the new manager is not familiar with local requirements.

In addition to the above, delays or operational challenges may also arise as a result of difficulties in finding a substitute asset manager, departures of key personnel at the legacy manager, and selection of client accounts (or "cherry-picking") by the new manager.

4.2 Overview of existing mitigants to address vulnerabilities

A number of regulatory tools and market practices are currently in place to directly or indirectly address operational difficulties and challenges in transferring investment mandates. However, there seem to be substantial differences across jurisdictions in the availability of such tools and practices.

- *Regulatory reform to promote central clearing of standardised OTC derivatives* - The efforts by authorities to promote the central clearing of standardised OTC derivatives could help reduce operational difficulties and challenges associated with transferring OTC derivatives positions from one asset manager to another. However, depending on the OTC derivatives instruments and the jurisdiction in which client accounts are held, use of such central counterparties may still be difficult.
- *Capital requirements for asset managers to cover operational risk* - In some jurisdictions, some asset managers are required to set aside capital or hold indemnity insurance for professional liability risks (including losses arising from business disruptions, system failures, and transaction processing or process management

[54] For example, the new manager may be unable or face serious difficulties in finding counterparties to re-establish derivative contracts if the market is under stress. Similarly, the legacy asset manager may face difficulties in closing out the derivatives contracts as counterparties may be reluctant to do so due to the difficulties or potential costs they will face in re-establishing the positions or closing out the hedge positions. The managers or counterparties themselves may also be under stress which may lead to delays in operationalising the termination of derivative contracts. These operational difficulties could become a financial stability concern through the mechanism explained above.

failures). Further assessment is needed to understand whether such requirements are common across jurisdictions or calibrated to sufficiently cover potential losses from operational issues arising in stressed market conditions.

- *Regulatory requirements for asset managers in establishing appropriate operational risk management process and risk limits* - In some jurisdictions, certain asset managers are required to establish appropriate internal risk management processes and risk limits. In those jurisdictions, a key element for authorities is to monitor whether such internal risk management processes are well prepared for stressed market conditions.
- *Regulatory requirements for asset managers to have business continuity plans (BCPs)* - Asset managers in some jurisdictions are required or expected to have BCPs to ensure continuity of critical business operations in case of operational failure (e.g. IT infrastructure) or natural disaster. However, BCPs generally do not seem to address operational challenges in transferring client accounts in stressed conditions.
- *Regulatory requirements to have an external custodian* - Asset managers in many jurisdictions are required to have an external (third party) custodian for client assets. Such an external custodian may help facilitate the transfer of the investment mandate especially in cases where the transfer of client assets is needed.
- *Supervisory tools to assess, monitor, and act on operational risks of asset managers* - Some jurisdictions have supervisory processes to assess and to ex ante detect reputational and organisational risks. Supervisory actions from such assessments include initial warnings, official letters, on-site visits, withdrawal of authorisation, and in extreme situations, the appointment of a transition manager.
- *Use of transition managers* - Some clients (i.e. funds or SMAs) as a matter of business practice in some jurisdictions employ "transition managers" to help move their investment portfolios between asset managers while managing risks and reducing transaction costs.[55] Close coordination with transition managers and the appropriate design of transition plans are important. Transition managers themselves also need to ensure appropriate controls and oversight especially as this is a concentrated industry.[56]
- *Firms' internal risk management tools* - To reduce or mitigate operational risks from transferring client accounts, some asset managers employ their own internal risk management tools, such as due diligence and oversight of service providers, use of multiple service providers or advance identification of back-up service providers, and required annual independent audits.

4.3 Residual risks that warrant policy responses

Historically, there have not been serious operational incidents during stressed conditions. Thus, it is difficult to assess the potential materiality of such operational difficulties. In order for

[55] Transition managers coordinate the transition of client assets (portfolios) with all service providers to the client's account, including custodians and the legacy/new asset managers. The main providers of transition management services are banks, asset managers, and specialist firms. According to an estimate by the UKFCA, over GBP 165 billion of assets were transitioned each year in 2010-12 by 13 transition managers in the UK (for details, see https://www.fca.org.uk/static/documents/thematic-reviews/tr14-01.pdf).

[56] According to the survey conducted by the UKFCA, the top five of the 13 firms reviewed accounted for 68% of transitions by number and nearly 80% by volume of assets traded.

systemic implications to develop from such operational difficulties, it likely would require the simultaneous occurrence of both stressed market conditions and operational difficulties at large and/or complex asset managers. If this occurred, the impact of such difficulties on the financial system could be considerable, especially if they involved a large scale transfer of assets (including OTC derivatives) or the transfer of ancillary services that are not easily substitutable or if there were legal or regulatory requirements that needed to be satisfied.

Although a number of regulatory and supervisory tools and market practices are in place to mitigate or reduce the likelihood and impact of operational difficulties, potential gaps may exist between the scope and focus of existing mitigants and the sources of operational difficulties within and across jurisdictions. Also, sufficient information is not available on the positions and contractual features of OTC derivatives of funds and SMAs to assess the potential operational difficulties posed to financial stability. Similarly, while asset managers have tools such as BCPs to ensure continuity of daily business operations, the scope of BCPs may not cover all the potential sources of operational difficulties in transferring client accounts especially in stressed conditions.

4.4 Proposed policy recommendation to address residual risks

The following proposed policy recommendation is intended to address the residual risks associated with operational risk and challenges in transferring investment mandates or client accounts.

Recommendation 13: Authorities should have requirements or guidance for asset managers that are large, complex, and/or provide critical services to have comprehensive and robust risk management frameworks and practices, especially with regards to business continuity plans and transition plans, to enable orderly transfer of their clients' accounts and investment mandates in stressed conditions.

To address operational challenges and enable orderly transfer of investment mandates and client accounts in stressed conditions, authorities should have requirements or supervisory guidance for asset managers that are large, complex, and/or provide critical services[57] to establish risk management frameworks and practices that are comprehensive and robust.

In particular, they should develop business continuity and transition plans that take into account potential challenges and difficulties that could arise in stressed market conditions while considering the asset manager's individual features. For example, an asset manager's transition plan with respect to OTC derivatives should be based on its assessment of the transferability of the OTC derivatives positions of its managed funds and SMAs, subject to the oversight of the relevant authority. Similarly, an asset manager should consider individual characteristics such as its size, as well as the ancillary services that it provides (including those for which it relies on third-party service providers).

To further their understanding of the financial stability risks at stake, the relevant authorities should:

[57] The relevant national/regional authority (where the asset manager's head office resides and assessed on a globally consolidated basis) should define asset managers that are "large, complex, and/or provide critical services". As a simple point of reference, authorities could, for example, focus on size indicators for asset managers (in terms of AUM and their own size) as well as the aggregate OTC derivative transactions relative to the global total.

- Have access to aggregated data/information on the OTC derivatives positions of funds and SMAs (e.g. notional amount outstanding, gross mark-to-market) in order to understand the potential impact to the global financial system from operational risk and challenges associated with termination of derivatives contracts when transferring client accounts. Such access to aggregated data/information should leverage existing national and international initiatives.
- Share experiences and approaches used to identify and address the operational challenges and difficulties arising from transfer of client accounts and investment mandates in stressed conditions. Such sharing of experiences can be conducted through existing international fora (e.g. FSB, IOSCO) or through firm-specific international settings (e.g. crisis management groups, supervisory colleges).

Q15. The proposed recommendation to address the residual risks associated with operational risk and challenges in transferring investment mandates or client accounts would apply to asset managers that are large, complex, and/or provide critical services. Should the proposed recommendation apply more broadly (e.g. proportionally to all asset managers), or more narrowly as defined in Recommendation 13? If so, please explain the potential scope of application that you believe is appropriate and its rationales.

5. Securities lending activities of asset managers and funds

5.1 Securities lending activities as a source of potential structural vulnerabilities

Securities lending supports price discovery and secondary market liquidity for a variety of securities, and is central to financial intermediaries' market making, investment, and risk management strategies. Funds are often involved in securities lending as the *beneficial owners* of securities being lent,[58] and the actual lending of securities is often facilitated by *agent lenders* (e.g. custodian banks) upon instruction from asset managers. In addition, some funds (e.g. hedge funds) are also involved in securities lending as *borrowers* of securities, typically in order to cover short positions.

A very limited number of large asset managers act as agent lenders, and in that capacity may offer insurance-like commitments known as borrower or counterparty indemnifications to their clients, notably their funds, to insure against potential losses when a counterparty defaults or does not return borrowed securities and the pledged collateral is not sufficient to cover the replacement cost of the loaned securities.

Securities lending activities by market participants, including asset managers and funds, can generate a number of financial stability risks, which are discussed in FSB documents on securities financing transactions.[59] Such financial stability risks include maturity/liquidity transformation and leverage associated with cash collateral reinvestment, procyclicality associated with securities financing transactions, risk of a fire sale of collateral securities, and inadequate collateral valuation practices.

Another potential vulnerability that may have systemic implications is the risk associated with agent lender indemnifications especially if done on a large scale. If most securities lenders would not engage in securities lending absent such a guarantee, an impairment of the value of this indemnification commitment could lead lenders to withdraw suddenly from the market, forcing securities borrowers to exit their positions or find another lender of securities, possibly affecting asset prices and market liquidity. A defaulted indemnification commitment could lead to widespread concern about the ability of *other* agent lenders to meet their indemnification commitments. Although very few asset managers seem to be currently involved in providing such indemnifications, the scale of exposures can be as large as that of some global systemically important banks (G-SIBs).

5.2 Overview of existing mitigants to address vulnerabilities

In general, regulatory tools and risk management practices seem to be in place for funds that engage in securities lending as beneficial owners and for asset managers acting as agent lenders.[60] The detailed design and the risk coverage of these tools and practices, however, vary across jurisdictions and firms. The existing FSB policy recommendations to address financial stability risks associated with securities financing transactions, if implemented appropriately,

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[58] According to the International Securities Lending Association (ISLA), mutual funds and other retail investment funds accounted for 44% of the €14 trillion in securities made available for lending, and 18% of the €1.8 trillion in securities actually on loan, globally, at year-end 2015. For details, see http://www.isla.co.uk/wp-content/uploads/2016/03/ISLA-SL-Market-Report-Dec-2015c.pdf.

[59] See, for example, http://www.fsb.org/wp-content/uploads/r_130829b.pdf.

[60] http://www.fsb.org/wp-content/uploads/r_120427.pdf

should eventually introduce consistency in the design and risk coverage of policy tools in addressing financial stability risks across jurisdictions.[61]

In addition to regulatory measures, a wide range of internal risk management tools are used by funds that lend securities and asset managers that act as agents to address or reduce risks associated with their securities lending activities. Such tools include stringent counterparty selection processes, collateral standards and haircuts, daily mark-to-market valuation, concentration limits, limits on the fraction of the portfolio lent at any one time, and periodic counterparty credit evaluations.

Although data on asset managers' involvement in agent lender activities is limited, a few asset managers provide agent lending services, and sometimes offer indemnification to securities lenders for losses associated with the non-return of lent securities. While some of the risks associated with indemnification (e.g. counterparty, collateral value) are similar to those faced by beneficial owners and are subject to similar regulatory measures, some risks remain that are not fully addressed by regulatory measures:

- *Potential losses associated with indemnification-related exposures* - Agent lender banks (and bank-affiliated asset managers subject to consolidated prudential oversight) are subject to the Basel capital requirements for potential losses resulting from indemnification-related exposures. In contrast, asset managers and other entities that are not affiliated with banks do not face capital requirements related to their indemnification exposures in any jurisdictions.
- *Opacity risk related to indemnifications* - To address opacity risk related to indemnifications, some jurisdictions require publicly offered investment funds to disclose any indemnities provided by securities lending agents. For bank-affiliated asset managers, the FSB recommended that the Enhanced Disclosure Task Force should work to improve public disclosure for financial institutions (i.e. banks) on any indemnifications provided as agent to securities lending clients, including a maturity profile of those contingent liabilities where appropriate.[62] However, such a recommendation does not exist for other types of financial institutions offering securities lending indemnities.

Agent lenders also report mitigating indemnification-related risks by managing their operational risks, knowing their clients, hedging, stress testing, internal risk management, portfolio diversification, and by maintaining a diverse set of counterparties. Other ways that an agent lender may mitigate risks associated with indemnification include obtaining insurance coverage to back the indemnification commitments from one or more unaffiliated insurance companies and holding liquidity reserves against the exposure to assist in withstanding adverse liquidity shocks.

5.3 Residual risks that warrant policy responses

The timely adoption of FSB policy recommendations should address most of the potential residual risks to financial stability associated with securities lending activities of asset managers and funds. For example, the timely implementation of the standards and processes

[61] See footnote 59.

[62] See footnote 59.

for global securities financing data collection and aggregation[63] should address the lack of timely, comparable, and granular data on the size, scope, and risks posed by securities lending activity performed by asset managers and their funds, which is necessary to assess the risks posed by this activity. The timely adoption of the regulatory framework for haircuts on non-centrally cleared securities financing transactions[64] should also address the potential creation of excess leverage and procyclicality during times of financial stress facilitated by improperly designed or inadequate haircuts. The implementation of the minimum standards for cash collateral reinvestment should furthermore address inconsistencies in the existing mitigants for the reinvestment of cash collateral.[65]

However, a gap will remain with respect to the treatment of agent lender indemnities. The difference in regulatory requirements relating to indemnification risk for bank and non-bank agent lenders may create an incentive for agent lending activity to migrate away from prudentially regulated entities and could potentially result in a concentration of systemic risks outside the banking sector. If a shock occurred that was large enough to overwhelm an asset manager's ability to meet its indemnification commitments, such an impairment could precipitate a contraction of securities lending activity more generally if clients of other asset managers question the value of the indemnification they have received. Such a withdrawal could disrupt other market participants' funding strategies, short positions, and collateral management activities, exacerbating market stress. These risks may be effectively addressed through an appropriate regulatory framework that enhances consistency of treatment across agent lenders, irrespective of entity types.

5.4 Proposed policy recommendation to address residual risks

The following proposed recommendation is intended to address residual risks posed by agent lender business in which asset managers are (and may in the future be) involved.

Recommendation 14: Authorities should monitor indemnifications provided by agent lenders/asset managers to clients in relation to their securities lending activities. Where these monitoring efforts detect the development of material risks or regulatory arbitrage that may adversely affect financial stability, authorities should verify and confirm asset managers adequately cover potential credit losses from the indemnification provided to their clients.

Although a limited number of large asset managers act as agent lenders, authorities currently lack sufficient information/data on the agent lender activities to monitor trends and potential risks to financial stability associated with any indemnification they provide to lending clients. Therefore, authorities should collect the relevant information/data on, for example, whether an agent lender or any other entity indemnified or provided support to a fund (client) and the nature and potential risks such indemnification may pose for financial stability. To facilitate such data collection and monitoring efforts, the FSB, through its Data Experts Group, should consider adding relevant data elements to the *Standards for global securities financing data*

63 http://www.fsb.org/wp-content/uploads/FSB-Standards-for-Global-Securities-Financing-Data-Collection.pdf

64 http://www.fsb.org/wp-content/uploads/SFT_haircuts_framework.pdf

65 See footnote 59.

collection and aggregation (the implementation date for this can be later than the end-2018 launch date of the global securities financing data collection and aggregation).[66]

When such information/data become available, and if the development of material risks or regulatory arbitrage that may adversely affect financial stability is detected, authorities should verify and confirm that asset managers that provide indemnifications adequately cover potential credit losses from their indemnification. In addressing the development of such material risks or regulatory arbitrage, authorities should consider a number of factors. Indemnification-related exposures should be subject to a regulatory treatment that adequately covers their risks but also takes due consideration to avoid creating incentives for such activities to migrate to less regulated sectors, while taking into account differences in how entity types are structured and in the approaches taken by regulators. Such treatment could be achieved either through the implementation of similar regulatory tools[67] or by achieving an equivalent realignment of incentives in providing these services.[68]

Q16. In your view, what are the relevant information/data items authorities should monitor for financial stability purposes in relation to indemnifications provided by agent lenders/asset managers to clients in relation to their securities lending activities?

Q17. Should the proposed recommendation be modified in any way to address residual risks related to indemnifications? For example, should it be more specific with respect to actions to be taken by authorities (e.g. identifying specific means for covering potential credit losses) or more general (e.g. leaving to authorities to determine the nature of appropriate action rather than specifying coverage of potential credit losses)?

66 http://www.fsb.org/wp-content/uploads/FSB-Standards-for-Global-Securities-Financing-Data-Collection.pdf

67 In this regard, authorities may refer to the Basel treatment of indemnification-related exposures that currently apply to many financial entities that provide (or may provide) agent lender services including indemnifications to clients.

68 For instance, firms offering indemnifications could be required to reinsure this risk. This would shift the potential losses associated with indemnifications away from the balance sheet of an asset manager that provides such indemnification.

Annex 1: List of proposed policy recommendations to address asset management structural vulnerabilities

Recommendations to address liquidity mismatch between fund investment assets and redemption terms and conditions for fund units

Lack 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.

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 profiles, 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 guidance and, as appropriate, enhance it.

Gaps in liquidity risk management tools both at the design phase and on an ongoing basis:

Recommendation 3: In order to reduce the likelihood of material liquidity mismatches arising from an open-ended fund's structure, authorities should have requirements or guidance stating that funds' assets and investment strategies should be consistent with the terms and conditions governing fund unit redemptions both at fund inception and on an ongoing basis (for new and existing funds), taking into account the expected liquidity of the assets and investor behaviour during normal and stressed market conditions. In this regard, IOSCO should review its existing guidance and, as appropriate, enhance it.

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.

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.

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.

Adequacy of liquidity risk management tools to deal with exceptional circumstances:

Recommendation 7: Authorities should promote (through regulatory requirements or guidance) clear decision-making processes for open-ended funds' use of extraordinary liquidity risk management tools, and the processes should be made transparent to investors and the relevant authorities. In this regard, IOSCO should review its existing guidance and, as appropriate, enhance it.

Recommendation 8: Authorities should provide guidance and, where appropriate and necessary, provide direction regarding open-ended funds' use of extraordinary liquidity risk management tools. In this regard, IOSCO should review its existing guidance and, as appropriate, enhance it.

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 institutional investors on the resilience of financial markets and the financial system more generally.

Recommendations to address leverage within funds

Recommendation 10: IOSCO should develop simple and consistent measure(s) of leverage in funds with due consideration of appropriate netting and hedging assumptions. This would enhance authorities' understanding of risks that leverage in funds may create, facilitate more meaningful monitoring of leverage, and help enable direct comparisons across funds and at a global level. IOSCO should also consider developing more risk-based measure(s) to complement the initial measure(s) and enhance the monitoring of leverage across funds at a global level.

Recommendation 11: Authorities should collect data on leverage in funds, monitor the use of leverage by funds not subject to leverage limits or which pose significant leverage-related risks to the financial system, and take action when appropriate.

Recommendation 12: IOSCO should collect national/regional aggregated data on leverage across its member jurisdictions based on the simple and consistent measures(s) it develops.

Recommendation to address operational risk and challenges in transferring investment mandates or client accounts

Recommendation 13: Authorities should have requirements or guidance for asset managers that are large, complex, and/or provide critical services to have comprehensive and robust risk management frameworks and practices, especially with regards to business continuity plans and transition plans, to enable orderly transfer of their clients' accounts and investment mandates in stressed conditions.

Recommendation to address securities lending activities of asset managers and funds

Recommendation 14: Authorities should monitor indemnifications provided by agent lenders/asset managers to clients in relation to their securities lending activities. Where these monitoring efforts detect the development of material risks or regulatory arbitrage that may adversely affect financial stability, authorities should verify and confirm asset managers adequately cover potential credit losses from the indemnification provided to their clients.

Annex 2: Pension funds and sovereign wealth funds

In September 2015, the FSB reviewed the initial findings from the work on asset management structural vulnerabilities and identified potential vulnerabilities of pension funds and sovereign wealth funds (SWFs) as an area for further analysis.[69] The FSB's further analysis suggests that the risks posed to the financial system tend to vary depending on the size, nature, and legal settings of the individual entity. For example, there are some vulnerabilities from a financial stability perspective associated with defined contribution plans that resemble those of investment funds. SWFs may also pose some financial stability issues given that the degree of government support for them varies across jurisdictions as does their adherence to the Santiago Principles.[70] Therefore, the FSB decided to conduct further assessment when it revisits the scope of assessment methodologies for identifying NBNI G-SIFIs. However, the relevant authorities may refer to the proposed recommendations in this document in considering their policies towards pension funds and SWFs in their jurisdictions if they consider them appropriate.

This Annex sets forth preliminary results of analysis regarding potential vulnerabilities of pension funds and SWFs.

1. Potential vulnerabilities of pension funds

Pension plans provide their members with retirement benefits under two basic structures, defined benefits or defined contributions. In a defined benefit arrangement, the plan sponsor (employer) is responsible for paying a stream of benefits determined by a formula to a retired plan member, with the employer/plan sponsor bearing the risk that plan assets will not sufficiently fund the benefits. In a defined contribution arrangement, employer contributions are fixed by formula and the plan member's benefit is equal to the accumulated value of employer and employee contributions in the member's account, with the plan member bearing the risk that accumulated assets will not provide adequate funds for retirement.

Private and public pension funds continue to grow and their position as financial intermediaries has increased relative to banks in many jurisdictions.[71] Their assets amounted to $25.2 trillion at end-2014 for OECD countries,[72] and about 25 pension funds each have total assets in excess

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69 http://www.fsb.org/2015/09/meeting-of-the-financial-stability-board-in-london-on-25-september/

70 The International Monetary Fund (IMF) engaged with the SWFs in 2008 to encourage the development of agreed-upon principles for addressing the types of vulnerabilities described above. Subsequently, a group of SWFs (the International Working Group of Sovereign Wealth Funds (IWG)) created 24 voluntary principles known as the "Santiago Principles" which aimed to achieve transparent, sound governance practices so that SWFs would contribute to long-term investing and the stability of markets in which they invest. The purpose of the Santiago Principles is to: (i) establish a transparent and sound governance structure that provides for adequate operational controls, risk management and accountability; (ii) ensure compliance with regulatory and disclosure requirements; (iii) ensure SWFs invest on the basis of risk and return-related considerations; and (iv) help maintain a stable global financial system. Aligned with these principles, some SWFs have limits on the annual withdrawals from funds to help mitigate the potential for a significant divestment. For details, see http://www.iwg-swf.org/pubs/eng/santiagoprinciples.pdf.

71 http://www.fsb.org/wp-content/uploads/global-shadow-banking-monitoring-report-2015.pdf

72 For details, see: http://www.oecd.org/daf/fin/private-pensions/Pension-Markets-in-Focus-2015.pdf. Preliminary results for end-2015 suggest this number fell to $24.8 billion last year. For details, see http://www.oecd.org/daf/fin/private-pensions/Pension-funds-pre-data-2016.pdf.

of $100 billion.[73] Moreover, some pension funds are moving into higher-risk assets or less-liquid alternative assets.[74]

Pension funds generally have long-term investment horizons and make a positive contribution to financial stability. They also generally have relatively low levels of liquidity transformation and financial leverage. Nonetheless, pension funds can engage in activities that give rise to vulnerabilities, in the event that liquidity or asset reallocation pressures may arise.

- *Potential for liquidity risk in some types of defined contribution pension funds* - Pension funds are generally not vulnerable to liquidity risk (or run-like risk) arising from redemption pressures or borrowings. However, where plan rules – particularly rules of defined contribution plans – allow members to withdraw from or switch funds on very short notice, there could potentially be liquidity risk similar to that of open-ended funds. In practice, pension funds do not experience frequent withdrawals. However, some defined contribution pension funds permit individuals to withdraw amounts invested on short notice, either in cash or as a transfer to another fund, and liquidity risk could be potentially material in such a case. The terms of plan portfolio rebalancing may merit further assessment to identify cases of daily or short-term redemptions that could cause liquidity risks similar to open-ended funds.
- *Potential build-up of leverage* - While pension funds generally do not take on significant financial leverage, they may take on other forms of leverage. For example, in some cases, pension funds may invest in funds that take on leverage, and pension plans may engage in leveraged strategies (for example through the use of derivatives) as part of liability-driven investment strategies to enable better matching of the sensitivity of liabilities and assets to interest rate changes. Furthermore, funding deficits and a search for yield in a low interest rate environment may have encouraged pension funds to take on relatively more leverage or invest in less liquid assets.[75]
- *Use of derivatives and longevity risks* - Defined benefit pension plans sometimes engage in derivatives for enhancing returns, and for hedging longevity risks.[76] Longevity risk transfers protect defined benefit pension plans from the longevity risk that plan beneficiaries live longer than expected. As the number of pension plans employing longevity risk hedging increases, the extent of longevity risk borne directly by the plans decreases. This may, at the same time, imply a need for better management of counterparty risk and interconnectedness in the financial system.

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[73] https://www.towerswatson.com/en-GB/Insights/IC-Types/Survey-Research-Results/2015/09/The-worlds-300-largest-pension-funds-year-end-2014

[74] For example, in five OECD and two non-OECD countries, pension funds increased their exposure to alternative investments by more than five percentage points between 2004 and 2014 or the longest available period. See http://www.oecd.org/daf/fin/private-pensions/Pension-Markets-in-Focus-2015.pdf.

[75] Many pension funds are restricted from borrowing or taking on significant leverage.

[76] See http://www.bis.org/publ/joint34.pdf. Motivated by the findings of the report, the Joint Forum proposed a number of recommendations to supervisors and policymakers regarding further understanding the exposures and risks, ensuring adequate risk-bearing capacity, monitoring market developments, and paying attention to tail risk, among others.

2. Potential vulnerabilities of SWFs

SWFs are special purpose investment funds or arrangements that are owned by a government.[77] Created by the government for macroeconomic purposes, SWFs hold, manage, or administer assets to achieve certain financial objectives, and are important participants in the capital markets.

While the aggregate AUM of SWFs is much smaller than that of open-ended funds and pension funds,[78] some SWFs are very large. The SWF market is also quite concentrated, with the largest 15 funds accounting for about 85% of total AUM of SWFs.[79] In fact, some SWFs rank among the largest investment funds in the world. Given their size, changes in portfolio allocations can have potentially substantial impacts on markets. In many instances, SWFs are significant investors in financial institutions, and recently in more illiquid assets (e.g. alternative assets), which could potentially lead to a transmission of stress to the financial system in the event of divestment from those positions.

Many SWFs are established to hold wealth for future generations, while others may have stability or development mandates. For example, savings funds and reserve investment corporations tend to emphasise high risk-return profiles in their investment mandates, and may therefore pursue higher returns by taking on greater exposures to equity and alternative investments. By contrast, some SWFs are required to address sovereigns' fiscal budget deficits. SWFs in general face limited liquidity risks, as there is no liquidity promise to end-investors, and limits in some jurisdictions on the annual withdrawals from funds help to mitigate the potential for significant divestment.[80] However, some SWFs could be exposed to potentially significant withdrawals, depending on the fiscal strength of the government and, possibly, the quality of their own governance practices.

Although the use of leverage by SWFs is generally considered to be low,[81] they are not restricted from taking on leverage unless internal limits exist. The aggregate amount of leverage in SWFs, particularly synthetic leverage obtained through the use of derivatives, is difficult to determine due to limitations in data. Therefore, it is difficult to monitor whether leverage in SWFs may result in material counterparty exposures and may potentially amplify risks to global financial stability.

As the industry assessment of the SWF adherence to the Santiago Principles suggested that the practices to manage risks such as liquidity risks and leverage vary widely,[82] further careful assessment of each SWF's potential vulnerabilities may be warranted.

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77 http://www.iwg-swf.org/pubs/eng/santiagoprinciples.pdf

78 $6.3 trillion was invested in SWFs at end-2015 (https://www.preqin.com/docs/samples/The-2015-Preqin-Sovereign-Wealth-Fund-Review-Sample-Pages.pdf), compared to $25.2 trillion in pension funds at end-2014 and $37.2 trillion in regulated open-ended funds at end-2015.

79 Based on data from Sovereign Wealth Fund Institute and IMF.

80 Withdrawals from SWF by the sovereign are usually infrequent and typically occur with sufficient warning.

81 According to the Santiago Principles, SWFs typically do not use much leverage.

82 http://www.iie.com/publications/pb/pb13-19.pdf

Annex 3: Liquidity transformation of exchange-traded funds (ETFs)

Global ETF assets under management (AUM) rose from approximately $400 billion in 2005 to almost $3 trillion in 2015.[83] ETF sponsors have also in recent years increasingly offered products investing in asset classes less actively traded than equities, in particular products tracking indices on fixed income, credit, emerging markets, or commodities.

ETFs are generally open-ended collective investment schemes (or funds) that trade throughout the day like an equity on the secondary market (i.e. through an exchange). As with any security listed for trading, investors may trade ETF shares continuously at market prices. Unlike investors in other open-ended funds, ETF investors generally do not sell or redeem their individual shares directly from the fund at NAV. Instead, only certain financial institutions (known as authorised participants or APs) purchase and redeem ETF shares directly from the ETF, but only in large blocks, called *creation units*. A creation unit is the block of ETF shares (the number of which the ETF specifies) that an authorised participant can acquire or redeem, typically "in kind" (i.e. for a specified basket of securities or other assets).[84] As a result of using in-kind redemptions, the transaction costs associated with redemptions from an ETF are imposed on redeeming shareholders rather than the fund and its remaining shareholders. Therefore, ETFs generally do not pose the issues described in Section 2.1 with respect to open-ended funds (i.e. issues related to on-demand liquidity and first-mover advantage). Although some ETF sponsors also redeem in cash which may pose similar issues to those described with respect to open-ended funds, many of these sponsors also charge fees for cash redemptions, which mitigates liquidity risks.

This market mechanism is designed to maintain the market price of ETFs close to the estimated value of the underlying assets, through arbitrage activity in the secondary market facilitated by the transparency of the ETF's portfolio, which enables market participants to realise profits from any premiums or discounts between the intraday price of the ETF and its NAV. This mechanism, however, may be vulnerable to market stress in certain circumstances.[85] APs are not obligated to create or redeem ETF shares, and an AP engages in these transactions only when they are in the AP's best interest given market conditions. This could have potentially negative effects on the ability to trade without accepting significant discounts to the estimated value of the underlying assets if, for example, one or more APs were to pull back from the market in turbulent conditions. In an extremely stressed market environment where no AP is left functioning (a hypothetical situation with no historical occurrence), the ETF would effectively take on the characteristics of closed-end funds, which do not offer liquidity transformation and do not pose the potential financial stability risks associated with liquidity transformation in open-ended funds.[86] However, this situation could still create a significant discount or premium on ETF shares for an extended period, which could affect hedged positions and pricing of securities closely linked to the ETF.

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83 http://www.etfgi.com/index/home

84 http://www.iosco.org/library/pubdocs/pdf/IOSCOPD414.pdf

85 Some markets have rules that constrain the fluctuations of an ETF in a range close to NAV and therefore limit the risks of the ETF trading at significant premiums or discounts to its NAV (typically 0.5% to 3% in Euronext rules).

86 In some cases, an ETF sponsor may be required to provide liquidity to investors in exceptional circumstances (https://www.esma.europa.eu/system/files_force/library/2015/11/esma-2014-0011-01-00_en_0.pdf).

When operationalising the proposed recommendations on liquidity mismatch set out in Section 2.4, there may be cases where additional tailoring to address the underlying liquidity risks of ETFs is required.