

# Global Monitoring Report on Non-Bank Financial Intermediation

2020



16 December 2020

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## Executive summary

**The COVID-19 shock highlighted the importance of monitoring developments in the non-bank financial intermediation (NBFI) sector from a financial stability perspective.** NBFI is a valuable source of financing for many firms and households, facilitating diversity and competition among credit providers. However, the market turmoil witnessed in March 2020 also highlighted how certain NBFI entities or activities give rise to vulnerabilities that can amplify shocks, both directly and through their linkages with other parts of the financial system.

**As it is based on annual data, the main part of this report discusses trends in the NBFI sector globally before the onset of the COVID-19 shock in early 2020.** It presents the results of the tenth annual FSB monitoring exercise to assess trends and risks in NBFI, covering 29 jurisdictions that account for 80% of global GDP. While the majority of this report is based on end-2019 data and therefore predates the pandemic, the trends described here contribute to an understanding of the backdrop and some of the vulnerabilities that became apparent during the March market turmoil. Moreover, two case studies included in the report analyse the impact of the COVID-19 shock on the NBFI sector in general and on money market funds (MMFs) specifically. A comprehensive discussion of the March 2020 market turmoil and its policy implications are provided in the FSB's Holistic Review Report.<sup>1</sup>

**The FSB's monitoring of NBFI consists of two steps.** The first step, shown in Section 1 of the report, compares the size and trends of financial sectors in aggregate and across jurisdictions, primarily using sectoral balance sheet data. The second step, which focuses on the NBFI activities and entities that may pose bank-like financial stability risks and/or involve regulatory arbitrage, is shown in Section 3. Non-bank financial entities are included in this "narrow measure" if they perform one of the five economic functions set out in the FSB monitoring approach. This assessment is conservative in its approach, reflecting the assumption that policy measures and/or risk management tools have not been exercised (i.e. on a pre-mitigant basis).

**The NBFI sector has grown faster than banks over the past decade, including in 2019.** The financial assets of the NBFI sector – comprising mainly pension funds, insurance corporations and other financial intermediaries (OFIs)<sup>2</sup> – accounted for 49.5% of the global financial system in 2019, compared to 42% in 2008. Non-bank financial entities play an increasing role in providing financing to the real economy, as well as in managing the savings of households and corporates (see Section 1). Moreover, the relative size of NBFI in emerging market economies (EMEs) has increased at a faster pace than in advanced economies (AEs) (see Box 3-1). More specifically, loan provision by non-bank entities dependent on short-term funding (economic function 2 in the narrow measure) has increased significantly faster in EMEs than in AEs.

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<sup>1</sup> See FSB (2020c).

<sup>2</sup> OFIs include all financial intermediaries that are not central banks, banks, public financial institutions, insurance corporations, pension funds, or financial auxiliaries. They include mainly investment funds, captive financial institutions and money lenders, central counterparties, broker-dealers, finance companies, trust companies and structured finance vehicles. The monitoring aggregates used in this report – NBFI, OFIs and the narrow measure of NBFI – are defined in Box 0-1 at the end of this Executive summary.

**Key amongst the drivers of growth of NBFIs has been the expansion of collective investment vehicles (CIVs).** CIVs, which cover a diverse range of entities including hedge funds, MMFs and other investment funds (OIFs), made up 31% of NBFIs sector assets in 2019 and contributed to a large part of the NBFIs growth. Their assets grew by an annual average rate of 11% between 2013 and 2019, reflecting both sizeable inflows and valuation gains (see Box 1-1). A subset of CIVs – comprising mainly fixed income funds, mixed funds and MMFs – are engaged in activities that involve liquidity and maturity transformation. Such CIVs grew by an average annual rate of 9.2% between 2013 and 2019 (see Section 3.3).

**In March 2020, as key funding markets experienced acute stress and the demand for liquidity increased, some of these funds experienced large outflows.** There was a surge in redemptions from some non-government MMFs (see MMF case study). Some fixed income funds also saw large redemptions, particularly those that offer daily redemptions and invest in less liquid assets (see FSB Holistic Review and COVID-19 case study). Based on the additional quarterly data collected up to Q2 2020 for the COVID-19 case study, credit intermediation as well as maturity and liquidity transformation of fixed income funds generally decreased in the first quarter of 2020 before increasing again in the second quarter following official sector support measures.

**There have been changes in the pattern of linkages between banks and OIFs since the 2008 financial crisis.** One example of changing linkages is the increasing use of repo transactions as a source of funding, particularly in the Americas. At end-2019, OIFs were – and had been for some time – net providers of cash to the financial system through reverse repo transactions (see Section 1.3). Another example is the cross-border linkages of OIFs, particularly in jurisdictions that serve as hubs for international capital flows. In aggregate, the cross-border links of OIFs are larger than those of banks, with the highest degree of such links seen in investment funds (see Section 2.4). Measured relative to bank assets, banks' linkages with the NBFIs sector were little changed in 2019, while their use of funding from insurance corporations and pension funds continued to decrease.

**Financial assets of broker-dealers – non-banks that intermediate in the market for securities and secured funding – increased steadily over the past decade** (see Section 3.5). Such broker-dealers tend to be dependent on short-term funding, including that obtained from repo markets. This shift in credit intermediation towards markets has increased the need for liquidity to price and finance assets.<sup>3</sup> Available data also suggests that broker-dealers' leverage increased during the decade prior to the COVID-19 crisis, albeit it remains lower than that before the 2008 financial crisis. Broker-dealers' balance sheets increased in Q1 2020 and contracted in Q2 2020; however, this might in part reflect the easing of liquidity strains, following unprecedented official sector policy action (see COVID-19 case study).

**The COVID-19 experience also bears important lessons for the design of the FSB's annual global monitoring exercise.** The March 2020 market turmoil has underlined the importance of the annual system-wide monitoring of NBFIs developments carried out in this exercise. At the same time, however, it has revealed room for improvement to better identify potential vulnerabilities - including structural characteristics of MMFs, and to measure interconnectedness

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<sup>3</sup> See FSB (2020c).

within the NBFIs sector and with the rest of the financial system. The FSB will consider additional improvements to the data collection and adjustments to future monitoring exercises.

### Box 0-1: Monitoring aggregates

The following monitoring aggregates are referred to throughout this report:

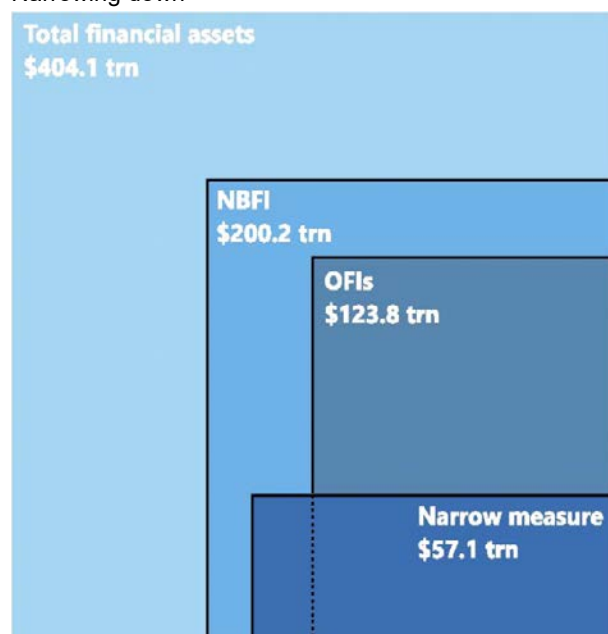
- (i) **The non-bank financial intermediation (NBFIs) sector** is a broad measure of all non-bank financial entities, and comprising all financial institutions that are not central banks, banks or public financial institutions. In previous editions of the FSB’s global monitoring report on NBFIs, this was referred to as the monitoring universe of non-bank financial intermediation or “MUNFI”. The change in terminology did not result in any changes in substance.
- (ii) **OFIs (other financial intermediaries)** is a subset of the NBFIs sector, comprising all financial institutions that are not central banks, banks, public financial institutions, insurance corporations, pension funds, or financial auxiliaries. OFIs include, for example, investment funds, captive financial institutions and money lenders (CFIMs), central counterparties (CCPs), broker-dealers, finance companies, trust companies and structured finance vehicles.
- (iii) **The narrow measure of NBFIs** (or “narrow measure of non-bank financial intermediation”) comprises a subset of entities of the NBFIs sector that authorities have assessed as being involved in credit intermediation activities that may pose bank-like financial stability risks (i.e. credit intermediation that involves maturity/liquidity transformation, leverage or imperfect credit risk transfer) and/or regulatory arbitrage, according to the methodology and classification guidance used in the FSB’s annual monitoring exercise. The narrow measure comprises five economic functions or activities (see Graph 0-1, RHS).

### Size of monitoring aggregates and composition of the narrow measure

At end-2019

Graph 0-1

Narrowing down<sup>1</sup>



Composition of the narrow measure<sup>2</sup>

Economic Functions	Size (USD trillion)	Share (%)	Change in 2019 <sup>3</sup> (%)
EF1 (collective investment vehicles with features that make them susceptible to runs)	41.7	72.9	13.5
EF2 (lending dependent on short-term funding)	3.9	6.8	6.1
EF3 (market intermediation dependent on short-term funding)	4.7	8.2	5.4
EF4 (facilitation of credit intermediation)	0.5	0.8	16.6
EF5 (securitisation-based credit intermediation)	4.8	8.4	2.5
Unallocated	1.7	2.9	7.0
<b>Narrow measure (total)</b>	<b>57.1</b>	<b>100</b>	<b>11.1</b>

<sup>1</sup> Total financial assets and NBFIs are based on 21+EA-Group; OFIs and Narrow measure are based on the 29-Group. <sup>2</sup> Net of prudential consolidation into banking groups. For additional details on these categories, see Section 3. <sup>3</sup> This table does not reflect the percentage contributions to the growth rate and thus the total does not add up to the sum of the components.

Source: Jurisdictions’ 2020 submissions (national sector balance sheet and other data); FSB calculations.



## Introduction

The comprehensive monitoring of global trends, risks, and innovations of NBFIs is a key part of the FSB's efforts to enhance financial system resilience.<sup>4</sup> The FSB's annual global monitoring exercise, which is currently based on data submitted by 29 jurisdictions<sup>5</sup> as of end-2019, uses sectoral balance sheet data from national financial accounts statistics ("flow of funds"), complemented with supervisory and other publicly available data where appropriate.<sup>6</sup>

The monitoring exercise adopts a practical two-step approach.<sup>7</sup> First, it takes a comprehensive look at NBFIs to ensure that data gathering and surveillance covers all NBFIs areas where risks to the financial system might arise (see Section 1). As part of the comprehensive review of NBFIs, this report then provides an assessment of the interconnectedness between different types of non-bank financial entities and banks, as well as cross-border linkages (see Section 2). The second step of the monitoring approach focuses on the subset of NBFIs that may pose bank-like financial stability risks and/or where there are indications of regulatory arbitrage.<sup>8</sup> To arrive at this narrow measure of NBFIs, the participating jurisdictions classify a subset of NBFIs entities on the basis of their economic functions (EFs) (or activities) that may involve bank-like financial stability risks (i.e. credit intermediation involving liquidity/maturity transformation, leverage or imperfect credit risk transfer) (see Section 3).<sup>9</sup> To enhance consistency across jurisdictions, this classification into the narrow measure is done on a conservative basis, without taking any mitigants into consideration.

In addition to assessing the data collected annually, experts from participating authorities also discuss various topics regarding non-bank financial entities and activities in greater detail. This report includes the following case studies on two topics: (i) the impact of the COVID-19 stress on the NBFIs sector; and (ii) money market funds during the COVID-19 shock (see Section 4). As part of the forward-looking aspect of the monitoring exercise, jurisdictions also shared recent NBFIs-related innovations in their jurisdictions (see Box 0-2).

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<sup>4</sup> The monitoring exercise is conducted by the FSB's Non-bank Monitoring Experts Group ("the Experts Group"), which was established in 2016 under the Standing Committee on Assessment of Vulnerabilities (SCAV). The Experts Group includes experts from all participating jurisdictions (see Table 0-1), as well as the Bank for International Settlements, European Commission, European Securities and Markets Authority, European Systemic Risk Board, International Association of Insurance Supervisors, International Monetary Fund, International Organization of Securities Commissions and the Organisation for Economic Co-operation and Development.

<sup>5</sup> The geographical scope of the monitoring exercise may be broadened in the future to include additional jurisdictions. See also the results of the FSB Regional Consultative Group for the Americas 2019 NBFIs monitoring exercise, which uses the FSB's monitoring approach.

<sup>6</sup> The FSB's NBFIs monitoring exercise uses sectoral balance sheet statistics, as these are widely available and provide generally consistent financial sector data for mapping the global size and trends of NBFIs. Some jurisdictions that currently lack sectoral balance sheet statistics have used other data sources that may not be fully consistent with the data from other participating jurisdictions. Jurisdictions that are already using sectoral balance sheet statistics are encouraged to further improve their granularity, where needed, while those that have not yet implemented official sectoral balance sheet statistics are encouraged to develop them.

<sup>7</sup> The practical two-step approach in this report is based on the monitoring framework to assess bank-like financial stability risks from NBFIs as set out in FSB (2011).

<sup>8</sup> See FSB (2011).

<sup>9</sup> The focus on economic functions is based on an approach that was introduced in the FSB's high-level *Policy Framework for Strengthening Oversight and Regulation of Shadow Banking Entities* (the "FSB Policy Framework"), published in 2013. See FSB (2013).

Each year, the FSB aims to improve the annual monitoring exercise by deepening its analysis and learning from the experiences of previous exercises.<sup>10</sup> For example, in the 2020 monitoring exercise, additional time series data for interconnections within the NBFIs sector were collected. Risk metrics data were also enhanced and additional data points collected, although further improvements are needed. Separately, data definitions in the reporting templates were improved to enhance the consistency of data submitted and the assessments made by jurisdictions.<sup>11</sup> The FSB regularly assesses the effectiveness of these improvements and makes adjustments as needed to further improve its understanding of NBFIs and associated bank-like financial stability risks.

To maximise both the scope and granularity of available data, the monitoring results are presented for two different samples of jurisdictions, which differ in terms of the treatment of euro area (EA) jurisdictions. The first sample, denoted as *29-Group*, comprises 29 individual jurisdictions and has better granularity of non-bank financial sectors. The second sample, denoted as *21+EA-Group*, is more comprehensive in terms of jurisdictional coverage because it not only comprises 21 individual non-euro area jurisdictions, but also includes the 19-member euro area as a whole, as opposed to only eight euro area jurisdictions in the *29-Group*.<sup>12</sup> As in previous Reports, the *29-Group* sample is used in Section 4 of this report because of its greater granularity, while the *21+EA-Group* is used in parts of Sections 2 and 3, where it is equally granular but provides wider jurisdictional coverage.

**Table 0-1: Data sample composition**

Belgium (BE)*	Argentina (AR)**	Hong Kong (HK)*	Saudi Arabia (SA)**	Euro area (EA)*
France (FR)*	Australia (AU)*	India (IN)**	Singapore (SG)*	
Germany (DE)*	Brazil (BR)**	Indonesia (ID)**	South Africa (ZA)**	
Ireland (IE)*	Canada (CA)*	Japan (JP)*	Switzerland (CH)*	
Italy (IT)*	Cayman Islands (KY)*	Korea (KR)*	Turkey (TR)**	
Luxembourg (LU)*	Chile (CL)**	Mexico (MX)**	United Kingdom (UK)*	
Netherlands (NL)*	China (CN)**	Russia (RU)**	United States (US)*	
Spain (ES)*				

  = 29-Group     
  = 21+EA-Group     
\* = Advanced economy     
\*\* = Emerging market economy (EME)

Measures of growth and results throughout this report are based on either annual historical data covering end-2002 to end-2019 or cross-sectional data as of end-2019. Some exchange rate effects have been corrected when presenting growth rates by applying a constant end-2019 exchange rate across all past years to convert each jurisdiction's local currency data into US dollars. Growth rates have not been otherwise adjusted (e.g. for the appreciation or depreciation of asset prices). The results in this report are not strictly comparable

<sup>10</sup> Improvements are made as part of the ongoing implementation of the recommendations made in the FSB report, *Assessment of shadow banking activities, risks and the adequacy of post-crisis policy tools to address financial stability concerns*, submitted to the July 2017 Hamburg G20 Summit. See FSB (2017b).

<sup>11</sup> Achieving consistency in the EF classification framework is an iterative process. The classification guidance used in the FSB's annual monitoring exercise is regularly refined to reflect improvements in data availability, assessment of non-bank financial entities' involvement in the different EFs, and financial market developments such as the emergence of new entity types or risks.

<sup>12</sup> The European Central Bank (ECB) provided the euro area aggregated data. The euro area jurisdictions are Austria, Belgium, Cyprus, Estonia, Finland, France, Germany, Greece, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Portugal, Slovakia, Slovenia and Spain.



to those presented in previous reports because of jurisdictions' revisions to historical data, improvements in national statistics and more granular reporting.

#### Box 0-2: Recent innovations in NBF1

As a part of the forward-looking aspect of its annual monitoring exercise, the FSB collects information on recent innovations from participating jurisdictions. This information is shared among jurisdictions, discussed within the Experts Group and, when appropriate, reported to senior FSB committees.

For the current monitoring exercise, jurisdictions were asked to report whether five specific innovations were present in their jurisdictions and to report any additional innovations.

25 jurisdictions reported one or more of these five specific innovations:

- Twenty-two jurisdictions reported **peer-to-peer (P2P) lending** – the most common innovation identified – which remains very small but is growing rapidly. While data collection remains limited and at an early stage,<sup>13</sup> a number of jurisdictions reported that regulations are now in place.
- Thirteen jurisdictions reported the presence of **collateralised loan obligations (CLOs)**.<sup>14</sup> Most respondents included some estimates on size, indicating improvements in data gathering compared to the 2019 report. Some jurisdictions noted risks from the complexities in credit scoring CLOs.
- Ten jurisdictions reported some involvement of investment funds (e.g. loan funds), special purpose vehicles (SPVs), pension funds or insurers in **leveraged loan markets**. US loan funds experienced net outflows of 25% of assets under management (AUM) in 2019 amid falling interest rates, as leveraged loans pay a floating interest rate.
- Nine jurisdictions (four more than in the 2019 report) reported **crypto-asset-based lending**; this is still a relatively small number, but some jurisdictions reported fast growth.
- Eight jurisdictions reported **crowdfunding to raise mortgage down payments**. Where present, typically only a few small firms are involved.

Members also identified these additional innovations:

- **Digital only non-banking financial companies**: These entities are involved in credit intermediation, similar to traditional NBF1 activity and are classified into EF2.
- **FinTech lending (consumer credit)**: These entities offer direct lending through e-commerce partnerships. Their activity is supported by new technology such as machine learning, allowing near-instant credit risk assessment and personalised offerings. Because of their reliance on new digital processes, operational risk is a concern. Leverage and credit risk transfer were also mentioned as potential financial stability risks posed by these entities.

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<sup>13</sup> In a case study included in the 2018 Report, P2P lending referred to matching platforms. However, it was also noted in that report that there is little consistency across jurisdictions in the definitions used for FinTech credit activities. See FSB (2019a).

<sup>14</sup> See FSB (2019b) for more detail on data availability with respect to CLOs.

# 1. Financial intermediation in the global financial system

Section 1.1 provides an overview of the growth and size of the global financial system, with comparisons to the (NBFI) sector, which includes insurance corporations (ICs), pension funds (PFs), other financial intermediaries (OFIs) and financial auxiliaries. Section 1.2 focuses on trends and main drivers of growth in the NBFI sector. Credit intermediation and wholesale funding trends of OFIs are analysed in Section 1.3.

## 1.1. Overview of trends in the composition of the financial system

**Following asset valuation declines in 2018, total global financial assets grew by 6.6% to \$404.1 trillion in 2019, with the growth of the NBFI sector outpacing that of banks in 25 jurisdictions in 2019.** At a global level, the NBFI sector grew by 8.9% in 2019 to \$200.2 trillion, and the banking sector grew by 5.1% to \$155.4 trillion (Graph 1-1). Financial assets of financial intermediaries increased in almost all jurisdictions in 2019.

**The NBFI sector accounts for 49.5% of global financial assets, but banks remain the largest single sector of the financial system in 22 jurisdictions of the 29-Group** (Graph 1-2). The NBFI sector represented more than 50% of the financial system in 12 jurisdictions as at end-2019. Moreover, the NBFI sector tends to be relatively larger in advanced economies (AEs) comprising on average 56% of total financial assets, in comparison to 27% in emerging market economies (EMEs). OFIs typically comprise the largest share of NBFI assets, while pension funds constitute an important share of the financial system in some jurisdictions (Australia, the US, and certain EMEs).

**In 14 out of the 18 participating AEs, the OFI sector remains larger than the jurisdiction's GDP.** The largest three OFI assets-to-GDP ratios are in the Cayman Islands, Luxembourg, and Ireland, where OFIs' assets are 1790, 222, and 14 times their respective GDP. In these jurisdictions, the largest OFI sub-sectors are investment funds and/or captive financial institutions and money lenders (CFIMLs), with limited links to their respective domestic economies (see Section 2 for more detail on interconnectedness).<sup>15</sup>

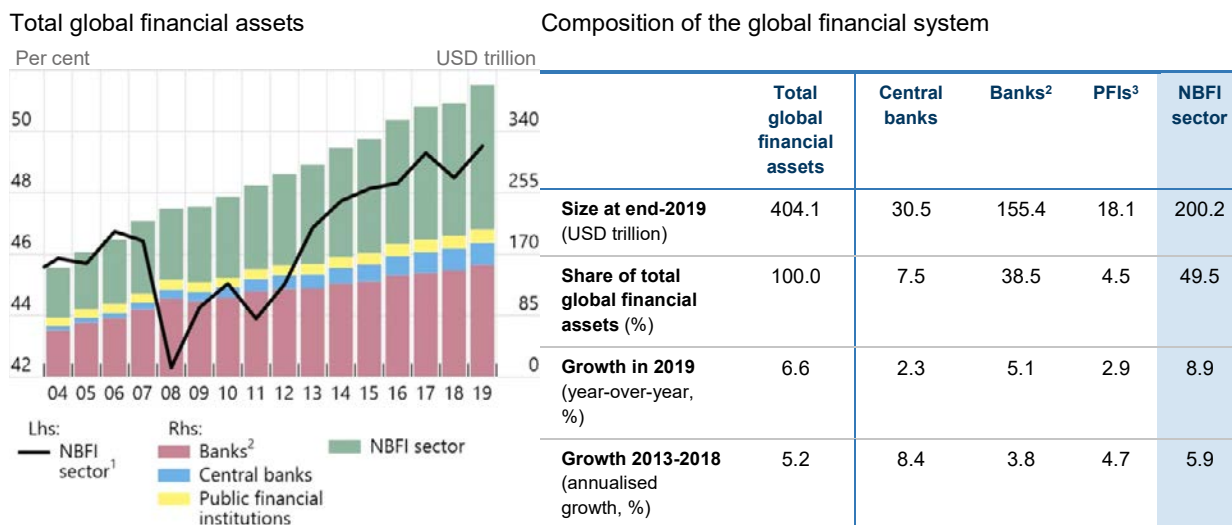
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<sup>15</sup> For example, the majority of the assets of investment funds in the Cayman Islands are managed and/or marketed outside of the jurisdiction, particularly in the US.

## NBFI assets increased as a share of total financial assets in 2019, after a slight decrease in 2018

21+EA-Group

Graph 1-1



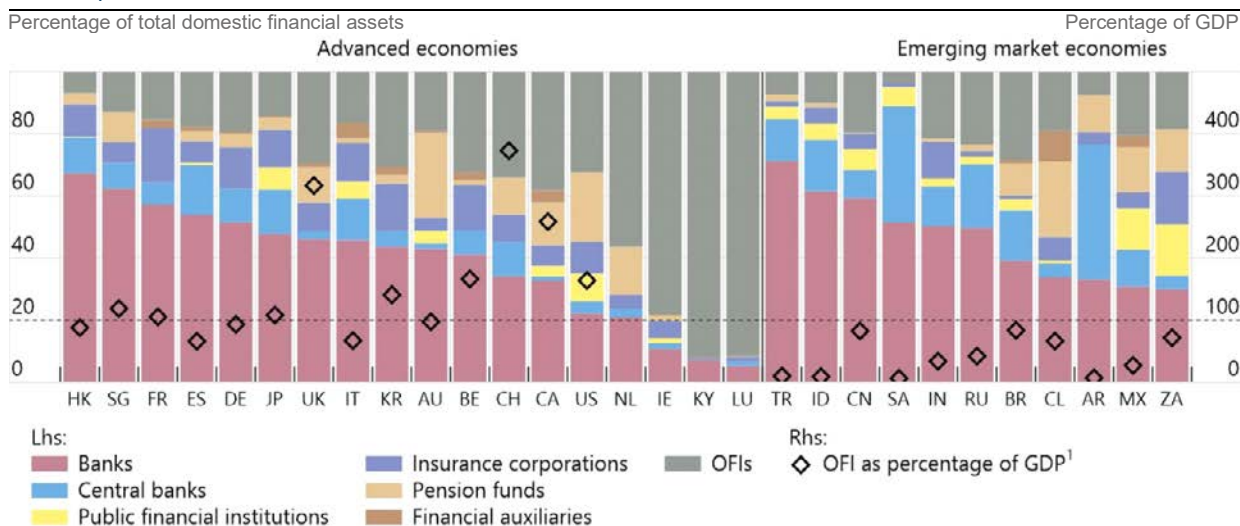
<sup>1</sup> NBFI sector includes insurance corporations, pension funds, OFIs and financial auxiliaries. <sup>2</sup> All deposit-taking corporations. <sup>3</sup> Public financial institutions.

Source: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

## In the majority of jurisdictions, banks remain the single largest sector of the financial system

29-Group at end-2019

Graph 1-2



<sup>1</sup> Jurisdictions with OFI assets greater (lower) than their GDP will be above (below) the horizontal dashed line. The ratio of OFI assets to GDP for the Cayman Islands (179,056), Luxembourg (22,199), Ireland (1,404) and the Netherlands (781) are not shown since they are particularly high compared to the rest of the jurisdictions.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

### 1.2. Trends and drivers within the NBFI sector

**NBFI sector growth in 2019 was broad-based, but driven mainly by increases in investment funds, pension funds and insurance corporations (Graph 1-3, LHS). Almost half of the growth in NBFI assets was a result of growth in 'other investment funds' (OIFs), i.e.**

investment funds other than hedge funds and money market funds (MMFs). About a third of the growth of NBF assets in 2019 was attributable to increases in the financial assets of pension funds and insurance corporations.

### Other investment funds (OIFs)<sup>1</sup>, together with insurers and pension funds, were the main drivers of the high growth rate of NBF assets in 2019

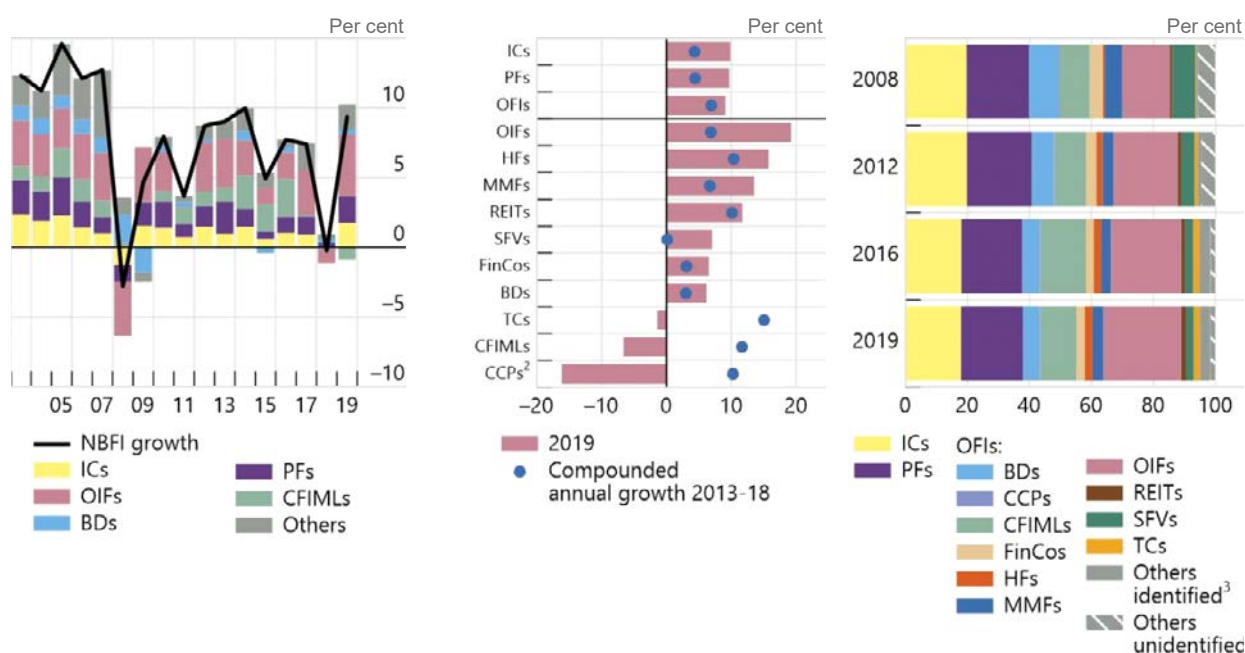
29-Group

Graph 1-3

Contribution to NBF sector growth

Annual growth, selected NBF subsectors<sup>2</sup>

Composition of the NBF sector



BDs = broker-dealers; CCPs = central counterparties; CFIMs = captive financial institutions and money lenders; FinCos = finance companies; HFs = hedge funds; MMFs = money market funds; OIFs = investment funds other than MMFs and hedge funds; REITs = real estate investment trusts and real estate funds; SFVs = structured finance vehicles; TCs = trust companies.

<sup>1</sup> Investment funds other than hedge funds and money market funds. OIFs include equity funds, fixed income funds and other funds such as mixed funds, referenced investment funds, external debt investment funds, currency funds, asset allocation funds, etc. <sup>2</sup> The decrease of CCPs is mainly attributable to a transfer of activity from a UK CCP, belonging to the NBF sector, to a CCP in France (within the same corporate group) classified as a bank. <sup>3</sup> 'Others identified' comprise a variety of jurisdiction-specific entities that do not fit into any of the explicit categories included in the monitoring exercise.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**Other investment funds' assets increased by 19.2% in 2019, mainly due to valuation increases in equity funds as stock prices rebounded from 2018 falls.** Other investment funds (OIFs) - composed mainly of equity funds and fixed income funds, experienced the highest growth rate of NBF sub-categories in 2019, and thus remained the largest component of NBF (Graph 1-3, middle and RHS panels). For equity funds, these increases were mainly driven by valuation increases following a decline in valuation in 2018, while the increases observed in fixed income funds in 2019 are mainly attributable to flows, as discussed in Box 1-1.

#### Box 1-1: Flow vs Valuation effects in other investment funds and MMFs

**Investment funds have been a primary driver of the increase in assets of the NBF sector over the past decade.** The FSB's annual monitoring exercise collects data for MMFs, hedge funds and other investment funds (OIFs) – which are comprised of equity funds, fixed income funds, mixed funds and other funds.

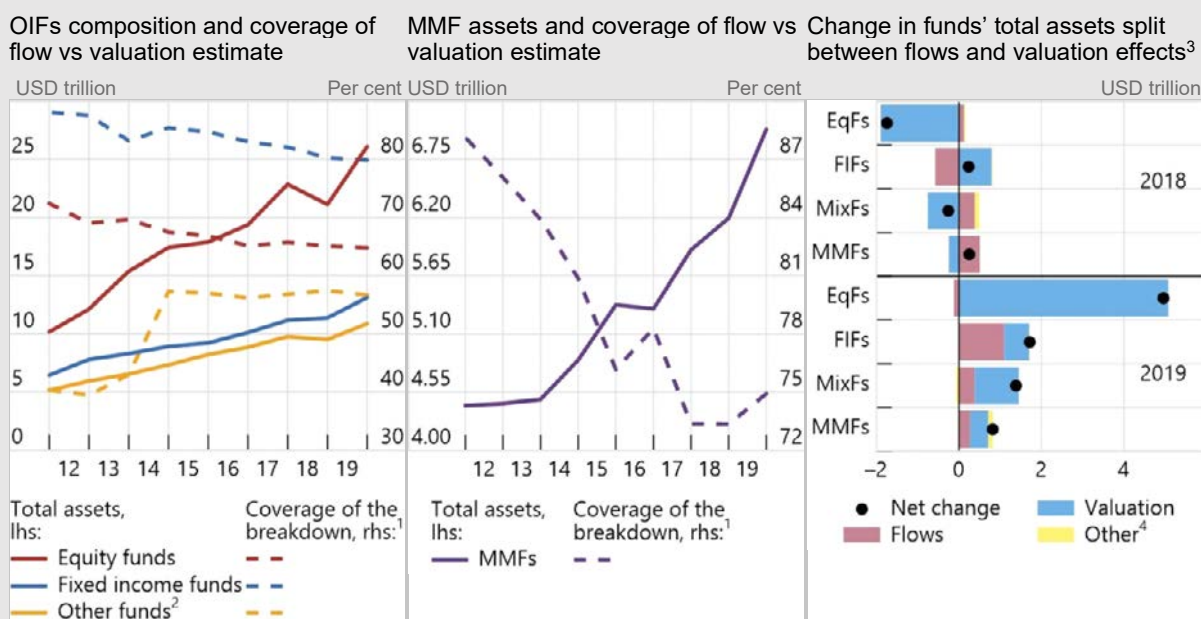
**In the 2020 global monitoring exercise, quarterly data were collected up to Q1 2020 to disentangle trends in flow and valuation effects in MMFs, equity funds, fixed income funds and**

**mixed funds.**<sup>1</sup> The contribution of valuation effects to the growth of funds' assets is estimated as the residual from subtracting the cumulative flows from total assets. Twenty jurisdictions shared data on the split between valuation and flow effects in MMFs, equity funds, fixed income funds and mixed funds.<sup>1</sup> While not all 20 jurisdictions shared data for all funds, the fund data collected represents 75%, 65%, 80% and 57% of these entities' global assets respectively, as at end 2019 (Graph B1, LHS and middle panels).

**The strong rebound in market values in 2019 following declines in 2018 is observed in equity funds.** Based on the data collected as described above, the estimated role of valuation and flows in changes in investment funds for 2018 and 2019 are shown in Graph B1, RHS. Increases were observed in 2019 in the assets of equity funds, fixed income funds, mixed funds and MMFs, with the largest increase in levels seen in equity funds – mainly as a result of valuation effects after declines in 2018. The increase in fixed income funds in 2019 was mainly as a result of flows.

### OIF growth in 2019 mainly reflects valuation effects as asset prices, particularly equities, rebounded from falls in 2018

Graph B1



EqFs = Equity funds; FIFs = Fixed income funds; MixFs= Mixed funds; MMFs = Money market funds. Annual data (end of period) provided by 29 reporting jurisdictions

<sup>1</sup> Total assets under management of each fund type from jurisdictions reporting the breakdown between flows and valuations divided by total assets of each fund type from the FSB's reporting template, including all jurisdictions. <sup>2</sup> Other funds such as mixed funds, referenced investment funds, external debt investment funds, currency funds, asset allocation funds, etc. The numerator includes only mixed funds. <sup>3</sup> Estimated based on the data reported by a sub-sample of jurisdictions. <sup>4</sup> 'Other' represents change attributable to factors other than fund flows and valuation (e.g. changes in leverage and sample adjustments).

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

The quarterly breakdown of flows vs valuation impacts up to Q1 2020 for these funds are shown in Graph B2.

**Over time, both flow and valuation effects have contributed to the growth of equity funds, fixed income funds, mixed funds and MMFs, but the relative contribution varies.** In equity funds, changes in assets are predominantly attributable to changes in valuation. Valuation impacts play a smaller role in the changes in assets for fixed income and mixed funds, with almost no impact on MMFs. The relatively larger role of valuation impacts in mixed-funds may be driven by equity holdings of these funds. In contrast, the change in the asset value of MMFs was mainly driven by flows as these funds typically hold assets of a shorter maturity and no equity. Based on the available data, the decreases

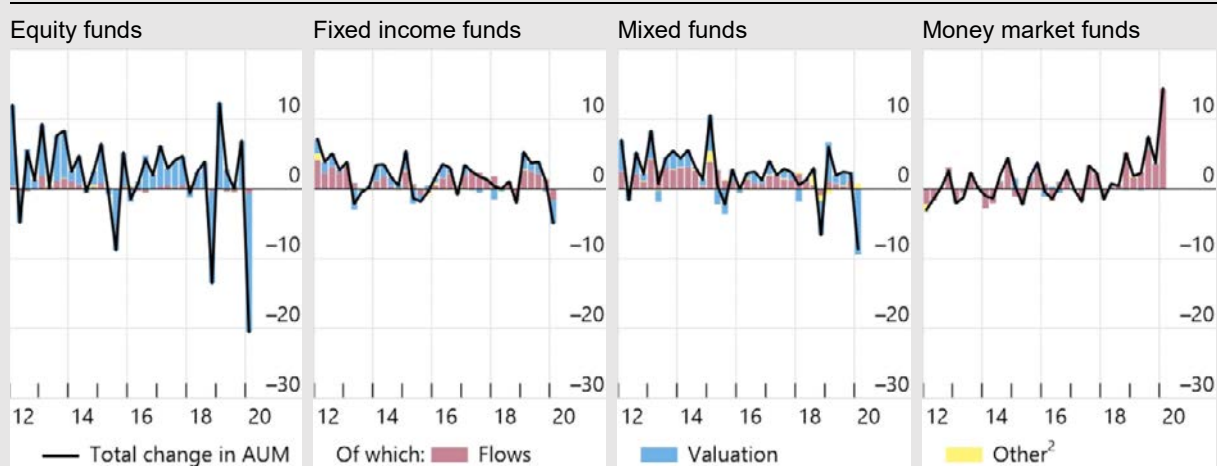


observed in these funds in Q1 2020 are mainly attributable to valuation impacts, apart from fixed income funds, where outflows also played a role.

**Changes in AUM of equity funds tend to be driven by valuation effects, whilst fixed income and mixed funds are driven by both flow and valuation impacts.<sup>1</sup>**

% of AUM

**Graph B2**



<sup>1</sup> Quarterly data up to Q1 2020. Equity funds include 19 jurisdictions. Fixed income funds include 20 jurisdictions. Mixed funds include 18 jurisdictions. Money market funds include 19 jurisdictions. <sup>2</sup> 'Other' represents change attributable to factors other than fund flows and valuation (e.g. changes in leverage and sample adjustments).

Source: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

<sup>1</sup> The analysis here follows from a case study included in the 2019 Global Monitoring Report (FSB, 2020a) which was based on data from the euro area, Japan, the UK and the US. The estimated series could be over- or under-estimating the flow effects for jurisdictions that do not explicitly account for changes in leverage. Changes as a result of leverage were mainly attributed to flow effects under this methodology - the total assets of investment funds increase (decrease) when leveraging up (down) or through derivatives. However, these considerations should not introduce significant biases in the estimated data series, given the limited changes in leverage for most types of funds. Moreover, valuation is estimated as a residual, which may be impacted by changes in the sample due to the reclassification of funds.

**Insurance corporations (ICs) and pension funds (PFs) experienced higher growth rates in 2019 compared to the prior five years; however, their share of the NBFIs assets remained constant.** Strong growth can be partly attributed to a rebound in financial markets, after the asset valuation declines toward the end of 2018, and the linkages of insurance corporations and pension funds with other OFIs, particularly investment funds (see Section 2). According to the Organisation for Economic Co-operation and Development (OECD, 2020), strong investment returns of pension funds explained the large growth of assets in 2019 in most OECD jurisdictions, although some of these gains reversed in Q1 2020. In aggregate, insurance corporations and pension funds each hold roughly 20% of NBFIs sector assets at end-2019 (Graph 1-3, RHS).

**Structured finance vehicles' (SFVs) assets continued the upward trend that started in 2017, but assets still remain below levels seen prior to the 2008 financial crisis.** In 2019, growth was mostly driven by some euro area jurisdictions (in particular, Italy and Ireland), the Cayman Islands and the US. The drivers of SFVs' growth are discussed in more detail in Section 3.7.

**The assets of CFIMLs, CCPs and trust companies decreased – mostly as a result of decreases within specific jurisdictions.** The 6.6% decrease in CFIMLs and 16.2% decrease in CCPs in 2019 were largely driven by the UK, whilst the 1.4% decrease in trust companies was mainly as a result of changes in China. The decline in UK's CFIML assets is due to a reduction

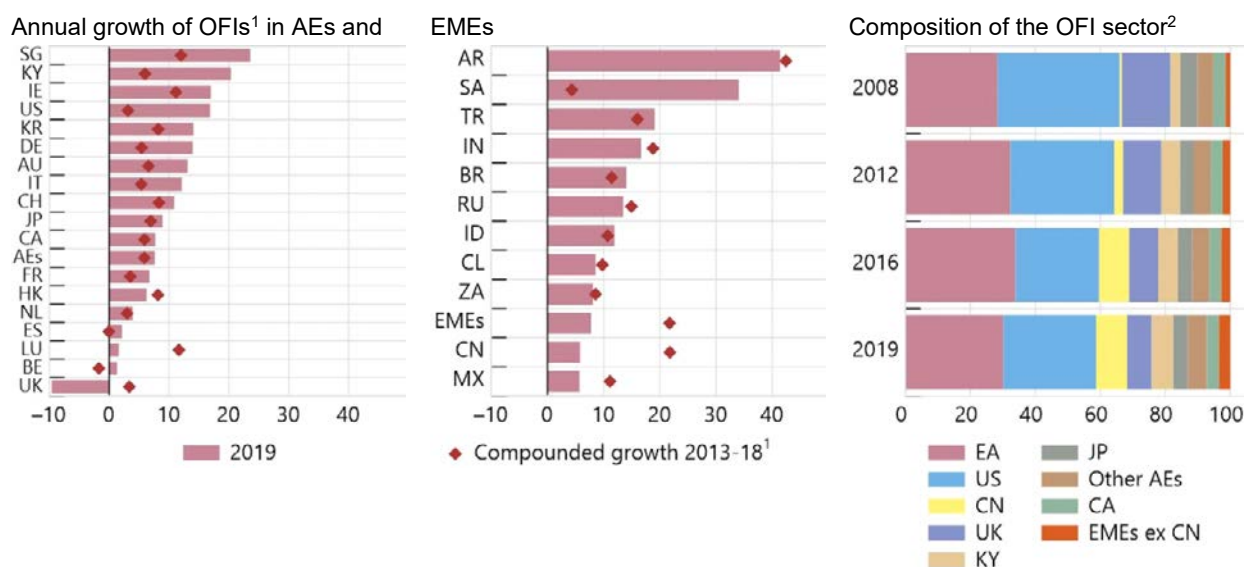


in the sample used by the Office for National Statistics for CFIMLs. However, excluding the UK, global CFIML assets would have still declined by 1.5% due to decreases in four other jurisdictions. The decrease of CCPs is mainly attributable to a shift in activity from a CCP in the UK to another CCP in France within the same corporate group. In France, CCPs hold a banking license, and as such are included as banks in this report. Excluding the UK, global CCP assets would have increased by 5.2%.

### Financial assets of OFIs experienced relatively higher growth in 2019 than in previous years.

29-Group; in per cent

Graph 1-4



<sup>1</sup> Growth rates for China and Russia are for 2014-18. Growth rates in Argentina reflect a high rate of inflation. <sup>2</sup> OFI assets by jurisdiction, 21+EA-Group.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**In 2019, OFIs in the majority of jurisdictions experienced growth at a faster pace than average annual growth rates between 2013 and 2018** (Graph 1-4, LHS and middle panels).<sup>16</sup> Moreover, the growth of OFIs outpaced that of total financial assets in the majority of jurisdictions. The US exhibited a record annual growth rate in its OFI assets (16.9%) for the reporting period of this monitoring exercise (2002-2019). Germany (14%) and Singapore (23.6%) also recorded their highest annual growth rate since 2005 and 2009, respectively.<sup>17</sup>

**The euro area accounts for the largest share of OFI assets (30%), followed by the US (29%)** (Graph 1-4 RHS). The share of global OFI assets held by EMEs has increased to 13% in 2019 from 4.9% in 2012, driven mainly by China. In 2019, the share of OFI assets held by EMEs remained unchanged at 13%. Table 1-1 describes recent developments in the main NBFIs sectors in more detail, including the 10 main OFI sub-sectors.

<sup>16</sup> In contrast, the UK decreased by 9.6% in 2019, mainly as a result of a decline in the assets of CFIMLs. This decline, as explained before, was due to a reduction in the sample used by the ONS for CFIMLs. Excluding the decline of CFIML assets, the OFI sector in the UK would have grown by 3%.

<sup>17</sup> The increase in OFI assets in Singapore is largely attributed to trust companies, due to improved reporting on financial assets.

**Table 1-1: Recent developments in major NBF sub-sectors (29-Group)**

	Size, share of global NBF assets, change in 2019	Trends in 2019
<b>Insurance corporations (ICs)</b>	<ul style="list-style-type: none"> <li>• \$35.4 trillion</li> <li>• 17.6% share of NBF assets</li> <li>• 9.8% growth</li> </ul>	<p>The financial assets of insurance corporations increased at the fastest pace since 2002. Although IC assets grew in all of the 29 reporting jurisdictions, the rebound in AEs contributed to most of the overall growth. This growth may be partly attributable to the rebound of OFIs in 2019, particularly investment funds, given the exposure of insurance corporations to OFIs (see Section 2).</p> <p>Global insurance corporation assets are held mainly in the US (31.5%), euro area (27.2%), and Japan (13.4%) while EMEs hold 11.6%.</p>
<b>Pension funds (PFs)</b>	<ul style="list-style-type: none"> <li>• \$39.5 trillion</li> <li>• 19.6% share of NBF assets</li> <li>• 9.7% growth</li> </ul>	<p>The growth in pension funds' assets accelerated in 2019, after a slowdown in 2018, growing by 9.7% in 2019 compared to 1.3% in 2018. All 28 reporting jurisdictions<sup>18</sup> showed increases in pension funds' assets during 2019.</p> <p>AEs still hold more than 96% of pension funds' assets but they continue to grow rapidly in EMEs, particularly in Turkey (37%), India (35%) and China (21%).</p>
<b>Investment funds (other than MMFs and hedge funds)</b>	<ul style="list-style-type: none"> <li>• \$50.2 trillion</li> <li>• 24.9% share of NBF assets and 40.5% of OFI assets</li> <li>• 19.2% growth</li> </ul>	<p>The fastest growing OFI sub-sector in 2019 was investment funds, where high growth reflects mostly valuation effects (rather than flows into funds) as asset prices (particularly equities) rebounded from falls at the end of 2018 (see Box 1-1). Investment funds grew by 19.2%, with fixed income funds, equity funds, and other funds growing by 15.1%, 23.5% and 14.5%, respectively.</p> <p>The US and the eight participating euro area jurisdictions continued to account for the majority of investment fund assets, representing about 45% and 27% of global investment fund assets, respectively.</p>
<b>Captive financial institutions and money lenders (CFIMLs)</b>	<ul style="list-style-type: none"> <li>• \$22.9 trillion</li> <li>• 11.4% share of NBF assets and 18.5% of OFI assets</li> <li>• 6.6% decline</li> </ul>	<p>The decline in CFIML assets was largely due to a reduction in the sample size<sup>19</sup> used by the UK which resulted in a decline of 41% in UK CFIML assets. Excluding the UK, CFIML assets showed a modest decline of 1.5%.</p> <p>However, CFIML assets grew in nine of the other 15 reporting jurisdictions.</p>

<sup>18</sup> Saudi Arabia does not report data for pension funds.

<sup>19</sup> The CFIML data included in the UK data submission is based on the sample of holding companies, and not an estimate of the whole population. In 2020, the UK Office for National Statistics (ONS) reviewed its main non-bank data collection survey. As part of the review, some CFIML holding companies were reclassified as head offices, reducing the number of CFIML holding companies.

	Size, share of global NBFi assets, change in 2019	Trends in 2019
<b>Broker-dealers (BDs)<sup>20</sup></b>	<ul style="list-style-type: none"> <li>• \$10.5 trillion</li> <li>• 5.2% share of NBFi assets and 8.5% of OFI assets</li> <li>• 6.2% growth</li> </ul>	<p>Broker-dealers' assets increased in 24 of the 27 jurisdictions that reported these data. However, the overall growth was driven mostly by the growth in AEs, particularly the UK (4.8%) and the US (3.3%). Some euro area jurisdictions exhibited significant increases in broker-dealers' assets. For example, Germany reported a significant increase in broker-dealers assets, to reach \$16.9 billion (up from \$664 million the previous year). This large increase was mainly driven by financial institutions establishing new operations in Germany in 2019 ahead of the anticipated UK withdrawal from the European Union. Broker-dealers' trends and risks are discussed in more detail in Section 3.5.</p>
<b>Money market funds (MMFs)</b>	<ul style="list-style-type: none"> <li>• \$7.0 trillion</li> <li>• 3.5% share of NBFi assets and 5.7% of OFI assets</li> <li>• 13.5% growth</li> </ul>	<p>MMFs' assets grew in the majority of jurisdictions (21 out of 29). In the US, MMF assets grew by 22% in 2019, contributing to around 86% of the total increase in MMFs' global assets. The growth in MMFs' assets in Ireland and Luxembourg offset declines observed in most other euro area jurisdictions. MMFs are discussed in Section 3.3.</p>
<b>Hedge funds</b>	<ul style="list-style-type: none"> <li>• \$5.6 trillion</li> <li>• 2.8% share of NBFi assets and 4.5% of OFI assets</li> <li>• 15.8% growth</li> </ul>	<p>The growth of reported hedge fund assets was primarily attributable to the growth in the Cayman Islands, contributing around 90% of the increase in 2019 (\$677 billion increase). However, China and Ireland also reported high nominal increases of \$61 billion and \$28 billion, respectively, while Turkey reported the highest growth rate (210%) but from a significantly lower base. In contrast, hedge funds' assets declined in the UK (-32%), South Africa (-7%), Italy (-5%) and Luxembourg (-2%).<sup>21</sup> Similar to previous reports, around 80% of reported global hedge fund assets are in the Cayman Islands.</p>
<b>Structured finance vehicles (SFVs)</b>	<ul style="list-style-type: none"> <li>• \$5.3 trillion</li> <li>• 2.6% share of NBFi assets and 4.2% of OFI assets</li> <li>• 7.0% growth</li> </ul>	<p>SFVs assets continued their upward trend that began in 2017. The increase in 2019 was mostly driven - as in previous years - by some euro area jurisdictions (in particular, Italy and Ireland), as well as the Cayman Islands and the US. These four jurisdictions contributed to about 65% of the global growth. SFV assets also exhibited growth in several EMEs, with Brazil presenting the highest growth rate (78%). Around 75% of SFV assets were classified into EF5; the rest were either classified into EF4, prudentially consolidated into banking groups and hence excluded from the narrow measure, or excluded from the narrow measure</p>

<sup>20</sup> This category includes not only broker-dealers, but also other entities with similar structures, such as securities dealers and money market dealers.

<sup>21</sup> The hedge fund sector is relatively small in Italy, South Africa, Turkey and the UK, with \$8.4 billion, \$5.7 billion, \$3.6 billion and \$2.6 billion in 2019, respectively. In contrast, hedge funds assets amounted to \$288 billion in Luxembourg in 2019.

	Size, share of global NBF assets, change in 2019	Trends in 2019
		of NBF assets for other reasons. SFVs' trends and risks are discussed in more detail in Section 3.7.
<b>Finance companies</b>	<ul style="list-style-type: none"> <li>• \$5.1 trillion</li> <li>• 2.5% share of NBF assets and 4.1% of OFI assets</li> <li>• 6.5% growth</li> </ul>	<p>In 2019, the growth in finance companies' assets accelerated in most AEs. For EMEs, the majority of jurisdictions presented slower growth rates in 2019 than in 2018 (and the average annual rate during 2013-18), with large declines in Brazil (-66%) and Turkey (-14%). Finance companies' assets also decreased in Hong Kong (-25%).<sup>22</sup> The US, Japan, and India account for the largest shares of global finance company assets (at 34%, 16% and 13%, respectively). Finance companies' trends and risks are discussed in more detail in Section 3.4.</p>
<b>Trust companies</b>	<ul style="list-style-type: none"> <li>• \$3.8 trillion</li> <li>• 1.9% share of NBF assets and 3.1% of OFI assets</li> <li>• 1.4% decline</li> </ul>	<p>The modest decline in trust companies' assets was mainly driven by declines in China (-5%) and the Cayman Islands (-33%), which offset the growth in five other reporting jurisdictions. In the Cayman Islands, a number of trust companies associated with French banks downsized during 2019 with the aim of terminating operations in this jurisdiction.</p> <p>China accounted for 82% of global trust company assets in 2019. However, this share has been declining since 2018 because of a policy that was issued by the China Banking Regulatory Commission in November 2017 to regulate banks and trust companies.<sup>23</sup> Section 3.7 provides more detail on trust companies.</p>
<b>Real estate investment trusts and real estate funds (REITs)</b>	<ul style="list-style-type: none"> <li>• \$2.8 trillion</li> <li>• 1.4% share of NBF assets and 2.3% of OFI assets</li> <li>• 11.7% growth</li> </ul>	<p>Equity REIT assets, which are 49% of total REITs, grew by 9.3% in 2019, driven mainly by growth in Korea and Singapore. Mortgage REITs, which are 30% of total REITs, grew by 11.5% driven mainly by increased growth in the Netherlands and the US.</p>

<sup>22</sup> The decrease in assets of finance companies in Hong Kong was a result of economic uncertainties since 2019, which may have caused finance companies in Hong Kong to become more prudent in granting loans. As customer loans are a major component of the total assets of these companies concerned, the total assets of these companies were considerably reduced as a consequence.

<sup>23</sup> The policy issued in 2017 requires that trust companies in China do not provide financial institutions with a conduit service for the purpose of avoiding regulations, such as investment or leverage constraints. This policy was followed by a series of guidelines for regulating the asset management businesses of financial institutions that were released jointly by the Chinese authorities in April 2018.

	Size, share of global NBFIs assets, change in 2019	Trends in 2019
<b>Central counterparties (CCPs)</b>	<ul style="list-style-type: none"> <li>• \$0.7 trillion</li> <li>• 0.3% share of NBFIs assets and 0.5% of OFI assets</li> <li>• 16.2% decline</li> </ul>	The decline in CCP assets was driven by a decline of 27% in the UK - mostly reflecting a shift in activity from a UK CCP to a French CCP with a banking license, within the same group, rather than a reduction in activity. CCP assets increased in 10 of the other 13 reporting jurisdictions.

### 1.3. Credit intermediation by the NBFIs sector

#### 1.3.1. Credit and lending assets

The credit activities of NBFIs entities are of particular importance as they potentially pose risks to financial stability arising from maturity/liquidity transformation, leverage and imperfect credit transfer. Credit assets of financial intermediaries include debt securities (e.g. bills, bonds, commercial paper), loans and cash on deposit. Deposit assets of financial intermediaries are discussed in the interconnectedness section of this report. Loan assets includes overdrafts, instalment loans, hire-purchase credits and loans to finance trade credit.

**Credit assets held by insurance corporations, pension funds and OFIs increased at a faster pace than those of banks in 2019, and account for almost 40% of total credit assets in the financial system** (Table 1-2). However, banks continue to hold the largest share of credit assets in the financial system and remain the single largest source of lending, accounting for 62% of credit assets and 83% of global lending assets at end-2019.

**OFIs credit assets have increased significantly since 2008 and amounted to \$49.2 trillion in 2019.** In contrast to banks, this increase is mostly related to growth in credit assets other than deposits and loans (Graph 1-5, LHS).

**Among OFIs, investment funds continued to hold the largest share of credit assets** (Graph 1-5, middle panel). Credit assets of OFIs increased in all jurisdictions, except Belgium, Spain and the UK. Some jurisdictions reported that the drivers of this growth mainly relate to higher non-financial corporate debt issuance in a low interest rate environment. Within OFIs, credit assets held by hedge funds increased at the highest rate in 2019 (19.4%) – mainly driven by the Cayman Islands, followed by MMFs (16.2%).

**Table 1-2: Credit and lending in the financial system (21+EA-Group)**

	Total	Banks	Insurance corporations	Pension funds	OFls
<b>Credit assets (including deposits)</b> (USD trillion at end-2019)	204.9	126.7	19.2	9.9	49.2
Growth (% in 2019)	6.2	4.6	8.5	9.6	8.8
<b>Credit assets (excluding deposits)</b> (USD trillion at end-2019)	185.9	113.2	18.2	9.3	45.2
Growth (% in 2019)	7.0	5.7	8.7	9.8	9.3
<b>Lending assets</b> (USD trillion at end-2019)	102.4	85.1	2.4	0.3	14.6
Growth (% in 2019)	4.7	5.1	5.7	8.0	2.0

Some exchange rate effects have been netted out by using a constant exchange rate (from 2019).

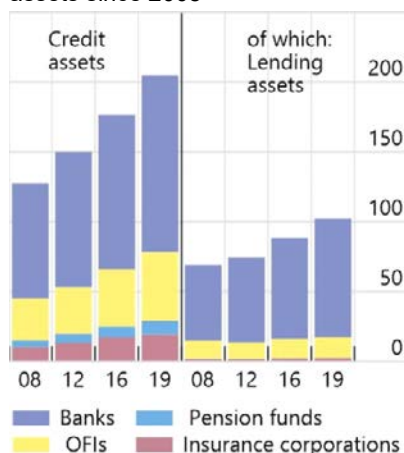
Sources: Jurisdictions' 2020 submissions (national sectoral balance sheet and other data); FSB calculations.

## OFI share of credit assets increased, reflecting the increase in assets held by investment funds

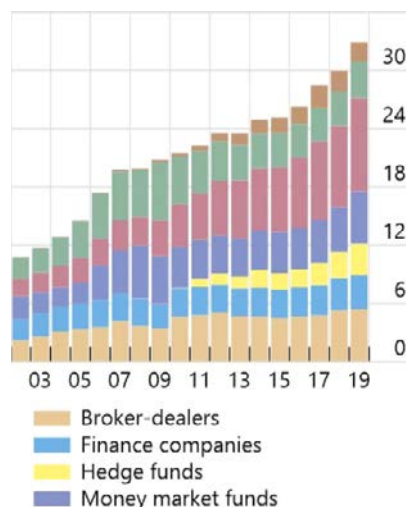
21+EA-Group, USD trillion

Graph 1-5

Composition and evolution of credit assets since 2008



Credit assets held by selected OFIs



Lending assets held by OFIs



OFls = other financial intermediaries.

Sources: Jurisdictions' 2020 submissions (national sectoral balance sheet and other data); FSB calculations.

**Among OFI sub-sectors, finance companies and SFVs hold the largest share of lending assets, which increased by 6% and 3% in 2019, respectively** (Graph 1-5, RHS). The increase in finance company lending assets was observed in 16 out of 23 jurisdictions, but mainly driven by increases in finance companies in Australia, China and India. Lending assets of SFVs increased in 8 out of 11 reporting jurisdictions, with the largest nominal increases seen in the US, Japan, France and Australia.



### 1.3.2. Wholesale funding and repos

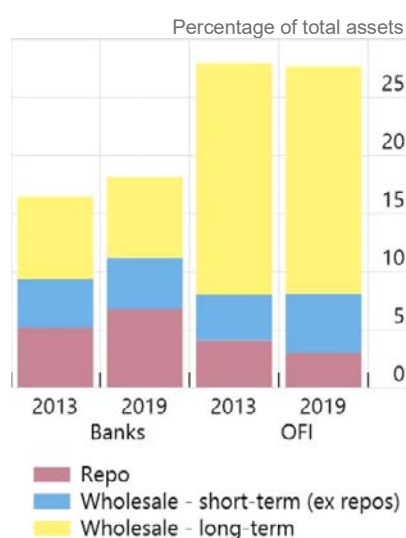
Wholesale funding instruments, which include repurchase agreements (repos), are important funding sources for financial intermediaries, notably for banks. While wholesale funding instruments support price discovery and secondary market liquidity for a wide variety of securities, they can also be used by non-bank financial entities to create short-term money-like liabilities, facilitating credit growth, and maturity/liquidity transformation outside the banking system. The repo market is a major channel for circulating cash and collateral through the financial system. This may pose financial stability risks by contributing to the build-up of leverage and maturity transformation. Wholesale funding may also increase interconnectedness among financial institutions and contribute to pro-cyclicality. However, owing to the secured nature of each transaction combined with the comparatively short maturities, the repo market has generally remained functional during stress, e.g. in 2008 and 2020.

#### Wholesale funding for OFIs was little changed in 2019 and OFIs remained net providers of cash through reverse repos to the financial system

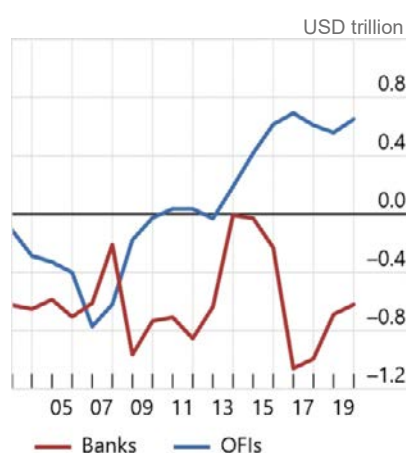
29-Group

Graph 1-6

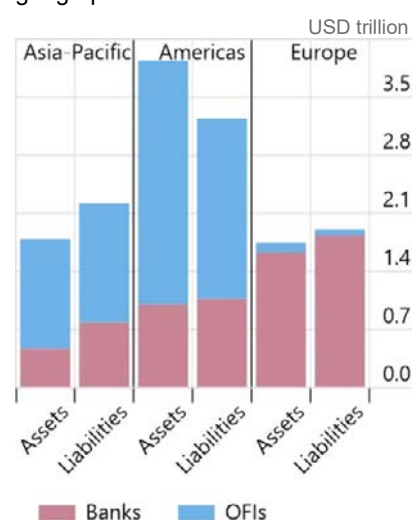
Funding of entities, by source<sup>1</sup>



Net repo position<sup>2</sup>



Repo assets and liabilities across geographic areas<sup>3</sup>



<sup>1</sup> Bank funding data from AU, BE, BR, CA, CH, ES, FR, KR, KY, LU, MX, NL, UK, US, and ZA. OFIs funding data from AU, BE, BR, CN, ES, FR, ID, IE, IT, KR, LU, MX, NL, SG, and the US. Short-term funding is defined as wholesale funding whose residual maturity is less than 12 months. <sup>2</sup> Repo assets less repo liabilities. Data for banks' net repo positions from AR, AU, BE, BR, CA, CH, CN, DE, ES, FR, ID, IN, IT, JP, KR, KY, MX, NL, RU, SA, SG, TR, UK, US and ZA. Data for OFIs' net repo positions from AU, BE, BR, CN, ES, FR, ID, IE, IN, IT, JP, KR, LU, MX, NL, RU, SG and the US. Assets related to repo transactions on the buyer's (collateral-taker, cash-provider) balance sheet. Liabilities related to repo transactions on the seller's (collateral-provider, cash-taker) balance sheet. <sup>3</sup> Americas = BR, MX, and the US; Asia-Pacific = AU, CN, IN, JP, KR, and SG; Europe = ES, FR, IT, NL, and RU.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**OFIs' reliance on wholesale funding has changed little in comparison to 2013, while banks' reliance on wholesale funding has increased.** Long-term wholesale funding remained the dominant source of wholesale funding for OFIs (19.6% of total financial assets), while short-term wholesale funding<sup>24</sup> (excluding repos) comprises 5.1% (Graph 1-6, LHS), but this varied significantly across jurisdictions. OFIs in some jurisdictions used almost no long-term wholesale funding (Brazil, Mexico, and the US), while others relied on long-term wholesale funding for more

<sup>24</sup> Short-term funding is defined as all wholesale funding with a residual maturity of less than 12 months.

than 80% of their total funding (e.g. Australia, Canada, Indonesia, Ireland, Italy, Luxembourg, Singapore and South Africa). This reliance on long-term wholesale funding was typically due to either finance companies or SFVs.

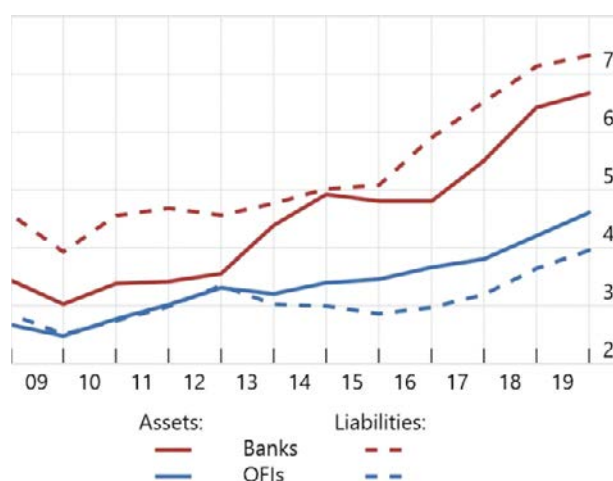
**OFIs continue to be net providers of cash to the financial system through reverse repos, while banks remain net recipients of cash through repos as reflected by their net repo positions** (Graph 1-6, middle panel). In 2019, OFIs' net repo positions increased after two consecutive years of decreases. Amongst OFIs, MMFs, trust companies, investment funds and SFVs are net providers of cash through reverse repos, whereas broker-dealers, hedge funds and finance companies are net recipients. Banks' repo assets continued to increase in 2019 but at a slower pace than in the previous two years. However, some jurisdictions saw large declines in banks' repo assets (Brazil, Switzerland, India and the UK), with the UK showing the largest nominal decline. The use of repo by OFIs is considerably higher in the Americas and Asia, compared to Europe (Graph 1-6, RHS).

### Repo assets and liabilities continued to increase in 2019

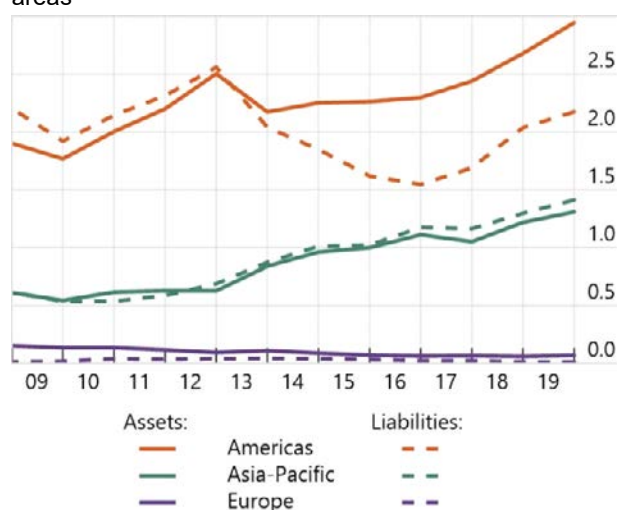
29-Group, USD trillion

Graph 1-7

Total repo assets and liabilities of banks and OFIs



Total OFI repo assets and liabilities across geographic areas



Europe = ES, FR, IT, NL and RU; Americas = BR, MX, and the US; Asia-Pacific = AU, CN, IN, JP, KR, and SG.

Sources: Jurisdictions' 2020 submissions (national sectoral balance sheet and other data); FSB calculations.

**The use of repos by OFIs has grown significantly since 2016.** OFI repo assets and liabilities increased by 9.6% and 8.5% in 2019, to reach \$4.6 and \$4.0 billion, respectively. This was mainly driven by the increasing use of repo as a source of funding by OFIs in the Americas and Asia (Graph 1-7, RHS). The largest net repo position arises from OFI positions in the Americas. Market growth has been driven not only by investors seeking funding, but also by investors in search of specific collateral. Lenders of cash can obtain specific securities (e.g. to take a market position, or to cover a short position), while lenders of securities gain improved liquidity for the term of the repo.

## 2. Direct Interconnectedness among financial sectors

Financial interconnectedness is a feature of an open and integrated global financial system. It can help diversify risk across financial sectors, but can also propagate certain risks during

periods of stress.<sup>25</sup> Interconnectedness has implications for financial stability through funding and credit risk channels, particularly where these channels are associated with the build-up of leverage or maturity/liquidity mismatches. Therefore, linkages among banks, OFIs and other non-bank financial entities can serve as important indicators of potential contagion, within and across borders.

This section focuses on direct domestic balance sheet interconnectedness between banks and OFIs, insurance corporations and pension funds, as well as OFI cross-border linkages.<sup>26</sup> To measure direct interconnectedness, the FSB compiles aggregated balance sheet data to get bilateral exposures between financial sectors (e.g. assets and liabilities of banks to OFIs and of OFIs to banks).<sup>27</sup> Exposures refer to the balance sheet asset exposures that arise from credit provision and/or investment to/in a counterparty, while use of funding dependence refers to the dependence that arises from sourcing funding from a counterparty. These aggregated data are used to calculate high-level measures of interconnectedness (including exposures and funding dependence) between sectors.

Interconnectedness between banks and OFIs through credit and funding relationships has increased in US dollar terms, but when measured as a percentage of bank assets these links remained largely unchanged since 2016 with a marginal decrease in 2019. When measured as a percentage of OFI assets, links between OFIs and banks have declined from 2009 levels. Investment funds and MMFs remain the largest OFI sub-sectors that provide credit to banks.

## 2.1. Overall interconnectedness of financial intermediaries in 2019

**The scope of interconnectedness data improved in the 2020 monitoring exercise; however, data gaps remain.** In the 2020 exercise additional time series data for interconnectedness were collected and the overall coverage of linkages reported by jurisdictions improved – with a large number of jurisdictions reporting a larger number of data points. Therefore, changes in interconnectedness measures may also reflect improvements in the availability of data over time at a jurisdictional level. However, in certain instances authorities only reported a subset of exposures, suggesting further consideration of potential improvements in the scope of interconnectedness data. In addition, similar to the past exercises, the 2020 monitoring exercise did not call for collection of data by type of exposure or disaggregated data on cross-border linkages; therefore, the nature of exposure and the set of cross-border entities with which these links exist is not known.

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<sup>25</sup> For example, if one or more large OFIs (particularly those with a high degree of leverage or significant maturity/liquidity transformation) are significant borrowers from one or more banks, material credit deterioration of those OFIs could precipitate broader contagion to a large bank or across multiple banks, which may spread to the entire banking system or other financial intermediaries.

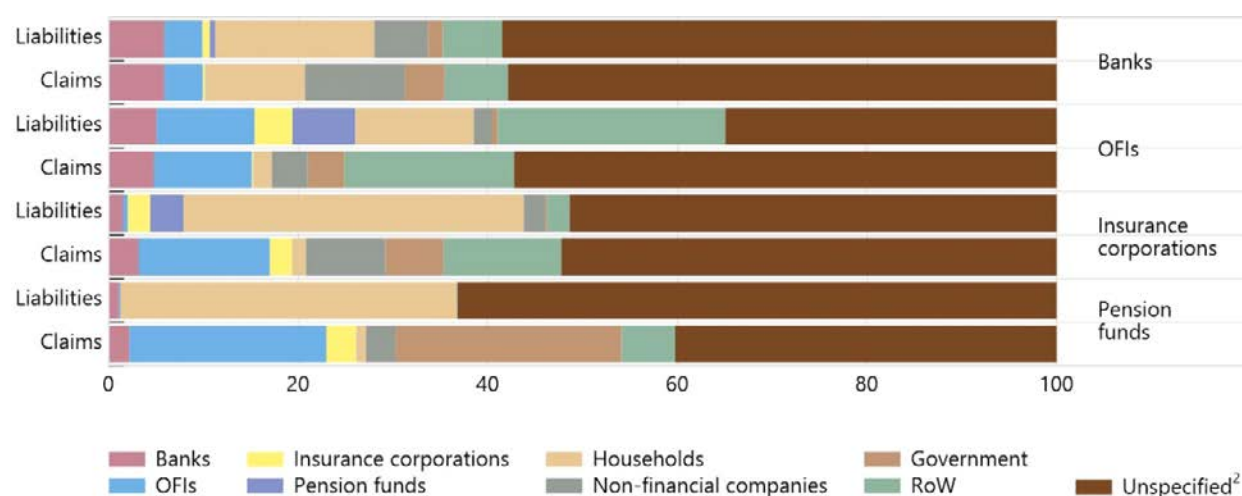
<sup>26</sup> Direct borrowing/lending and investment exposures between two counterparties are examples of direct interconnectedness.

<sup>27</sup> The FSB makes adjustments for assets and liabilities of OFIs that are prudentially consolidated into banking groups whenever jurisdictions provided the required granularity in their data submissions (in these cases data net of prudential consolidation are used). Most jurisdictions have followed their respective accounting rules and brought the full amount of an entity's assets back onto the bank's balance sheet, even in the case of partial ownership.

## Aggregate linkages, measured as a percentage of global financial assets<sup>1</sup>

29-Group

Graph 2-1



<sup>1</sup> The total reported linkages of all participating jurisdictions as a percentage of total liabilities and claims of each sector. The computed measures do not capture risks from indirect interconnectedness and do not take into account important qualitative aspects, such as the difference between secured and unsecured liabilities. <sup>2</sup> Unspecified indicates additional unspecified linkages, which include linkages to other sectors not covered in this report.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

The aggregate domestic linkages among banks, insurance corporations, pension funds and OFIs are shown in Graph 2-1 as a percentage of total liabilities and claims, together with their linkages to domestic households, government and non-financial corporates. Cross-border linkages are shown as linkages to the rest of the world (RoW). The unspecified category represent additional links that were either not reported or extend beyond the data coverage of the monitoring exercise. Based on available data, the relative importance of linkages varies across sectors, according to different business models.

**In aggregate, OFIs have the largest cross-border links, when measured as a percentage of total claims and liabilities.** The largest liabilities of banks, insurance companies and pension funds are to households, whereas the OFIs' largest liabilities are cross-border exposures. These cross-border exposures includes exposures to both bank and non-bank financial intermediaries. OFIs also show relatively large cross-border claims, whereas banks have the largest claims on households and non-financial corporates; and insurance companies and pension funds have relatively large claims on OFIs.

**While households are directly exposed to non-bank intermediaries, in aggregate non-bank intermediaries do not have large claims on households.** The data collected show that households invest in pension funds, insurance corporations and OFIs but, in contrast to banks, households do not obtain a large amount of funding from the NBFIs sector.

**The linkages shown in Graph 2-1 vary significantly across jurisdictions.** Domestic links among financial intermediaries and cross-border links of OFIs are discussed in more detail in the following sections.

## 2.2. General trends in interconnectedness between banks and the NBFi sector

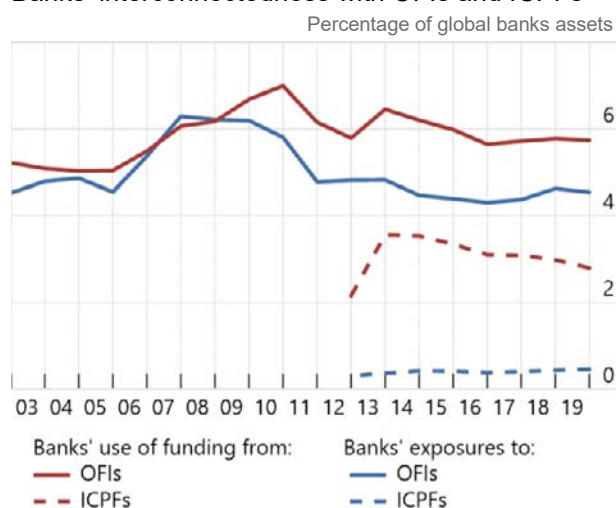
**Banks and non-bank financial intermediaries are directly connected, with funding channels operating in both directions.** For example, banks often extend credit to (or invest in) insurance corporations, pension funds or OFIs, while these entities provide funding to banks, or custodian banks receive the non-invested part of fund assets/operational deposits. In 2019 these links remained broadly similar in magnitude to those in the previous year.

**Banks' linkages with the NBFi sector were little changed in 2019, with their use of funding from insurance corporations and pension funds continuing to decrease.** Measured as a percentage of bank assets, banks' use of funding from OFIs and banks' exposure to OFIs have remained stable in recent years, even though these links have increased in aggregate terms. Banks' use of funding from insurance corporations and pension funds has been decreasing since 2013 – mainly as a result of insurance corporations and pension funds in the euro area where, amid negative interest rates, they have reduced their exposures to banks.

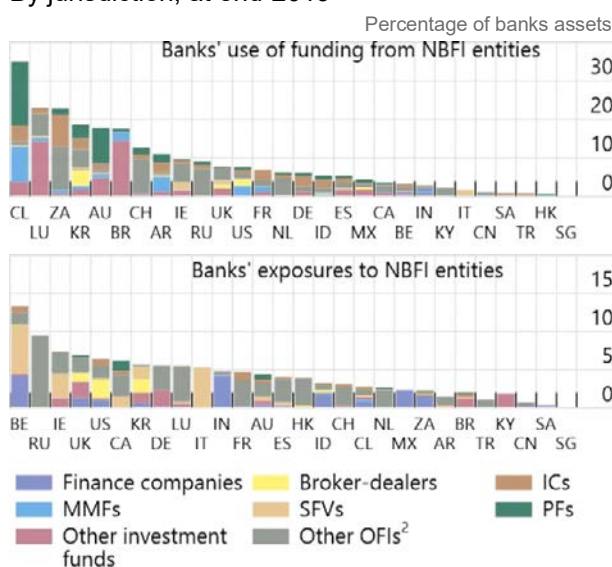
### Banks' use of funding from non-bank financial intermediaries is larger than its exposure to these entities

Graph 2-2

Banks' interconnectedness with OFIs and ICPFs



By jurisdiction, at end-2019<sup>1</sup>



The left-hand panel includes data for the 21+EA-Group; while the right-hand panels include data for the 29-Group.

<sup>1</sup> For upper (lower) panel, banks' use of funding from (exposure to) the corresponding NBFi sub-sector, net of prudential consolidation (where data permits), as a share of bank assets. <sup>2</sup> 'Other OFIs' includes CCPs, hedge funds, trust companies and unidentified OFIs.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**In aggregate, banks' use of funding from non-bank financial intermediaries exceeded their exposure these entities,** with use of funding from OFIs exceeding use of funding from insurance corporations and pension funds. The NBFi sector is an important provider of bank funding – amounting to 5.7% in 2019. Exposures varied significantly across jurisdictions, with banks' use of funding from OFIs being nearly equal to banks' exposure to OFIs in some jurisdictions but quite different in others. These exposures are typically in the form of deposits – shown in Graph 2-3. Banks' use of funding from insurance corporations, pension funds and OFIs



was above 20% of total bank assets in Chile, Luxembourg<sup>28</sup> and South Africa (Graph 2-2, RHS top). The largest use of funding from pension funds was reported in Chile and Australia, while Luxembourg and Brazil reported other investment funds as relatively large NBFIs providers of finance to banks.<sup>29</sup>

**Banks' exposures to non-bank financial intermediaries were mainly to OFIs; however, links varied significantly across jurisdictions.** Bank exposures to insurance corporations and pension funds remained relatively small, with larger exposures reported to OFIs. Banks' exposures to OFIs in aggregate amounted to 4.5% of bank assets in 2019 with these links below 5% of bank assets in 18 out of 28 reporting jurisdictions, and over 10% of bank assets in Belgium (Graph 2-2, RHS bottom). The types of entities to which banks are exposed also varied significantly across jurisdictions – for example, banks in Belgium have relatively large exposures to SFVs and finance companies, while Korean banks' exposures to the NBFIs sector include mainly exposures to investment funds and broker-dealers. In general, banks' exposures remained below 2% of total bank assets for MMFs, other investment funds and broker-dealers for the majority of jurisdictions, while larger exposures to finance companies and SFVs were seen in a few jurisdictions.<sup>30</sup> However, in several jurisdictions data limitations prevent the identification of these OFI sub-sectors.<sup>31</sup>

**Links between banks and non-banks are also analysed from the NBFIs sector's perspective.** Although OFIs' interconnectedness with banks (Graph 2-2) is effectively the mirror image of banks' interconnectedness with OFIs (Graph 2-3), in some jurisdictions these linkages tend to be more important for OFIs than for banks (e.g. those with a relatively large banking sector).

**Measured as a percentage of OFI assets, linkages between OFIs and banks continued their downward trend in 2019, and are now at levels lower than prior to the 2008 financial crisis.** Funding and credit interconnectedness between banks and OFIs, measured as a percentage of OFI assets, decreased marginally in 2019 to 6.2% and 5.0% respectively (Graph 2-3, LHS). This downward trend is broad based, with OFI exposure to banks decreasing in 18 out of the 28 jurisdictions that are included in the sample between 2012 and 2019. Measured as a percentage of insurance corporation and pension fund assets, these entities' exposure to banks has also been decreasing since 2013, to reach 3.8% in 2019.

**OFIs' use of funding from banks remains significant in a number of jurisdictions.** OFIs' use of funding from banks is larger than 10% of total OFI financial assets in 11 jurisdictions and amounts to over 15% of total OFI financial assets in Hong Kong, Russia, Indonesia and Belgium (Graph 2-3, RHS top panel).

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<sup>28</sup> In Luxembourg, this is primarily due to investment funds' operational deposits at their custodian banks. These operational deposits are the non-invested part of the fund's assets and are necessary for the fund to remain operational. As custodian banks are not credit-driven, this cash is typically placed on a short-term basis at the central bank or other banks, leading to very low credit-to-deposit ratios.

<sup>29</sup> For a discussion of bank funding from investment funds in Brazil, see Box 3-3 in FSB (2018).

<sup>30</sup> In cases where data net of prudential consolidation are not available this could include intra-group connections.

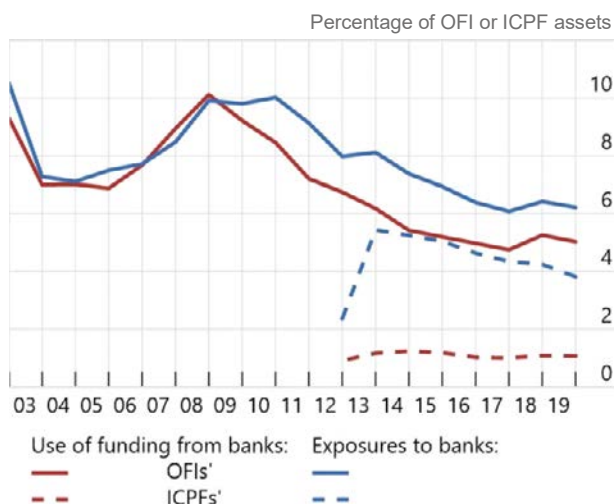
<sup>31</sup> The 2020 annual monitoring exercise data templates did not include a breakdown of all OFI sub-sectors, for example CFIMLS are not included.



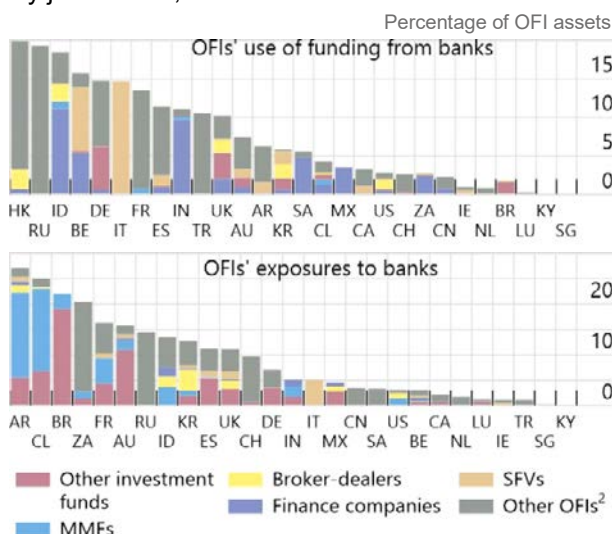
## NBFI sector interconnectedness with the banking sector decreased relative to NBFI assets

Graph 2-3

### Interconnectedness of NBFI sector with banks



### By jurisdiction, at end-2019<sup>1</sup>



The left-hand panel includes data for the 21+EA-Group; while the right-hand panels include data for the 29-Group.

<sup>1</sup> For upper (lower) panel, banks' claims on (liabilities to) the corresponding OFI sub-sector, net of prudential consolidation (where data permits), as a share of OFI assets. <sup>2</sup> 'Other OFIs' includes CCPs, hedge funds, trust companies and unidentified OFIs.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**OFI exposure to banks is mainly through deposits, which have decreased as a percentage of OFI assets since the 2008 financial crisis** (Graph 2-4, LHS). While the aggregate value of OFI deposits at banks increased in 2019, deposits as a share of OFI assets have steadily declined since the 2008 financial crisis. The decreasing trend in OFI deposits is broad based and has been present in many jurisdictions and OFI sub-sectors (Graph 2-4, RHS). One exception to this trend are SFVs, whose deposits have increased as a share of total assets since 2012.

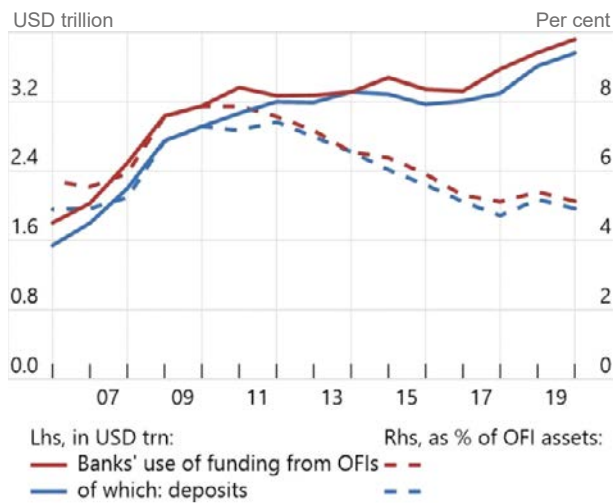
**Measured as a share of their respective assets, MMF and SFV deposits increased in 2019.** In contrast to the decrease in the overall share of OFI deposits seen on Graph 2-4 (LHS), the deposits of MMFs increased in 2019 relative to their assets, in contrast with declines over the past decade. The deposits of MMFs accounted for 9.2% of overall MMF assets. SFV deposits continued to increase in 2019.

## Banks' use of funding from OFIs are mainly in the form of deposits

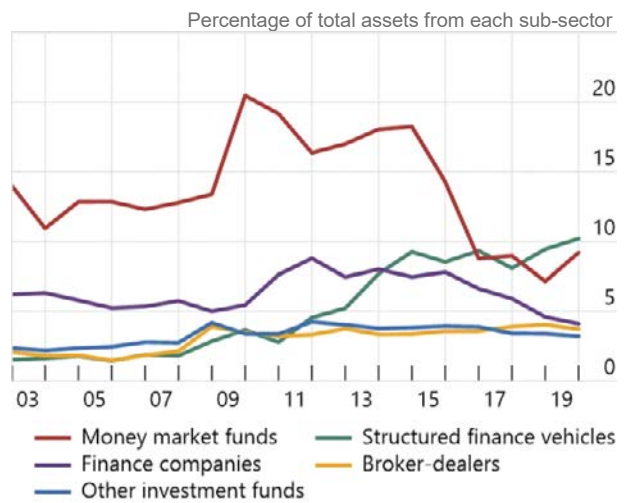
29-Group

Graph 2-4

Banks' use of funding from OFIs and deposits<sup>1</sup>



OFIs' deposits – selected sub-sectors<sup>1</sup>



<sup>1</sup> Data from 24 reporting jurisdictions.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

### 2.3. Interconnectedness among OFIs, PFs and ICs

**Beyond direct funding and credit exposure to banks, linkages exist among non-bank financial entities – for example pension funds and insurance corporations invest in OFIs.** While insurance corporations and pension funds tend to lend to, or invest in, OFIs, as shown in Graph 2-5, they typically do not obtain significant funding from OFIs, and analysis of this is therefore not included in this report.

**Pension funds' and other investment funds' exposure to OFIs have remained relatively constant over the past decade, while that of insurance corporations has decreased.** Rather than providing direct lending to OFIs, insurance corporations and pension funds invest in OFIs. A reversal of such investments by insurance corporations or pension funds from certain OFIs could lead to funding pressure on these OFIs and, in turn, the funding that these OFIs provide to other sectors. OFIs' use of funding from pension funds continued to exceed their use of funding from insurance corporations, which has been declining over the past several years (Graph 2-5, LHS). Aggregate linkages between OFIs and investment funds have increased slightly over the past three years, mainly driven by investment funds and OFIs in the US.

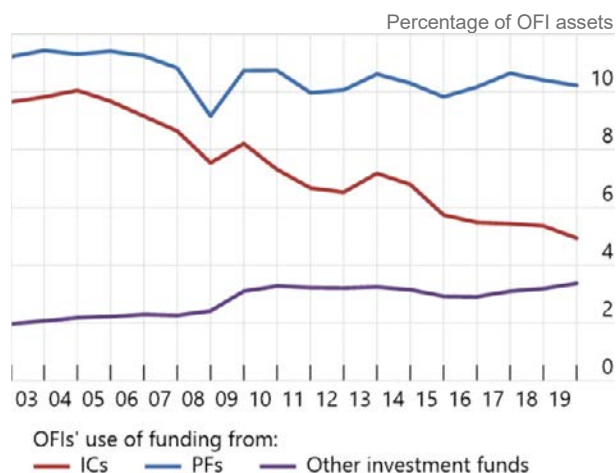
**Exposures of insurance corporations and pension funds to OFIs, and exposures among OFIs, differ across jurisdictions.** For example, pension funds' exposures to OFIs as a percentage of OFI assets are relatively large in Australia and Brazil, while insurers' exposures to OFIs, measured as a percentage of OFI assets in respective jurisdictions, are relatively large in South Africa, France and Germany (Graph 2-5, RHS). The largest exposures among OFIs (larger than 15% of OFI assets) were reported by India, Luxembourg, Korea and the Cayman Islands.

## Pension funds' exposures to OFIs have remained relatively constant over the past decade, while that of insurance corporations and other investment funds has decreased

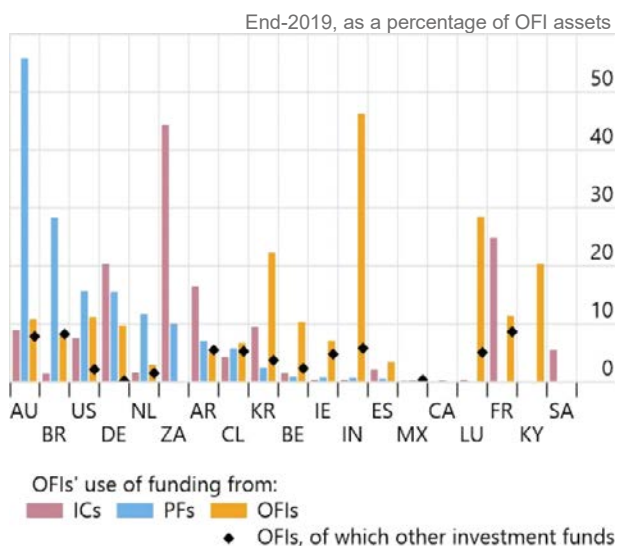
29-Group

Graph 2-5

OFIs' use of funding<sup>1,2</sup>



OFIs' use of funding from insurance corporations, pension funds and OFIs<sup>2</sup>



<sup>1</sup> OFIs' use of funding from ICs = OFIs' liabilities to insurance corporations as a share of OFI assets. OFIs' use of funding from PFs = OFIs' liabilities to pension funds as a share of OFI assets. OFIs' use of funding from OFIs = OFIs' liabilities to sum of MMFs, HFs, OIFs, FinCos, and BDs as a share of OFI assets. OFIs' use of funding from OIFs = OFIs' liabilities to other investment funds as a share of OFI assets.

<sup>2</sup> Net of entities prudentially consolidated into banking groups.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

## 2.4. Cross-border interconnectedness

Cross-border interconnectedness data (exposures and funding links with the rest of the world) were collected for the financial sectors of each jurisdiction (e.g. banks, OFIs, insurance corporations and pension funds).

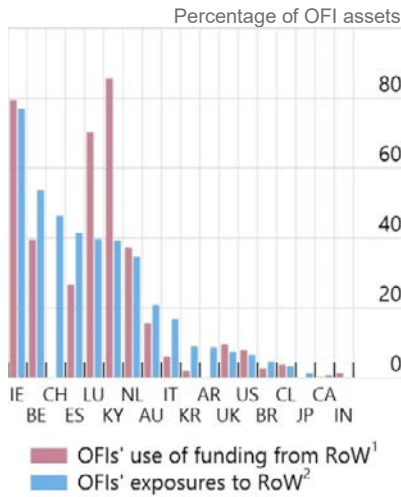
**OFI sectors in jurisdictions that serve as hubs for international capital flows continued to have relatively high levels of cross-border interconnectedness.** For example large cross-border exposures were reported for OFIs residing in Ireland, Belgium, Switzerland, Luxembourg and the Netherlands. There is also a positive correlation between the relative size of the OFI sector and the relative size of cross-border links – i.e. the larger the OFI sector is as a share of the overall financial system, the larger the cross-border links (Graph 2-6 middle panel).

## Cross-border interconnectedness

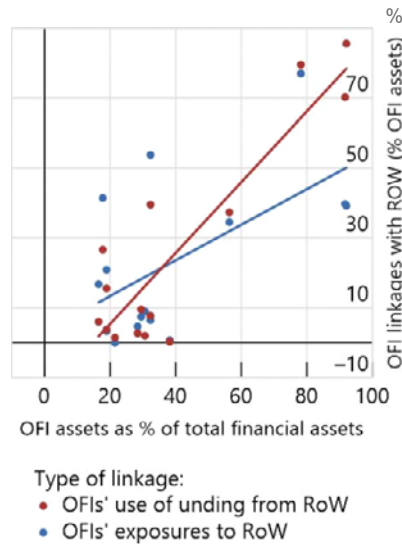
29-Group

Graph 2-6

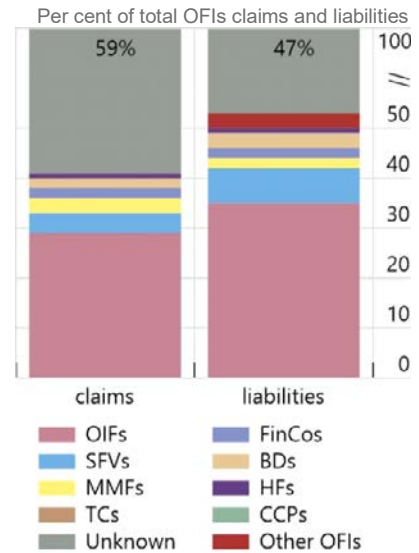
Aggregate exposures between financial intermediaries and the rest of the world (RoW)



Larger relative size of OFIs tends to be associated with larger cross-border exposures



OFI cross-border interconnectedness, at end-2019



<sup>1</sup> OFIs' liabilities to the RoW as a share of OFI assets. <sup>2</sup> OFIs' claims on the RoW as a share of OFI assets.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**A significant part of cross-border OFI linkages can be attributed to other investment funds** (i.e. investment funds other than MMFs and hedge funds, 29% of assets and 35% of liabilities) (Graph 2-6, RHS), which includes funds in one jurisdiction investing in funds in another jurisdiction. However, across all reporting jurisdictions, a significant portion of interconnections between the OFI sector and RoW (59% of assets and 47% of liabilities) cannot be attributed to a specific OFI sub-sector based on the data collected by the exercise.

### 3. The narrow measure of NBFi

This section first describes the FSB's process for obtaining the narrow measure according to the five economic functions (EFs) or activities.<sup>32</sup> It then provides an overview of global and regional trends for the overall narrow measure across all EFs.<sup>33</sup> Finally, the trends and risk metrics are presented for each of the five EFs (see Annex 4 for discussion of the metrics used to describe these risks).<sup>34</sup> The key takeaways are discussed below.

**The narrow measure of NBFi grew by 11.1% to \$57.1 trillion in 2019**, at a faster pace than the 2013-18 average annual growth rate of 7.1%. It now represents 14.2% of total global financial assets.

<sup>32</sup> The narrow measure also includes an unallocated category, which captures OFIs that the relevant authorities assessed to be involved in bank-like financial stability risks from NBFi, but which could not be assigned to a specific economic function.

<sup>33</sup> As in previous Reports, the 29-Group sample is used for the narrowing down section of this Report because of its greater granularity. Therefore, all the aggregates discussed in this Section relate to the 29-Group sample and might deviate from the aggregates discussed in Section 1 (which relies, in parts, on the 21+EA-Group sample).

<sup>34</sup> The Experts Group periodically assesses the effectiveness of these metrics as measures of the underlying risks.

- **Collective investment vehicles with features that make them susceptible to runs (EF1) grew by 13.5% in 2019**, increasing its share to 72.9% of the narrow measure. Two of the largest EF1 entity types, MMFs and fixed income funds, invest primarily in credit assets (reflecting their business models) and engage in liquidity and maturity transformation.
- **Loan provision that is typically dependent on short-term funding (EF2) grew by 6.1% in 2019**, representing 6.8% of the narrow measure. Finance companies, the entity type most commonly classified into EF2, displayed a somewhat elevated degree of leverage, but have moderate maturity transformation in most jurisdictions.
- **Intermediation of market activities dependent on short-term funding (EF3) grew by 5.4% in 2019**, representing 8.2% of the narrow measure. Broker-dealers that are not prudentially consolidated into banking groups constitute the largest EF3 entity type; they employ significant leverage (reflecting their business models), particularly when accounting for off-balance sheet exposures. The leverage of these broker-dealers increased modestly in 2019, but in aggregate remains lower than the levels seen in the lead up to the 2008 financial crisis.
- **Insurance or guarantees of financial products (EF4) grew by 16.6% in 2019, but still represents less than 1% of the narrow measure.** While credit insurers remain the most common EF4 entity type, assets of investment funds involved in credit derivatives have increased in recent years, and accounted for the biggest share of EF4 assets in 2019.
- **Securitisation-based credit intermediation (EF5) increased by 2.5% in 2019**, as increases in assets of SFVs, which include CLOs, offset a decrease in assets of Chinese trust companies. EF5 now accounts for 8.4% of the narrow measure. Assets of SFVs continued their growth trend seen since 2017, but still remain below their pre-2008 levels.

### 3.1. Narrowing down towards an activity-based measure of NBF1

**The FSB's monitoring methodology of narrowing down entities in the NBF1 sector to an activity-based narrow-measure of NBF1 involves two steps.**

1. The first step casts the net wide to capture an aggregate measure of the financial assets of entities that engage in NBF1 (the NBF1 sector – discussed in Section 2). Such non-bank financial intermediaries include insurance corporations, pension funds, OFIs and financial auxiliaries.
2. The second step narrows the focus to non-bank financial entities that are involved in credit intermediation and that have increased potential for posing risks to financial stability (through liquidity/maturity transformation and/or leverage), resulting in the

FSB's "narrow measure" of NBFI.<sup>35</sup> This step is undertaken by classifying a subset of the NBFI entities into the five economic functions (EFs) shown in Table 3-1.

**To implement this activity- or EF-based approach to monitoring NBFI, authorities assess non-bank financial entities' business models, activities and associated bank-like risks that may be posed to financial stability, and classify the relevant entity types into one or more of the five EFs.**<sup>36</sup> Authorities exclude entities that are either: (i) not typically part of a credit intermediation chain; or (ii) part of a credit intermediation chain, but are not involved in significant maturity/liquidity transformation and/or leverage. In some cases, this approach incorporates authorities' supervisory judgement (or qualitative information) given that data are sometimes not available.

**The inclusion of non-bank financial entities or activities in the narrow measure is based on a conservative (inclusive) assessment of the risks such entities or activities may pose, especially during stressed events.** The conservative assessment has two features:

- (i) Classification is done on a pre-mitigant basis – that is classifying authorities are asked to assume a scenario in which policy measures have not been adopted and/or risk management tools are not exercised. It does not constitute a judgement that policy measures that could be applied to address the financial stability risks of these NBFI entities and activities are inadequate or ineffective, nor does it necessarily reflect a judgement that there is regulatory arbitrage.
- (ii) Non-bank financial entities are excluded from the narrow measure only if data are available and the analysis of the data and rationales for exclusion, in light of the methodology and classification guidance used in the FSB's annual monitoring exercise, provides sufficient grounds for exclusion by participating jurisdictions.

**The conservative, pre-mitigant approach helps to improve data consistency across jurisdictions.** However, the narrow measure may overestimate the degree to which NBFI currently gives rise to post-mitigant financial stability risks given that existing policy measures, risk management tools, or structural features for them may have significantly reduced or addressed financial stability risks.<sup>37</sup>

Each EF contains a number of different entity types, and the financial stability risks posed by different entity types, and within an entity type, may differ (Table 3-1). For example, within EF1 (management of CIVs with features that make them susceptible to runs), the degree of run risk may vary among different types of MMFs in particular, following recent regulatory reforms across several jurisdictions.

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<sup>35</sup> This second step is based on the August 2013 FSB Policy Framework.

<sup>36</sup> Some entity types may be classified into more than one EF. In those few cases, its value is proportionately allocated between the EFs into which it was classified so as to only count once towards the jurisdiction's narrow measure. The narrow measure also includes an unallocated category, which captures OFIs that the relevant authorities assessed to be involved in bank-like financial stability risks from NBFI, but which could not be assigned to a specific EF.

<sup>37</sup> The Experts Group periodically reviews the composition of the narrow measure in light of better data and analysis. For example, the narrow measure currently includes certain types of investment funds with specific structural features that may mitigate risks (such as asset allocation requirements, liquidity risk management requirements, limits on leverage, loan origination bans, types of assets that the funds can invest in), which may warrant more thorough discussion in the EF-based approach.



**Table 3-1: Classification by Economic Functions (EFs)**

EF	Definition	Typical entity types <sup>38</sup>
EF1	Management of collective investment vehicles with features that make them susceptible to runs	MMFs, fixed income funds, mixed funds, credit hedge funds, <sup>39</sup> real estate funds
EF2	Loan provision that is dependent on short-term funding	Finance companies, leasing/factoring companies, consumer credit companies
EF3	Intermediation of market activities that is dependent on short-term funding or on secured funding of client assets	Broker-dealers, securities finance companies
EF4	Facilitation of credit creation	Credit insurance companies, financial guarantors, monolines
EF5	Securitisation-based credit intermediation and funding of financial entities	Securitisation vehicles, structured finance vehicles, asset-backed securities

**The FSB employs a process of review and discussion among participating jurisdictions to help enhance consistency in the classification of entities/activities and shed light on new issues.**<sup>40</sup> Achieving consistency of EF classification is an iterative process, reflecting both improvements in data availability and in the assessment of non-bank financial entities' involvement in the different EFs as authorities learn from collective information-sharing in successive annual exercises. At the same time, new developments in financial markets may result in additional areas in which guidance may be needed. Additional refinement of the classification guidance used in the FSB's annual monitoring exercise will help further improve accuracy and consistency in the relevant authorities' assessments going forward, especially as financial entities often provide their services across several jurisdictions.

**The steps of obtaining the narrow measure are explained in detail in Annexes 2 and 3.** At a high level, it involves excluding: (i) insurance corporations, pension funds, financial auxiliaries and OFIs that are not classified into any of the five EFs; (ii) entities that are prudentially consolidated into a banking group; and (iii) the statistical residual.

The relationship between the NBFIs sector (\$201.5 trillion for the 29-Group) and the EF-based narrow measure presented in this section (\$57.1 trillion) is illustrated and explained in detail in Annexes 2 and 3. A summary of this relationship for the main entity types classified into the narrow measure is illustrated in Table 3-2.

<sup>38</sup> The FSB's *Policy Framework* acknowledges that the narrow measure may take different forms across jurisdictions due to different legal and regulatory settings as well as the constant innovation and dynamic nature of the non-bank financial sector. It also enables authorities to capture new structures or innovations that may create financial stability risks from NBFIs, by looking through to their underlying economic functions and risks. Thus, the entity types listed should be taken as typical examples. For details, see FSB (2013).

<sup>39</sup> Credit hedge funds are hedge funds that invest primarily in credit assets (e.g. bonds, loans).

<sup>40</sup> The FSB's 2015-16 shadow banking peer review also stressed the importance of resolving material differences of view, thereby promoting greater consistency in the classification of non-bank financial entities. See Box 4-1 of FSB (2017a).

**Table 3-2. Major entity types in the narrow measure (29-Group)**

	EF1				EF2	EF3	EF5	
	MMFs	FIFs <sup>1</sup>	Mixed funds <sup>2</sup>	Hedge funds	Finance companies	Broker-dealers	SFVs	TCs <sup>3</sup>
<b>Total financial assets</b>								
Total financial assets (in USD trn)	7.0	13.1	10.9	5.6	5.1	10.5	5.3	3.8
Growth in 2019 (%)	↑ 13.5	↑ 15.1	↑ 14.5	↑ 15.8	↑ 6.5	↑ 6.2	↑ 7.0	↓ -1.4
of which: Credit assets (in USD trn)	5.3			3.2	3.6	5.6	3.6	1.9
Growth in 2019 (%)	↑ 16.8			↑ 19.5	↑ 6.2	↑ 2.6	↑ 7.9	↓ -9.7
<b>Narrow measure</b>								
Total assets classified into the respective economic functions (in USD trn)	7.0	12.0	8.7	5.9	3.1	3.9	3.9	0.9
Share of the narrow measure (in USD trn)	12.3	20.9	15.2	10.4	5.4	6.9	6.8	1.5
<b>Risk metrics</b>								
Credit intermediation	▲	—	▲	—	—	—	—	—
Maturity transformation	▼	▲	▲	—	—	▼	—	—
Liquidity transformation	—	—	—	▲	—	▼	—	—
Leverage	—	—	—	▲	▼	▲	▲	—

For total financial assets, arrows pointing up (down) indicate an increase (decline) in the corresponding total assets in 2019 compared to 2018. For risk metrics, the arrows pointing up (down) indicate an increase (decline) in the median value in 2019 compared to 2018, while the horizontal bar indicates little change. The shades of blue indicate the relative degree of credit intermediation, maturity transformation, liquidity transformation and leverage across the entity types shown in the table, measured as the median value of the metric. For each risk metric, the darkest (lightest) colour correspond to the entity type with the largest (lowest) engagement in the relevant metric/activity, in the median.

<sup>1</sup> Some fixed income funds are classified into EF4 or included in the mixed funds category in the narrow measure. A small amount of fixed income funds are outside the narrow measure (around \$121 bn). <sup>2</sup> Total financial assets include other funds such as referenced investment funds, external debt investment funds, currency funds, asset allocation funds, other closed-ended funds, etc. <sup>3</sup> Risk metrics data for trust companies in EF5 were not collected.

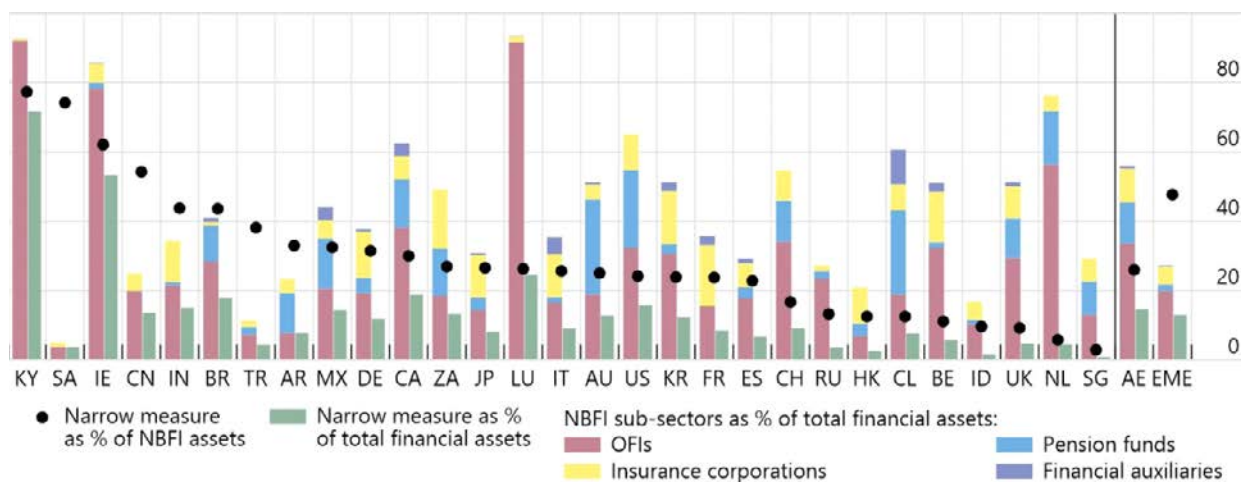
Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**The resulting narrow measure was \$57.1 trillion at end-2019, representing 28.4% of NBF1 sector assets and 14.2% of total financial assets.** In general, the narrow measure amounted to a larger share of the NBF1 sector assets in EMEs than in AEs; however, this varied significantly across jurisdictions (e.g. ranging from 2.9% in Singapore to 77.3% in the Cayman Islands). Graph 3-1 compares the components of the NBF1 sector to the narrow measure by jurisdiction, each displayed as a percentage of total national financial assets.

## The ratio of the narrow measure to NBFIs varies significantly across jurisdictions

29-Group, end-2019; in percent

Graph 3-1



Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

## 3.2. Narrow measure trends

### 3.2.1. Global trends

The total financial assets of entities in the narrow measure grew by 11.1% in 2019, compared to the 8.9% increase in the NBFIs sector assets (Graph 3-2). This growth rate is above the average annual growth rate (7.1%) of the narrow measure over 2013-18.<sup>41,42</sup> While AEs were the main drivers of growth in the narrow measure, strong growth in the narrow measure was also observed in EMEs, albeit from a low base (see Box 3-1 for more details on the relative importance of the NBFIs sector in EMEs). As a share of total global financial assets, the narrow measure has increased slightly in the last decade to 14.2% at end-2019, up from 12.0% in 2010 for the 29 jurisdictions.

Since the 2008 financial crisis, growth of the narrow measure has been driven primarily by investment funds, as opposed to pre-crisis growth, which was driven to a large degree by entity types such as SFVs and broker-dealers that often received support from banks. As a result, EF1 assets have been increasing as a share of total narrow measure assets since 2008.

Within the narrow measure, entities included in various EFs continued to grow at different rates in 2019, but all EFs increased at higher growth rates than on average during the prior five years. While EF4 (*facilitation of credit creation*) assets grew at the highest rate in 2019, its share of the narrow measure is nonetheless very small. EF1 (*management of collective investment vehicles with features that make them susceptible to runs*) remained the largest component of the narrow measure. While EF5 assets (*securitisation-based credit intermediation*)

<sup>41</sup> Growth rates have been calculated based on historical data included in jurisdictions' 2020 data submissions.

<sup>42</sup> The results reported here are not strictly comparable to those presented in previous Reports due to improvements in national sector balance sheet statistics, more granular reporting and revisions to historical data.

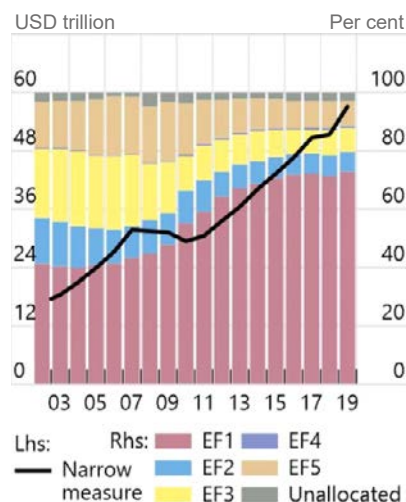
and funding of financial entities) grew at a higher pace than in previous years, overall the size was little changed.<sup>43</sup>

## Classification by economic function – EF1 remains the largest component of the narrow measure<sup>1</sup>

29-Group

Graph 3-2

Share of the narrow measure, per economic function



The narrow measure by economic function

	Narrow measure	EF1	EF2	EF3	EF4	EF5	Unallocated <sup>2</sup>
<b>Size at end-2019</b> (USD trillion)	57.1	41.7	3.9	4.7	0.5	4.8	1.7
<b>Share of narrow measure (%)</b>	100.0	72.9	6.8	8.2	0.8	8.4	2.9
<b>Growth in 2019</b> (year-over-year, %)	11.1	13.5	6.1	5.4	16.6	2.5	7.0
<b>Growth 2013-18</b> (annualised growth, %)	7.1	8.4	4.1	3.5	13.1	1.9	14.2
<b>Share of total financial assets (%)</b>	14.2	10.4	1.0	1.2	0.1	1.2	0.4

<sup>1</sup> Net of entities prudentially consolidated into banking groups. <sup>2</sup> Unallocated = assets of entities that were assessed to be involved in NBF1, but which could not be assigned to a specific economic function.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

### 3.2.2. Developments across jurisdictions

**Out of 29 jurisdictions, 21 reported a higher annual growth rate for the narrow measure in 2019 than in annualised growth rates from 2013-18** (Graph 3-3, LHS and middle panel). Only Belgium reported a decline in the narrow measure, mainly due to a decrease in investment fund assets, discussed in more detail in Section 3.3.

Eight AEs (Ireland, the Cayman Islands, Australia, Switzerland, Germany, Korea, the US and Luxembourg) and eight EMEs (Argentina, Saudi Arabia, Turkey, India, Chile, Indonesia, Russia and Brazil) saw their narrow measure increase by over 10%. However, the increase in some of these jurisdictions partly reflects growth from a low base, relatively high inflation rates, market valuation increases, or changes in data samples/coverage.<sup>44</sup>

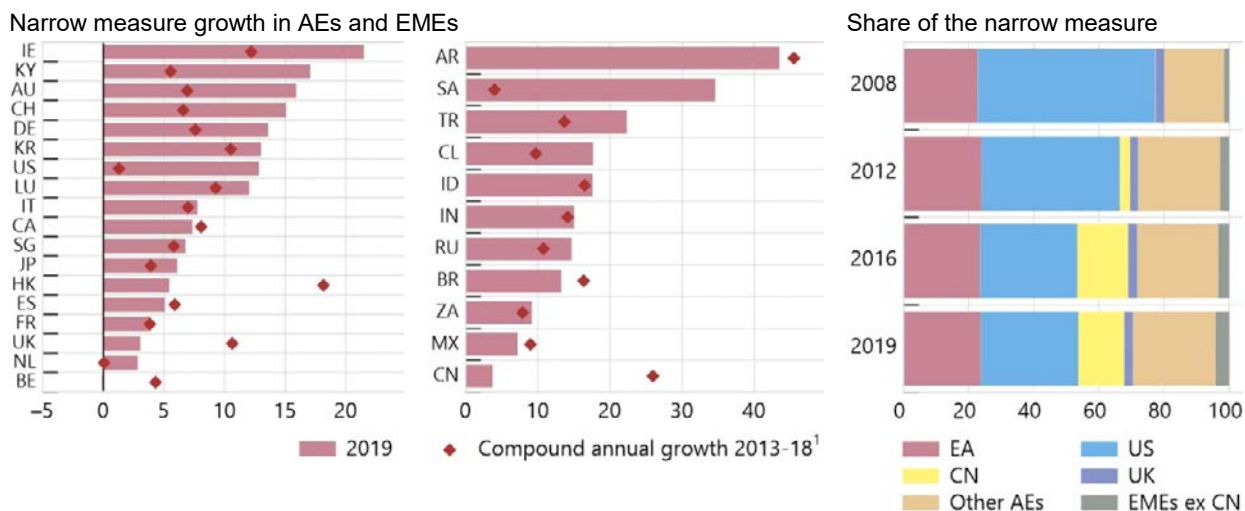
<sup>43</sup> The "unallocated" category grew by 7.0% in 2019, primarily driven by Ireland's non-securitisation vehicles. This increase is mainly due to the growth in special purpose entity holdings of non-performing loans of Greek banks, which increased by €30 billion in 2019.

<sup>44</sup> The increase in Australia reflects growth in EF2 assets in 2019, which is mainly attributable to changes in data samples. For Argentina, the growth in the narrow measure in nominal terms reflects the high inflation rate experienced in 2019.

## The narrow measure increased in the majority of jurisdictions in 2019; the largest share of assets are held in the US

In per cent, 29-Group

Graph 3-3



<sup>1</sup> Growth rates in Argentina reflect a high rate of inflation. As a weighted average based on rolling GDP weights. Belgium's and Russia's growth rates are based on data from 2014-18.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

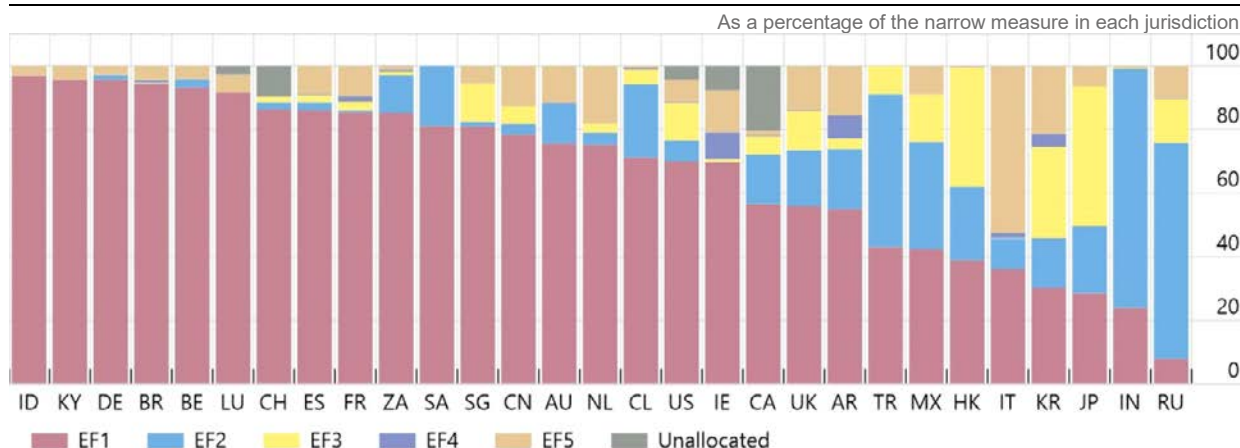
**The US continues to account for the largest share of narrow measure assets (\$17.1 trillion in 2019) representing around 30% of the total narrow measure** (Graph 3-3, RHS). The eight participating euro area jurisdictions comprised the next largest share (with a combined \$12.0 trillion in assets, 23.8%), followed by China (\$7.8 trillion, 14.1%), the Cayman Islands (\$5.5 trillion, 11.2%), and Japan (\$3.0 trillion, 5.6%). The US' share of the narrow measure has declined since 2006, whereas the shares accounted for by the Cayman Islands, China and Ireland have increased since 2006. China's share has, however, decreased since 2017.

**Collective investment vehicles with features that make them susceptible to runs (EF1) remained the largest EF in aggregate and also in 24 jurisdictions at end-2019.** However, EF2 continued to be the largest economic function in India, Russia and Turkey. Meanwhile, EF3 remained the largest economic function in Japan (Graph 3-4). In the subsequent sections each of the economic functions are discussed in turn.

## EF1 remained the largest EF in aggregate and also in 24 jurisdictions at end-2019<sup>1</sup>

Economic function classification by jurisdiction at end-2019

Graph 3-4



Unallocated = assets of entities that were assessed to be involved in NBF1, but which could not be assigned to a specific economic function.

<sup>1</sup> Net of entities prudentially consolidated into banking groups.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

### Box 3-1: Non-bank financial intermediation in emerging market economies

The relative importance of non-bank financial intermediation (NBF1) in emerging market economies (EMEs) are analysed in this Box. It includes analysis both of the NBF1 sector as well as the narrow measure of NBF1.

**While the share of global NBF1 sector assets held by EMEs has increased over time, it remains small when measured relative to total NBF1 financial assets.** The share of global NBF1 assets held by EMEs amounts to around 11%, with the largest share held by China.

**However, the relative importance of NBF1 has increased at a faster pace in EMEs than in AEs.** When measuring the importance of NBF1 sector assets as a percentage of EME financial assets, the share of financial assets held by the NBF1 sector increased at a faster pace in EMEs than AEs between 2013 and 2019. While this was mostly driven by China, the relative importance of the NBF1 sector increased in several other EMEs over the same time period (Graph B3, LHS). The same trend is observed in the narrow measure of NBF1, when measured as a share of total EME financial assets (Graph B3, middle panel).

**This increase in relative importance is observed in the majority of EMEs,** with relatively large increases between 2013 and 2019 in the assets held by the NBF1 sector seen in Brazil, China, India and Russia. In contrast, South Africa and Argentina showed a decrease in the relative importance of NBF1 in the same period – mainly as a result of an increase in the share of assets held by public financial institutions in South Africa and a larger share of financial assets held by the central bank in Argentina. The share of assets held by the NBF1 sector in Chile remained relatively unchanged during the same period, with the distribution of financial assets among financial intermediaries remaining relatively constant overall.<sup>1</sup>

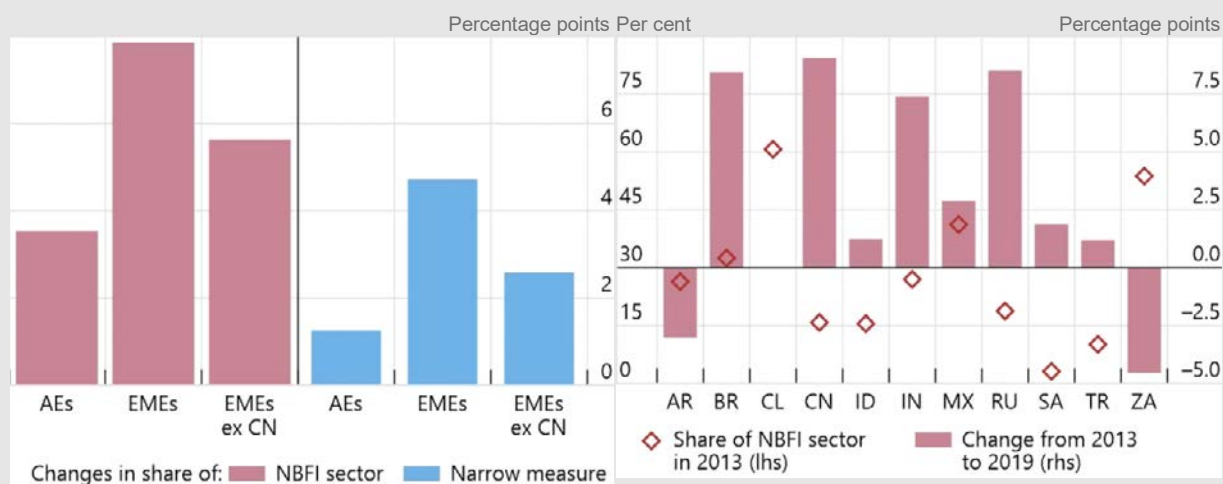


## The relative importance of the NBFIs sector has increased in EMEs

Graph B3

Changes in the share<sup>1</sup> of NBFIs sector and narrow measure as a percentage of total financial assets for AEs and EMEs between 2013 and 2019

Change in the share<sup>2</sup> of NBFIs assets in each EME between 2013 and 2019



<sup>1</sup> Shares of the NBFIs sector and narrow measure are calculated as aggregated financial assets of the NBFIs sector and narrow measure of each region divided by aggregated total financial assets of the region. <sup>2</sup> Shares of the NBFIs sector for each jurisdiction are calculated as financial assets of NBFIs of a jurisdiction divided by total financial assets of the jurisdiction.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**Over time, the relative share of the narrow measure held by EMEs has also increased across the majority of economic functions.** This trend is especially noticeable in EF2 – where EMEs now hold more than a quarter of global EF2 assets in comparison to 10% in 2013, and EF5 where trust companies in China have dominated the change in assets. While China accounts for the largest share of EME narrow measure assets held in EF1, EF3 and EF5, India accounts for the largest share of EF2 assets amongst EMEs and Brazil accounts for the largest share of EF4 assets across EMEs. EF4 assets in Brazil are insurance lines related to the facilitation of credit intermediation, and whilst large relative to EME EF4 assets, these represent less than 1% of Brazil's NBFIs sector assets.

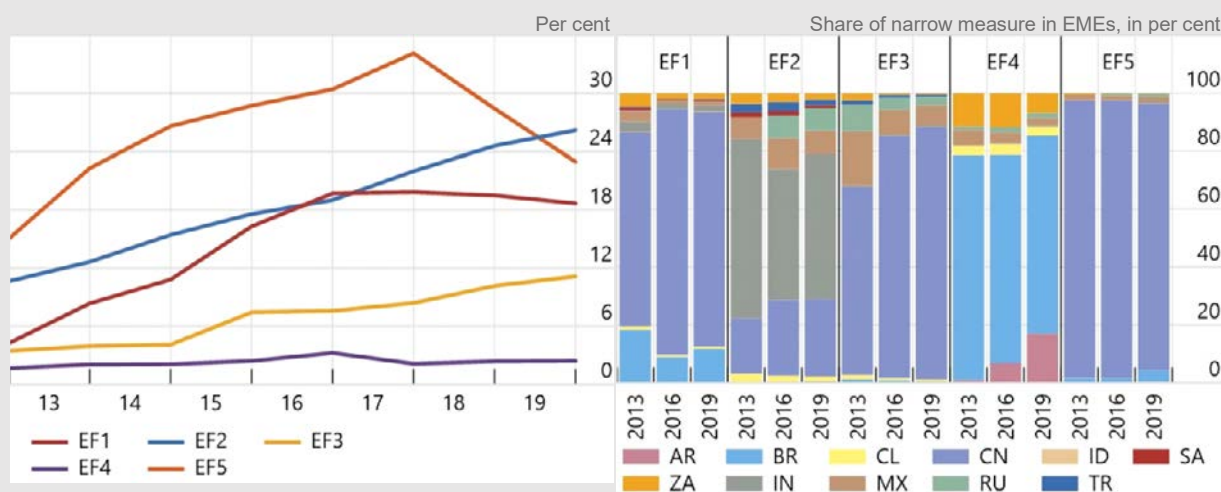
**The share of EF2 and EF3 assets held by EMEs has increased significantly since 2013.** While China and India are the main contributors to the increase in EF2, other EMEs have also seen persistent growth in EF2 assets in the past five years (including Mexico, Russia and Turkey). In EMEs, traditional finance companies are also the dominant EF2 entity type with 63% of total EF2 assets, though real estate finance companies and leasing and factoring companies also represented a significant share. As regards EF3, the increase was mainly driven by China (Graph B4), while broker-dealer assets increased over the past few years in the majority of EMEs.

**The share of EF5 assets held by EMEs has decreased since 2017.** This is mainly attributable to the decrease in assets held by trust companies in China. In contrast, SFVs assets in EMEs have increased by more than 50% during the same period, amounting to \$222 billion at end-2019. Brazil is an important jurisdiction in the SFVs market in EMEs. SFV assets in Brazil doubled over the past 6 years but still represent a small fraction of Brazil's narrow measure (4.4%).

## The share of the narrow measure assets held by EMEs has increased since 2013

Graph B4

The share of assets held by EMEs of each EF over time Breakdown per EFs in EMEs by jurisdiction as a percentage of the respective total global assets of each EF



Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

<sup>1</sup> See Annex 1 or the Monitoring Dataset of this report for the distribution of financial assets among financial intermediaries at a jurisdictional level.

### Risk metrics

To monitor and assess the potential risks to financial stability associated with the entity types classified into the different EFs, a set of on- and off-balance sheet data were collected in relation to imperfect credit risk transfer, maturity transformation, liquidity transformation; and leverage.<sup>45</sup> Annual data were collected from 2016 to 2019, in order to obtain insights on how potential financial stability risks associated with these entity types may be evolving. These data were also collected for the five largest entities within an entity type in a jurisdiction, to help understand how risks may be concentrated. Annex 4 provides an overview of collected on- and off-balance sheet items and calculated risk metrics.

Although the reporting of on-balance sheet data for classified entity types has improved compared to the prior monitoring exercise, gaps remain in reported data, particularly in relation to off-balance sheet data.<sup>46</sup> Some jurisdictions continue to face significant challenges collecting these data, in part because regulatory data collection of various non-bank financial entities is not sufficiently granular, and sectoral balance sheet data often do not provide specific

<sup>45</sup> For the largest three entity types classified into each EF (where assets exceed 1% of the total national financial assets or 1% of total global assets for the specific entity type classified in the narrow measure), authorities were asked to report balance sheet items on a gross basis, i.e. reporting weighted averages of all entities making up a particular entity type. If gross reporting was not feasible, authorities reported the weighted averages of a sample pool (e.g. the largest three entities, by assets, for an entity type) for some entity types, or other relevant proxies.

<sup>46</sup> For definitions of the balance sheet items used to compute risk metrics, please see the reporting templates that are published on the FSB website with this Report.

breakdowns with respect to maturity and liquidity factors.<sup>47</sup> For particular entities and entity types, some jurisdictions were not able to distinguish between their credit intermediation (and hence related risks) and their non-credit intermediation activities, which may affect the calculated risk metrics.<sup>48</sup> In addition to data gaps, differences in the accounting standards and the treatment of certain aspects of risk data also posed challenges in comparing financial stability risks posed by similar entity types across different jurisdictions.<sup>49</sup>

**The sample size for calculating risk metrics represents national aggregates rather than individual entities.** Thus, one jurisdiction's data submission of sector aggregates would typically include many individual entities that range from large to small entities. Due to data limitations, some of the exhibits and results presented in Sections 3.3-3.7 are based on a sub-sample of jurisdictions and should therefore not be extrapolated to describe the entire sample of jurisdictions. More specifically, any conclusion from the data related to the sub-sample may not apply to all of the jurisdictions that are covered in this report. However, to the extent possible, this report discusses observations and trends that can be gleaned from the reported data.

**The Experts Group will continue to advance risk analysis in future monitoring exercises,** through focused work to further refine risk metrics so that they are better tailored to the business models of the entities in each of the EFs. The FSB will also seek to make better use of widely available data, minimise the challenges presented by significant data gaps, and better assess the bank-like risks that NBF1 may pose to financial stability.

### 3.3. Collective investment vehicles with features that make them susceptible to runs (EF1)

EF1 comprises collective investment vehicles (CIVs) with features that make them susceptible to runs (e.g. fixed income funds, mixed funds, MMFs, credit focused hedge funds, real estate funds and non-equity exchange-traded funds (ETFs)). Funds are a means for investors to minimise their risk exposure by distributing their investment across a pool of generally diversified instruments. CIVs may act as shock absorbers in the financial system as losses from an entity's distress or insolvency or from adverse financial market conditions can be shared among a disparate group of investors. In extreme circumstances, however, some CIVs with maturity/liquidity transformation and/or leverage can be susceptible to runs. To address potential run risk, many jurisdictions have mandated risk mitigating structural features for some or all of their entities classified into EF1.<sup>50</sup>

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<sup>47</sup> Where only some jurisdictions are able to provide risk metrics, the collected sample may reflect selection bias.

<sup>48</sup> For example, some jurisdictions reported data for all funds, rather than only funds involved in credit intermediation. This may result, for example, in lower credit intermediation metrics.

<sup>49</sup> For example, some risk metrics include data from entities prudentially consolidated into banking groups, as some jurisdictions' data do not distinguish between consolidated and non-consolidated entities. Also, some jurisdictions classified the equity assets of funds as long-term assets, while others treated them as short-term assets. Furthermore, differences arose for example because some jurisdictions reported total financial assets, while others reported total net assets for EF1 entities. These factors highlight the challenges in calculating and comparing the risk metrics. The FSB, through the Experts Group, has been working on improving consistency and will continue to do so going forward.

<sup>50</sup> For example, structural features that mitigate risk include asset allocation requirements, liquidity risk management requirements and leverage limits. Post-mitigant tools designed to limit the probability and impact of stressed scenarios include redemption fees, suspension of redemptions, withdrawal gates, and swing pricing.

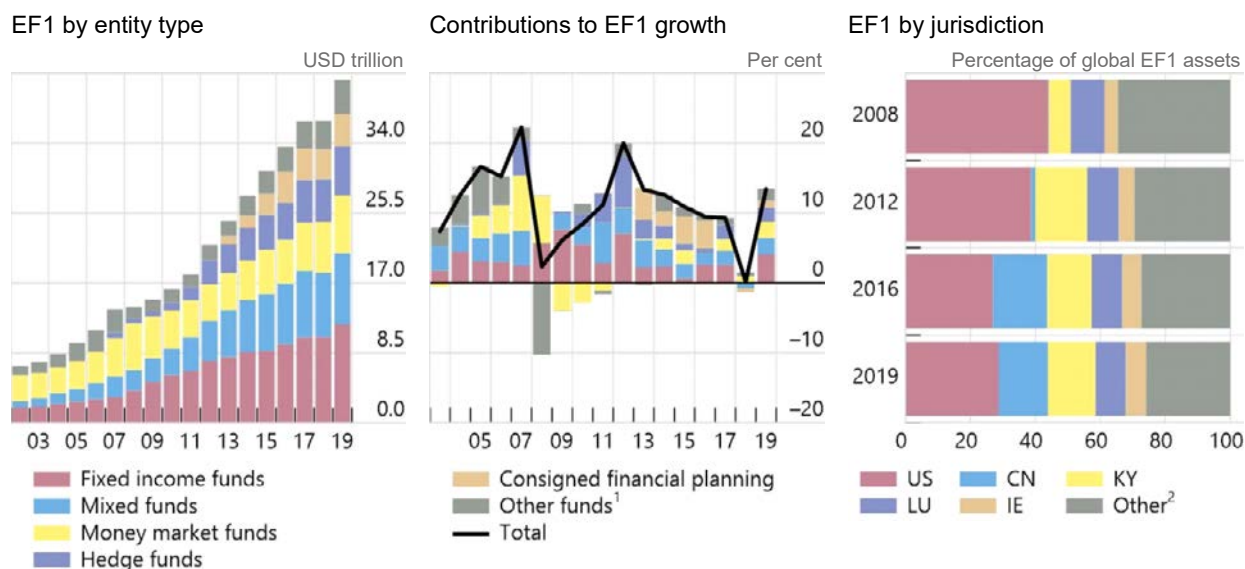
### 3.3.1. Trends in Economic Function 1

In 2019, EF1 assets grew by 13.5% to \$41.7 trillion in 2019, after slow growth in 2018 (Graph 3-5). While the increase was mainly driven by the largest three entity types – namely fixed income funds, mixed funds and MMFs, growth was broad based across all entity types included in EF1. While both valuation and flow effects played a role in the growth of fixed income funds and mixed funds, the growth in MMFs was mainly as a result of flows (See Box 1-1). EF1 accounted for 72.9% of the narrow measure in 2019, a slight increase from 71.4% during the prior year.

#### Economic Function 1 growth was mainly driven by fixed income and mixed funds

29-Group

Graph 3-5



<sup>1</sup> Other funds include investment funds not displayed separately such as referenced investment funds, external debt investment funds, equity funds, currency funds, asset allocation funds, other closed-ended funds, funds of funds. Equity funds include open-ended equity funds holding more than 20% credit assets. <sup>2</sup> Other jurisdictions in 29-Group not displayed separately.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**EF1 assets increased in 28 out of 29 jurisdictions in 2019**, with Belgium as the outlier which saw withdrawals from MMFs. Notably, Turkey saw an increase in EF1 assets of 139% during the year, with unfavourable interest rates on time deposits likely prompting investors to place savings in the fund sector. Of the more than 30 EF1 entity types, fixed income funds, mixed funds, MMFs and hedge funds dominate the economic function, accounting for about 80% of EF1 assets.

**The share of EF1 assets held by entities domiciled in the US increased in 2019.** As in previous years, the largest share of EF1 assets was accounted for by the US with 28.7% of total EF1 assets, an increase from 27.6% in 2018. Following the US, major domiciles for EF1 assets include China (15.1% in 2019, down from 16.0% in 2018), the Cayman Islands (14.7% compared to 14.3% in 2018), and Luxembourg (stable at 9.4% in 2019 and 9.3% in 2018). The share of global EF1 assets in EMEs has remained relatively constant over the past three years at 19%.

**Growth in EF1 assets was broad based across entity types, mainly driven by fixed income funds and mixed funds.** Fixed income funds remained the largest EF1 entity type with 29% of total assets and a 14.2% increase over 2019. The majority of fixed income fund assets are in

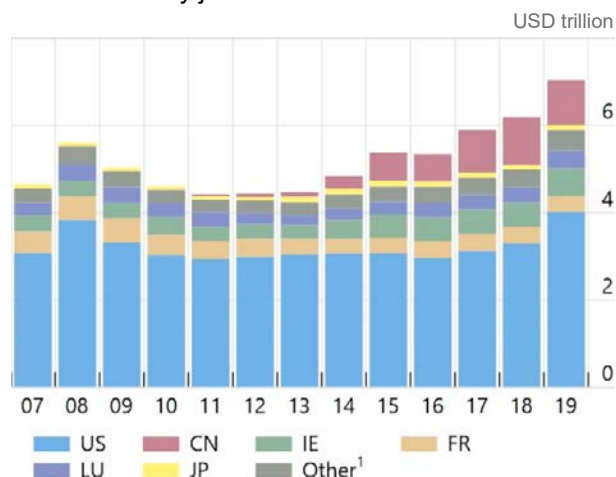
the US (39%), Luxembourg (15%) and Ireland (8%). Mixed funds represent the second largest share of EF1 assets with 21% of total EF1 assets, and an 11.4% increase in 2019. The US holds the largest share of global mixed fund assets (18%) with Luxembourg and Germany holding 14% each. Hedge funds<sup>51</sup> account for 14% of EF1 assets, largely unchanged from 2018. The largest share of hedge fund assets are held in the Cayman Islands (77%, \$4.6 trillion in 2019).

### Assets of MMFs increased in 2019 – MMFs in the majority of jurisdictions are variable NAV funds

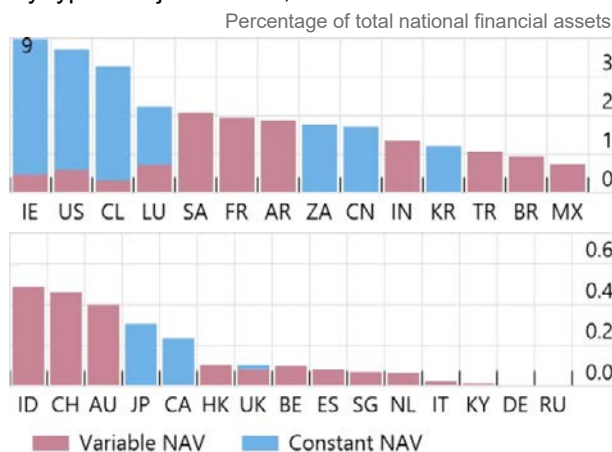
29-Group

Graph 3-6

MMF assets by jurisdiction



By type and jurisdiction, at end-2019<sup>2</sup>



<sup>1</sup> Other = Other jurisdictions in 29-Group not displayed separately. <sup>2</sup> The bar for Ireland's constant NAV (9%) is not shown entirely because it is particularly high compared to the rest of the jurisdictions.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

### In 2019, MMF asset growth continued, largely driven by growth in MMF assets in the US.

The majority of MMF assets, which constitute 17% of EF1 assets, are held in the US (57% of global MMF assets or \$4 trillion), China (15% or \$1 trillion) and Ireland (9% or \$648 billion) (Graph 3-6, LHS). US government MMFs<sup>52</sup> comprised the largest share of the assets of the US MMF sector, reflecting a shift in assets from prime MMFs (which invest primarily in corporate debt securities) to government MMFs, following the US MMF regulatory reforms that came into effect in 2016. The regulatory structure of US government MMFs requires these funds to primarily hold government securities, repos backed by those securities, and cash.<sup>53</sup> Funds offering constant (stable) net asset value (NAV) accounted for 79% of global MMF assets, and represented the largest type of MMFs in nine jurisdictions (Graph 3-6, RHS).

### 3.3.2. Financial stability risk metrics for EF1

#### Risk metrics measuring credit intermediation, maturity transformation, liquidity transformation and leverage vary across EF1 entity types, depending on their business

<sup>51</sup> Hedge funds are usually marketed by way of "private placement" to sophisticated, institutional or professional investors, they are often not subject to some regulations designed to protect retail investors and typically can employ more flexible investment strategies than mutual funds or other registered funds.

<sup>52</sup> US government MMFs include US Treasury MMFs, which are required to invest: (i) 99.5% of their assets in US government securities, or repos collateralised by US government securities or cash; and (ii) at least 80% of their assets in US Treasury securities or repos collateralised by US Treasury securities or cash.

<sup>53</sup> See Box 2-2 in FSB (2018).



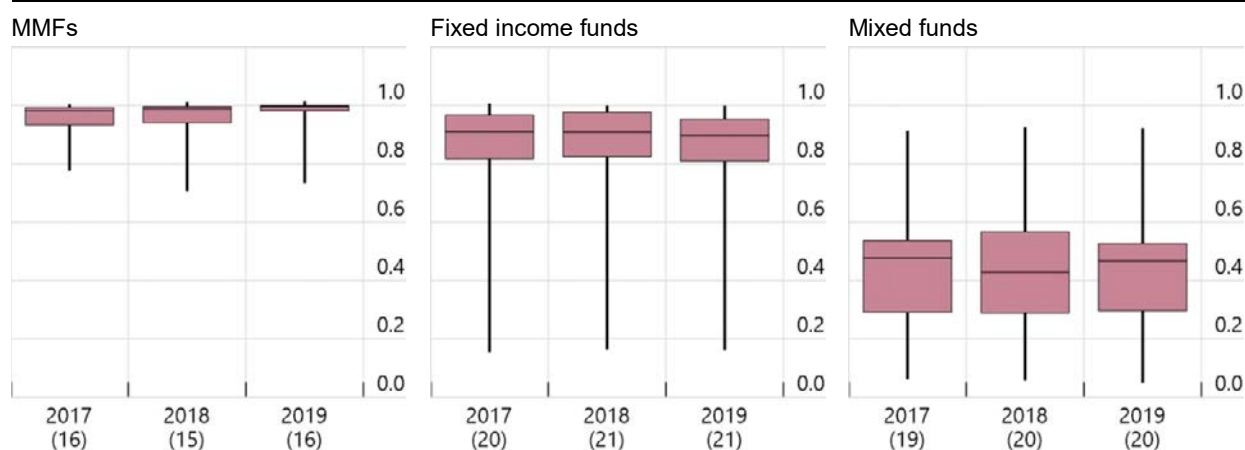
**models.** For instance, MMFs and fixed income funds show higher levels of credit intermediation than mixed funds as the latter also invest in equity instruments. In general, fixed income funds also display higher levels of maturity and liquidity transformation than mixed funds and especially MMFs, because mixed funds typically invest more in equity instruments and MMFs have limits on the maturity of assets that they hold. Funds engaging in liquidity or maturity transformation that do not effectively manage liquidity risk may face greater liquidity strains if they experience large and unexpected redemptions, especially under stressed market conditions.

**Credit intermediation for MMFs increased and remained high for fixed income funds in 2019 (Graph 3-7), in line with their investment strategies with most credit assets being debt securities.** In comparison to 2018, the median values of credit intermediation (CI) as measured by credit assets over total financial assets (CI1) also increased slightly for mixed funds, and is similar to 2017 levels. The bulk of the credit assets held by EF1 entities are debt securities as reflected by close to zero values for the ratio of loans to total financial assets (CI2 – see Annex 4), which continued to be much lower than CI1 and close to zero for all three entity types, indicating very limited direct lending by the largest EF1 entities.<sup>54</sup>

### Credit intermediation of MMFs increased in 2019

Credit intermediation<sup>1</sup>

Graph 3-7



The median value is represented by a horizontal line, with 50% of the values falling in the 25th to 75th percentile range shown by the box. The upper and lower end points of the thin vertical lines show the range of the entire sample. Changes in the distribution between years might be related to changes in the sample of jurisdictions that provided data.

<sup>1</sup> Credit assets / total financial assets (CI1). The sample size indicates the number of jurisdictions submitting the relevant data per year. Each jurisdiction's data submission reflects data from many individual entities within that jurisdiction. The sample of reporting jurisdictions in 2019 represents 84%, 96% and more than 100% of total MMF, fixed income fund and mixed fund assets respectively. The coverage of these risk metrics is higher than 100% due to some jurisdictions using a sample that includes entities prudentially consolidated into banking groups to calculate risk metrics, while such entities are excluded from those classified into the narrow measure.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**Maturity transformation decreased for MMFs in 2019, but increased slightly for fixed income funds and mixed funds.** All EF1 entity types were involved in some degree of maturity transformation. The ratio of long-term assets minus long-term liabilities and redeemable equity to total financial assets (Graph 3-8), showed some of these funds, notably fixed income and mixed funds, to be funding a portion of their long-term assets with short-term liabilities. They thus may be vulnerable to periods of diminished short-term funding liquidity.

<sup>54</sup> Some funds invest in shares of loan funds or securities issued by CLOs, and are thus indirectly exposed to loans.

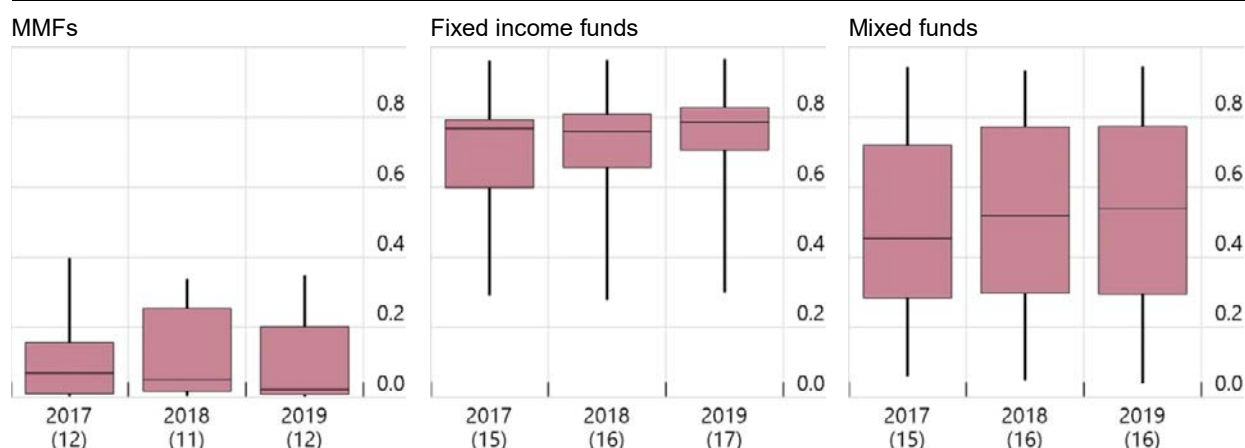


The median MT1 value of 0.79 for fixed income funds indicates that these entities mainly hold long-term assets funded by short-term liabilities. The very low median MT1 value for MMFs (0.02) suggests that MMFs do not perform maturity transformation. This reflects the short-term nature of their holdings, but is also due to the definition used in this context for short-term assets (a residual maturity of less than 12 months).

The decrease in median maturity transformation metrics indicate continued decreases in MMFs long-term assets that are funded by short-term liabilities (MT1); for fixed income funds and mixed funds, this trend was in the other direction, meaning there is an increase in long-term assets in the portfolio.

### EF1: Maturity transformation<sup>1,2</sup>

Graph 3-8



The median value is represented by a horizontal line, with 50% of the values falling in the 25th to 75th percentile range shown by the box. The upper and lower end points of the thin vertical lines show the range of the entire sample. Changes in the distribution across years might be related to changes in the sample of jurisdictions that provided data.

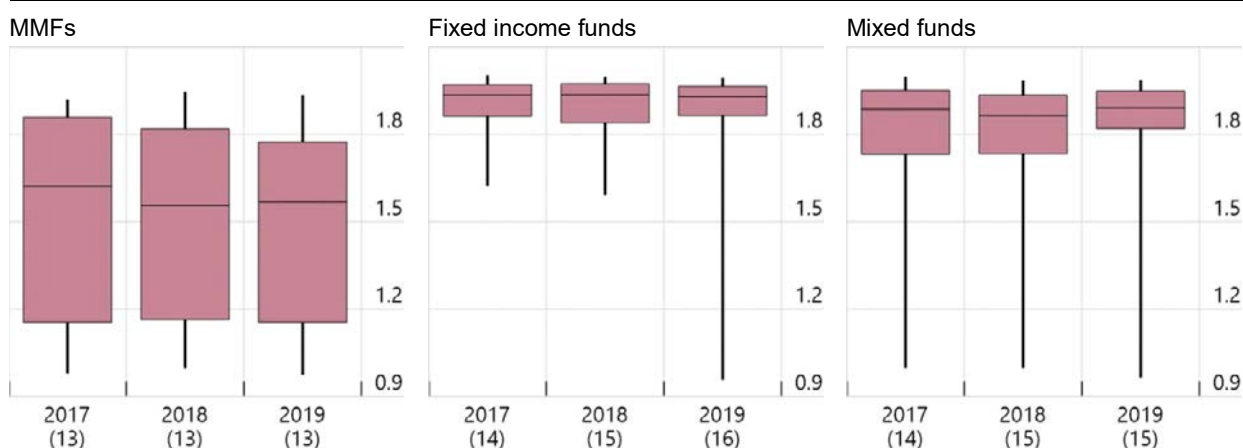
<sup>1</sup> (Long-term assets – equity – long-term liabilities) / total financial assets (MT1). The sample size indicates the number of jurisdictions submitting the relevant data. Each jurisdiction's data submission reflects data from many individual entities within that jurisdiction. <sup>2</sup> The sample of reporting jurisdictions in 2019 represents 25%, 84% and 83% of total MMF, fixed income fund and mixed fund assets, respectively. Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**Liquidity transformation was little changed from 2018. Fixed income funds, mixed funds and MMFs continued to have high liquidity transformation metrics.** The median value of the ratio of less-liquid assets funded by short-term liabilities, using a narrow definition of liquid assets (LT1)<sup>55</sup> was near the upper limit of two for MMFs (1.57), fixed income funds (1.93) and mixed funds (1.89) in 2019. In all jurisdictions that reported the relevant data, LT1 is larger than 1 indicating that short-term liabilities and redeemable equity were greater than fund holdings of liquid assets (Graph 3-9).<sup>56</sup>

Median values for the ratio of less-liquid assets funded by short-term liabilities, using a broad definition of liquid assets (LT2) were higher than one, suggesting some degree of liquidity transformation for MMFs (1.06), fixed income funds (1.63) and mixed funds (1.63).

<sup>55</sup> For further details on the definition of liquid assets, see Annex 4. As highlighted earlier, part of the variation in the risk metrics may also be caused by differences in data submission across participating jurisdictions.

<sup>56</sup> This ratio will be biased upwards for jurisdictions that reported total NAV in the total assets field, instead of total AUM without netting of any liabilities.



The median value is represented by a horizontal line, with 50% of the values falling in the 25th to 75th percentile range shown by the box. The upper and lower end points of the thin vertical lines show the range of the entire sample. Changes in the distribution across years might be related to changes in the sample of jurisdictions that provided data. For example, the large drop in the minimum of fixed income funds in 2019 relates to an additional reporting jurisdiction for this data item.

<sup>1</sup> (Total financial assets - liquid assets (narrow) + short-term liabilities) / total financial assets (LT1). The sample size indicates the number of jurisdictions submitting the relevant data. Each jurisdiction's data submission reflects data from many individual entities within that jurisdiction. The sample of reporting jurisdictions in 2019 represents 83%, 83% and 79% of MMFs, fixed income funds and mixed funds total assets, respectively.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

In general, the relatively high LT1 and LT2 measures for EF1 entities can be attributed to the open-ended redemption structure of most of the funds classified into EF1 by jurisdictions – i.e. these funds offer investors daily redemptions and hold assets that may be less liquid in times of stress.<sup>57</sup>

**Reported balance sheet leverage, as measured by total financial assets divided by equity (L1) continued to be low across the largest EF1 entity types (Graph 3-10):** median values of this ratio were close to one for MMFs, fixed income funds and mixed funds, with little change from the prior years. Most jurisdictions have regulatory limits on balance sheet leverage which leads to low leverage. Of note, mixed funds continued to show a narrowing of leverage dispersion levels across the reporting jurisdictions.

**This measure of leverage only provides a partial view of the leverage obtained by the relevant EF1 entities, given that off-balance sheet transactions are not taken into consideration.**<sup>58</sup> In this regard, in December 2019 IOSCO released its final recommendations on developing a framework for assessing leverage in investment funds in a consistent manner across jurisdictions. The report makes four recommendations to its members. Key amongst them is the use of a two-step framework, which calls for the use of either a gross notional exposure (GNE) or adjusted GNE (i.e. GNE adjusted for option contracts and interest rate derivatives) metric in Step One and more risk-based metrics, determined by individual jurisdictions, in Step Two. As part of its recommendations, IOSCO will begin collecting data, across jurisdictions, on GNE or adjusted GNE in 2021. During the course of 2020, IOSCO has been developing a

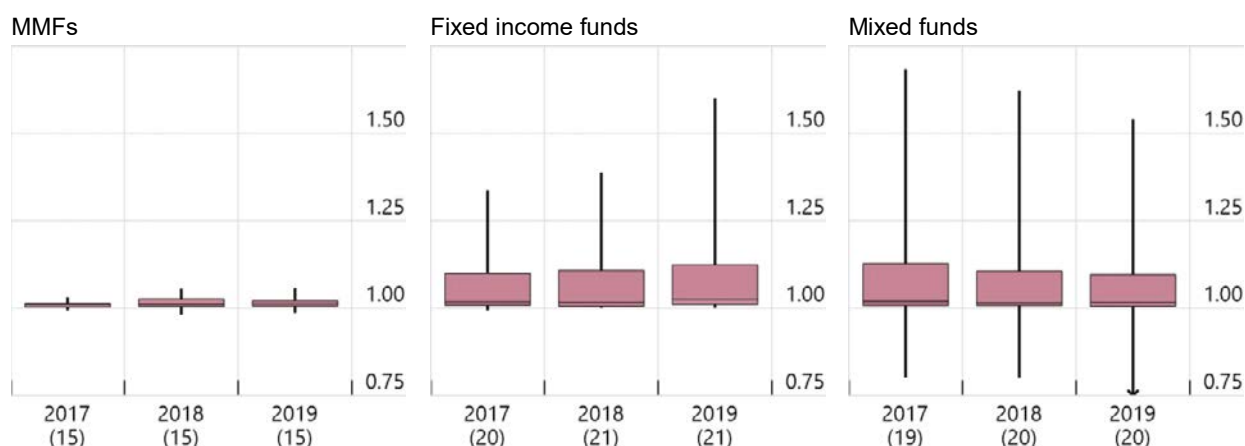
<sup>57</sup> Some jurisdictions included closed-ended funds in EF1 for various reasons, such as insufficient information on the redemption structures of certain entity types, because the funds are leveraged or involved in credit intermediation, and/or the jurisdictions' regulations allow closed-ended funds to operate more like open-ended funds.

<sup>58</sup> For example see Box 2-3 of FSB (2018) or IOSCO (2017) for synthetic leverage estimates for hedge funds in some jurisdictions.

dedicated data collection template for such data. Moreover, based on its existing Hedge Funds Survey, IOSCO is looking to collect this data by asset class exposure further broken down by long and short positions. The first data collection exercise is scheduled to take place in 2021, with a report published later in the same year. The process is expected to be iterative, with more funds in more jurisdictions to be covered in following years.

## EF1 Leverage <sup>1</sup>

Graph 3-10



The median value is represented by a horizontal line, with 50% of the values falling in the 25th to 75th percentile range shown by the box. The upper and lower end points of the thin vertical lines show the range of the entire sample. Changes in the distribution across years might be related to changes in the sample of jurisdictions that provided data.

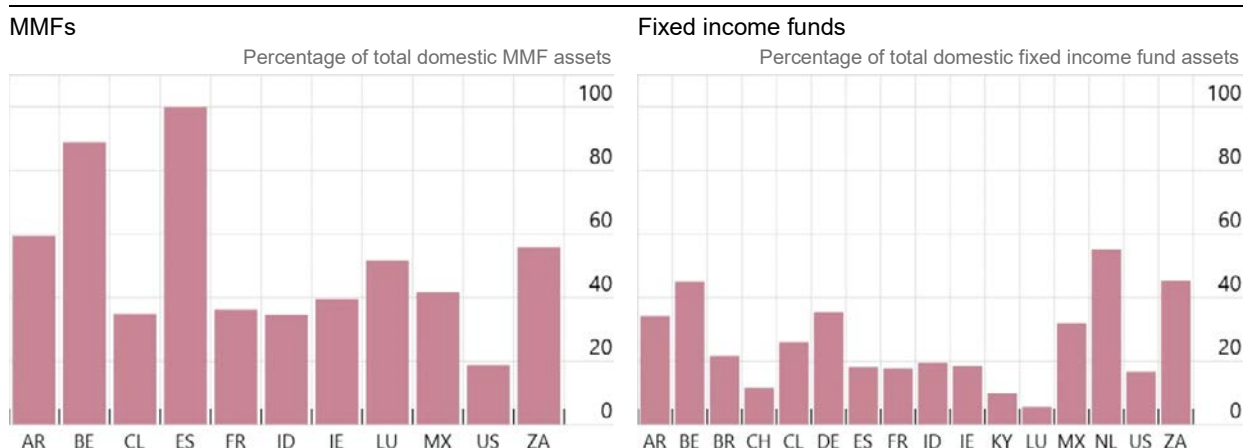
<sup>1</sup> Total financial assets / equity (leverage 1). The sample size indicates the number of jurisdictions submitting the relevant data. Each jurisdiction's data submission reflects data from many individual entities within that jurisdiction. The sample of reporting jurisdictions in 2019 represents 83%, 96% and more than 100% of MMFs, fixed income funds and mixed funds total assets, respectively. The coverage of these risk metrics is higher than 100% due to some jurisdictions using a sample that includes entities prudentially consolidated into banking groups to calculate risk metrics, while such entities are excluded from those classified into the narrow measure.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

### 3.3.3. Concentrations

Data for the largest five EF1 entities in each jurisdiction within each entity type can help to assess market concentrations.

**Similar to results from the previous years, concentration levels in MMFs are generally higher than for fixed income funds in 2019 with significant variation across jurisdictions** (Graph 3-11). The largest five MMFs accounted for over 50% of total MMF assets in five out of the 11 jurisdictions. The market share for the top five MMFs ranges from 100% in Spain (with a sector comprised of just two MMFs) to under 20% in the US. For some of these more concentrated jurisdictions, the domestic MMF sector is small with few choices and investors may seek to gain exposure in other jurisdictions. Fixed income funds on the other hand were less concentrated in most jurisdictions, with only the Netherlands exhibiting a concentration level above 50%, and Luxembourg having the least concentrated sector with a market share under 6% for the top five fixed income funds.



Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

### 3.4. Loan provision that is typically dependent on short-term funding (EF2)

EF2 entities engage in loan provision that is typically dependent on short-term funding. Finance companies, the long-standing dominant EF2 entity type, often specialise in areas such as consumer finance, auto finance, retail mortgage provision, commercial property finance and equipment finance. Entities engaged in these activities tend to either compete with banks or offer services in niche markets where banks are not active players, and often concentrate their lending in specific sectors due to expertise and other reasons. This may create significant risks if the sectors they focus on are cyclical in nature. Such risks may be exacerbated if these entities are heavily dependent on short-term or wholesale funding, or are dependent on parent companies for funding and the parent companies are in the same cyclical sectors. Moreover finance companies that offer deposit-like products to the retail sector raise further risks for households and businesses especially as such products are generally not covered by jurisdictions' deposit insurance schemes.

#### 3.4.1. Trends in Economic Function 2

**Global EF2 assets grew by 6.1% in 2019 to reach \$3.9 trillion and account for 6.8% of the narrow measure** (Graph 3-12, LHS). Finance companies, which continue to be the main entity type within EF2 (with nearly 80% of total EF2 assets), grew by 6.7% and was also the main driver of growth in EF2 assets (Graph 3-12, middle panel). Finance company asset growth in India (19.4% or \$83 billion increase), the US (4.6% or \$50 billion increase), Australia (50.8% or \$40 billion increase) and China (8.0% or \$20 billion increase) contributed to more than 85% of the total increase in global EF2 assets.<sup>59</sup>

**While EF2 assets increased in most jurisdictions (20 out of 26) in 2019, others reported large percentage declines**, namely Germany (-32.6%), Hong Kong (-24.9%) and Turkey (-14.1%). In Hong Kong, the economic uncertainties since 2019 may have caused finance

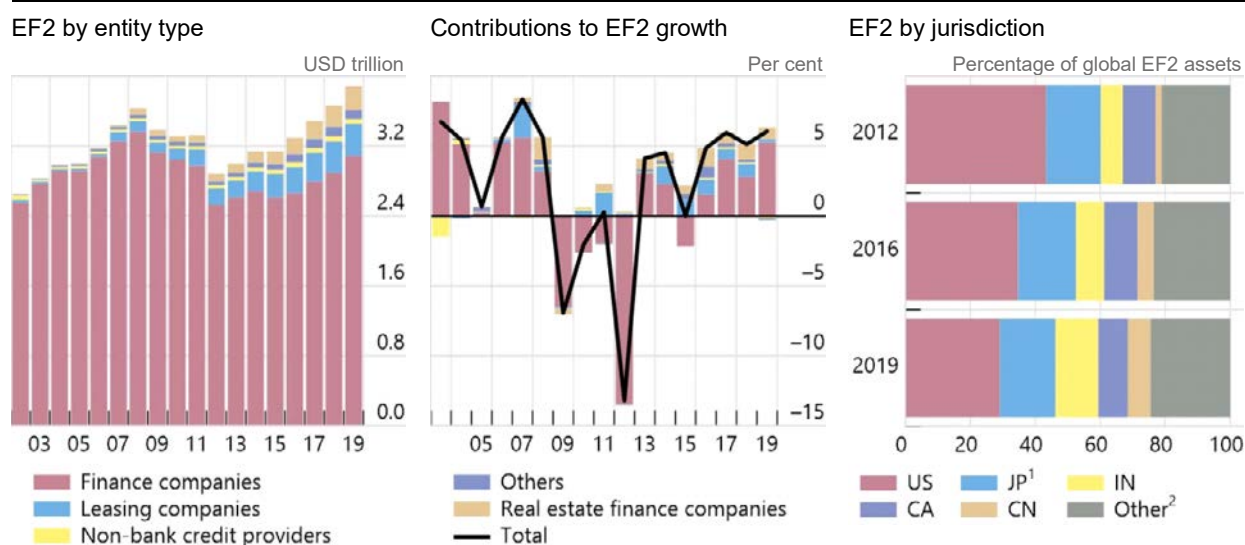
<sup>59</sup> EF2 assets in Australia increased by 30% (\$40 billion) in 2019, a significantly higher rate than the long-term average annual growth rate (10%). This reflects both the growth of finance companies' assets and additional financial firms being captured during 2019 in the relevant statistical collection.

companies to become more prudent in granting loans. The decrease in customer loans (a major component of the total assets of the finance companies concerned) has contributed to the considerable reduction in their total assets. For Turkey, factors such as an economic downturn, rising inflation and adverse exchange rates, that affected investment outlays and depressed demand, had an adverse impact on EF2 entities. These developments have negatively affected EF2 companies' profitability, total net shareholder equity, and the cost and term of their liabilities during this period. The financing of the automotive industry and technology products were affected the most, while leasing companies were also heavily affected as purchases by businesses and demand for construction machinery dried up.

## Finance companies continue to be the main drivers of growth in EF2

29-Group

Graph 3-12



<sup>1</sup> Japan's share of global EF2 assets is likely to be significantly overestimated given that, among the finance companies classified by Japan, there are several large entities that are prudentially consolidated into banking groups (and should be excluded from EF2) but given the lack of granular information on their balance sheet assets they are still reported in EF2. <sup>2</sup> Other jurisdictions in 29-Group not displayed separately. Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**The largest shares of global EF2 assets are held in the US, Japan, India and Canada.** The jurisdictions accounting for the largest shares of global EF2 assets were little changed in 2019, with the US (29% of total EF2 assets), Japan (17%),<sup>60</sup> India (13%) and Canada (9%) holding the largest shares (Graph 3-12, right panel). However, the share held by the US has decreased over time, whilst that of India has increased.

**India continues to see strong growth in EF2 assets, rising by 19.4% in 2019** (following around 23% growth in each of the previous two years). India's EF2 sector is made up entirely of finance companies, the majority of which are not part of banking groups. India has adopted regulatory changes intended to harmonise the regulation and supervision of finance companies with that of banks, and to help mitigate risks associated with the operations of finance companies. EF2 entities in India have consistently reported significant rates of credit

<sup>60</sup> Japan's share of global EF2 assets is likely to be significantly overestimated given that, among the finance companies classified by Japan, there are several large entities that are prudentially consolidated into banking groups (and should be excluded from EF2) but given the lack of granular information on their balance sheet assets they are still reported in EF2.

intermediation while reported metrics for maturity/liquidity transformation and leverage have remained stable for several years.

### 3.4.2. Risk metrics for finance companies

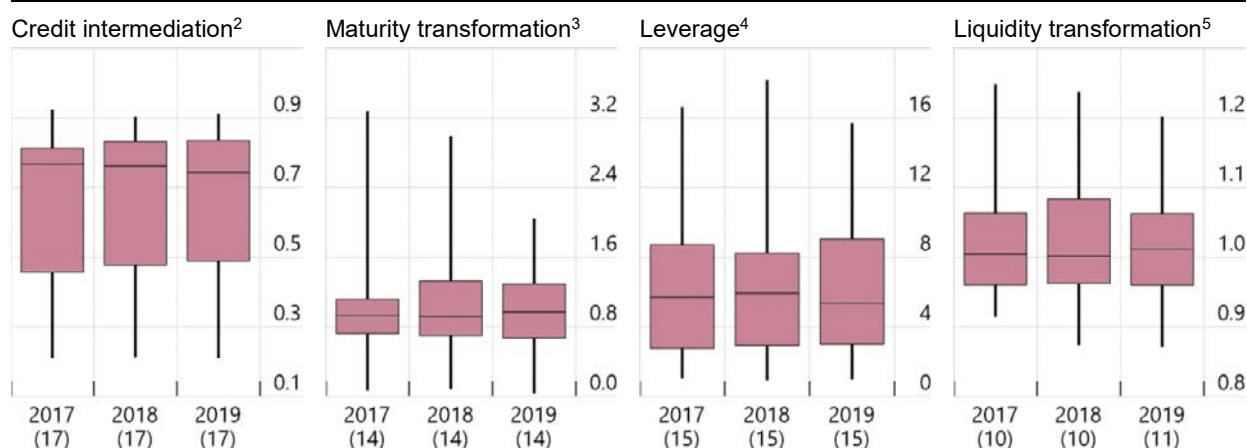
**The extent of credit intermediation by finance companies was broadly stable, decreasing only slightly in most jurisdictions in 2019, suggesting a marginal decrease in lending.** EF2 entities are very active in credit intermediation given they are the non-bank intermediaries most similar to banks in terms of their business models and scope of activities. However, in 2019, there was a marginal reduction in the degree of credit intermediation, especially in terms of direct lending, as measured by the ratio of loans to total assets (CI2). In the median, the share of loans represented 74% of finance companies' assets in 2019, compared to 76% in 2018.

**The level of finance company leverage varies across jurisdictions, with finance companies in three jurisdictions showing relatively high leverage compared to the rest of the reporting jurisdictions.** However, the median ratio of a key leverage metric (total liabilities to equity) for finance companies, was 5.4 in 2019, slightly lower than the median of 5.9 in 2018 as a result of slight declines in seven jurisdictions.

#### Despite strong growth in assets, risk metrics for finance companies were little changed in 2019, with slightly lower levels of credit intermediation and leverage<sup>1</sup>

Ratios for the last three years

Graph 3-13



The median value is represented by a horizontal line, with 50% of the values falling in the 25th to 75th percentile range shown by the box. The upper and lower end points of the thin vertical lines show the range of the entire sample. Changes in the distribution across years might be related to changes in the sample of jurisdictions that provided data.

<sup>1</sup> The sample size indicates the number of jurisdictions submitting the relevant data. Each jurisdiction's data submission reflects data from many individual entities within that jurisdiction. <sup>2</sup> Credit assets / total financial assets (CI2). The sample of reporting jurisdictions in 2019 represents 93% of finance companies total assets. <sup>3</sup> Short-term liabilities / short-term assets (MT2). The sample of reporting jurisdictions in 2019 represents 85% of finance companies total assets. <sup>4</sup> Total liabilities/equity (L4). The sample of reporting jurisdictions in 2019 represents 85% of finance companies total assets. <sup>5</sup> (Total financial assets – liquid assets (narrow) + short-term liabilities) / total financial assets (LT1). The sample of reporting jurisdictions in 2019 represents 77% of finance companies total assets.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**The degree of maturity transformation and liquidity transformation by finance companies remained low and broadly unchanged in most jurisdictions.** The median maturity transformation, measured as the ratio of short-term liabilities to short-term assets or MT2, increased slightly from 0.92 in 2018 to 0.97 in 2019. However, the level of maturity transformation decreased significantly in the two jurisdictions (Australia and Mexico) with the highest levels of MT2, narrowing the range for this metric, though in both cases this was due to



classification/reporting changes.<sup>61</sup> The median liquidity transformation, measured as the ratio of less-liquid assets funded by short-term liabilities, remained around 1 across the 11 reporting jurisdictions.

**The use of short-term wholesale funding by finance companies was little changed in most reporting jurisdictions in 2019**, while declining significantly in Australia, Brazil and Hong Kong (Graph 3-14, LHS).<sup>62,63</sup> In Brazil, the significant drop is related to a regulation issued by the Central Bank of Brazil in 2016 that prohibited banks from using bonds issued by linked finance companies as collateral for repurchase agreements. The regulation intended to mitigate the possibility of operations in which the value of the collateral has high correlation with the credit risk of the counterparty receiving liquidity. As these operations were relevant to the leasing companies, their financial assets and their short-term wholesale funding declined. At end-2019 finance companies assets in Brazil were just 12% of those at end-2016.

**While finance companies showed low to moderate use of short-term wholesale funding in most reporting jurisdictions in 2019, finance companies in Hong Kong,<sup>64</sup> Chile and Mexico were heavily dependent on short-term wholesale funding.** Moreover, finance companies in Chile and Mexico seemed to rely heavily on banks as a single source of funding.

**The liability structure of finance companies differs across jurisdictions.** As such, the interconnectedness between finance companies and the rest of the financial system, as well as associated risks, are quite varied across jurisdictions. Banks were the largest single source of funding for most jurisdictions, including Brazil, Canada, Chile and Mexico, while OFIs were the largest source in India and Korea. The rest of the world (RoW) represented a relatively important source of funding for Australia, Belgium, Chile, the Netherlands and the US. In Australia, for example, the majority of RoW funding is in the form of intra-group liabilities. This potentially reflects the fact that many finance companies in Australia are part of overseas groups, and that, for example, auto/equipment finance companies make use of overseas intra-group funding.

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<sup>61</sup> In Australia, this decline mainly reflects the switch to a new data collection by the prudential regulator known as the 'economic and financial statistics' (EFS). Previously intra-group liabilities were included as deposits and therefore were classed as short-term liabilities. They are now separately identified in EFS and are able to be excluded. In Mexico, there has been a reclassification of the entity types included into EF2 given a change in the legal status of some large entities (provide lending to firms and households but do not engage in deposit services). Due to these reclassifications, maturity transformation for finance companies decreased notably in 2019 (from 3 to 1.2), continuing a decreasing trend in MT2 since 2016.

<sup>62</sup> The reduction in business of finance companies in Hong Kong in 2019 (see footnote 22) may result in a broad-based reduction in various items of their balance sheet, including short-term wholesale funding.

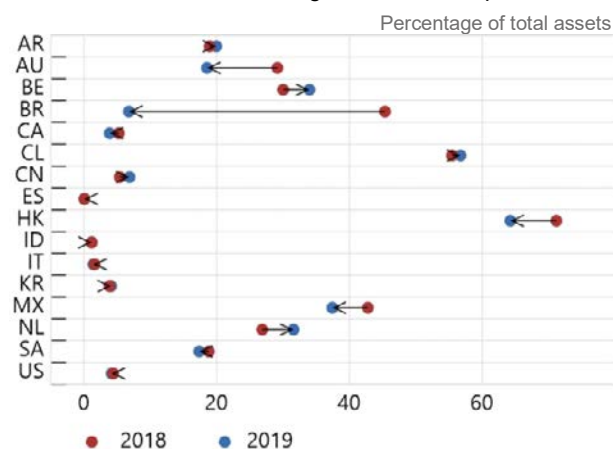
<sup>63</sup> In Australia, short-term wholesale funding has also decreased. However, this decrease is due to the introduction of a new data collection by the prudential regulator known as the 'economic and financial statistics' (EFS). Previously, debt securities issued to non-residents could not be split into short-term or long-term debt securities, therefore all securities were assumed to be short-term. Under the new EFS, the split into short- and long-term can be identified from 2019, resulting in the reduction in the amount classed as short-term wholesale funding.

<sup>64</sup> Despite the relatively high dependence on short-term wholesale funding compared to other reporting jurisdictions, there would be little maturity transformation risk faced by finance companies in Hong Kong, given that their ratio of short-term assets to short-term liabilities was close to 1 in 2019.

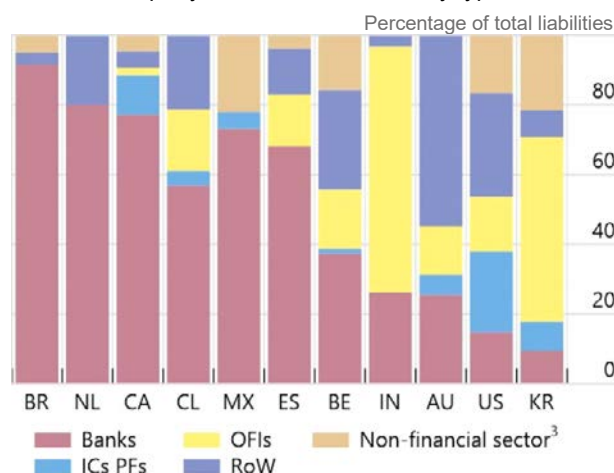
## The use of short-term wholesale funding by finance companies changed little in most reporting jurisdictions in 2019, while it declined significantly in Brazil

Graph 3-14

Short-term wholesale funding of finance companies<sup>1</sup>



Finance company liabilities to other entity types<sup>2</sup>



Note: The left panel only includes jurisdictions that provided short-term wholesale funding data for both years; the right panel only includes jurisdictions that provided a breakdown of finance company interconnectedness data.

<sup>1</sup> For some jurisdictions, high levels of funding from banks (included in short-term wholesale funding) may be due to a large share of finance company liabilities reflecting funding in the form of intra-group loans from related (parent) banks as these finance companies are a part of wider banking groups. Any such bank-owned finance companies and other bank-owned EF2 entities are, where data permits, excluded from the narrow measure. <sup>2</sup> Claims on finance companies from other sectors (gross of prudential consolidation). <sup>3</sup> Data on claims from the non-financial sector (non-financial corporations, government and households) are collected on best efforts basis. Therefore, claims from this sector are not presented for a few jurisdiction in the panel.

Source: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

### 3.5. Intermediation of market activities dependent on short-term funding (EF3)

EF3 involves the intermediation of market activities that is dependent on short-term funding, including secured funding of client assets, and securities borrowing and lending. EF3 entities tend to be broker-dealers and they fulfil several important functions, including providing short-term credit to their clients in covering their positions, supplying liquidity through market-making activities, facilitating trading activities, providing investment advice to clients, publishing investment research, and helping raise capital for corporates.<sup>65</sup> Where data permits, broker-dealers that are owned by (and hence prudentially consolidated within) banking groups are excluded from EF3. As such, broker-dealers discussed here represent a smaller subset of the broader category of broker-dealers that is discussed in Section 1.<sup>66</sup> Given that broker-dealers are the predominant EF3 entity type, the risk metrics analysed in this section focuses only on broker-dealers.<sup>67</sup>

<sup>65</sup> EF3 entities' intermediation activity may also include securities brokerage services (i.e. buying and selling of securities and derivatives on- and off-exchange including in a market-making role) as well as prime brokerage services to hedge funds.

<sup>66</sup> In the US, for example, broker-dealers with a prudentially supervised holding company comprise around 62% of all broker-dealer assets. These broker-dealers are excluded from the EF3 asset size and trends analysis.

<sup>67</sup> In some cases, differences in the risk metrics across jurisdictions might be caused by differences in whether prudentially consolidated broker-dealers are included in the data inputs or not. For example, the risk metrics data inputs for US broker-dealers include prudentially consolidated broker-dealers (i.e. broker-dealers that are subsidiaries of banking groups are included in the risk metrics analysis). This may also result in differences as compared to the narrow measure of EF3, which only considers, where data permits, non-prudentially consolidated broker-dealers. The FSB continues to work on further improvements in risk metrics and their analysis.

### 3.5.1. Trends in Economic Function 3

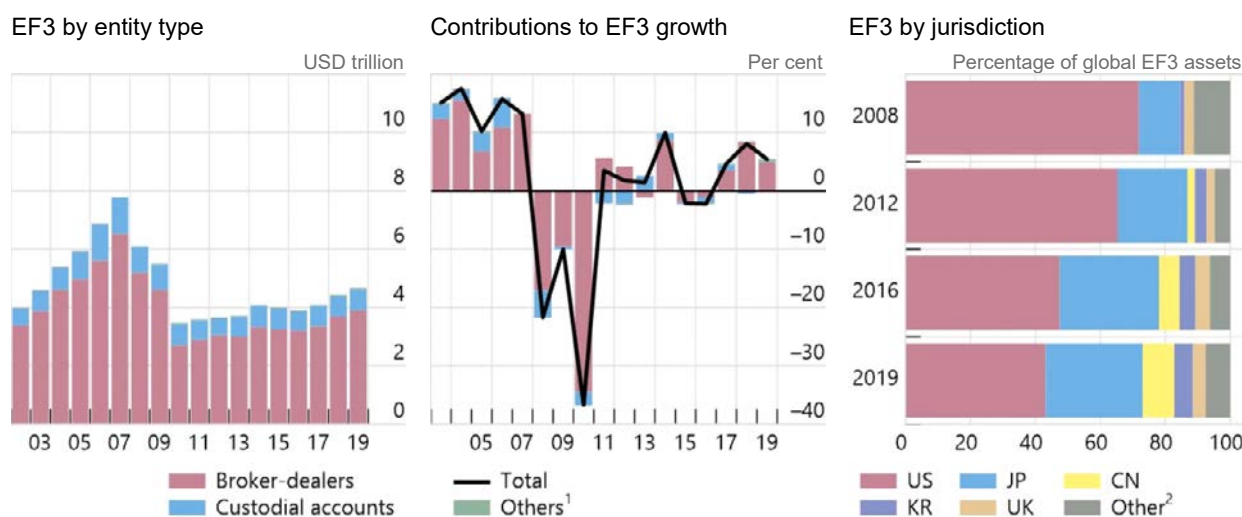
**Assets of EF3 entities grew by 5.4% to \$4.7 trillion in 2019**, slightly lower than the growth rate in 2018. Growth was mainly as a result of an increase in broker-dealer assets - which make up 84% of EF3 assets. Other entities classified into EF3 include custodial accounts and securities finance companies which account for 15% and 1% of EF3 assets respectively. EF3 represents 8.2% of the narrow measure, a minor decline from 2018 when EF3 represented 8.6%.

**The majority of jurisdictions saw EF3 assets increase.** Out of the 26 jurisdictions that classify entities into EF3, 20 jurisdictions reported increases in EF3 assets in 2019. While increases were broad-based across jurisdictions, more than 60% of the growth in broker-dealer assets in 2019 is attributable to increases in Japan and China.

#### Broker-dealers are the largest EF3 entity type, and drove the growth in 2019

29-Group

Graph 3-15



<sup>1</sup> Others include securities finance companies and dealers. <sup>2</sup> Other jurisdictions in 29-Group not displayed separately.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**The vast majority of EF3 assets continue to be located in the US, Japan and China.** These top three jurisdictions accounted for more than 82% of global EF3 assets, and around two thirds of the total growth over the year. Over the past several years, the share of EF3 assets held by the US has decreased, whilst that held by Japan and China has increased.

### 3.5.2. Financial stability risk metrics for EF3

**Broker-dealers are part of the critical market infrastructure in financial markets.** Broker-dealers with significant degrees of leverage and maturity/liquidity transformation could impact financial stability. Such entities could (i) amplify or cause runs if general market and/or asset price conditions deteriorate; (ii) become subject to viability concerns if funding providers become concerned over the price deterioration of collateral in short-term funding markets, (iii) play a role in liquidity stress if their balance sheets become constrained.<sup>68</sup> Depending on these entities'

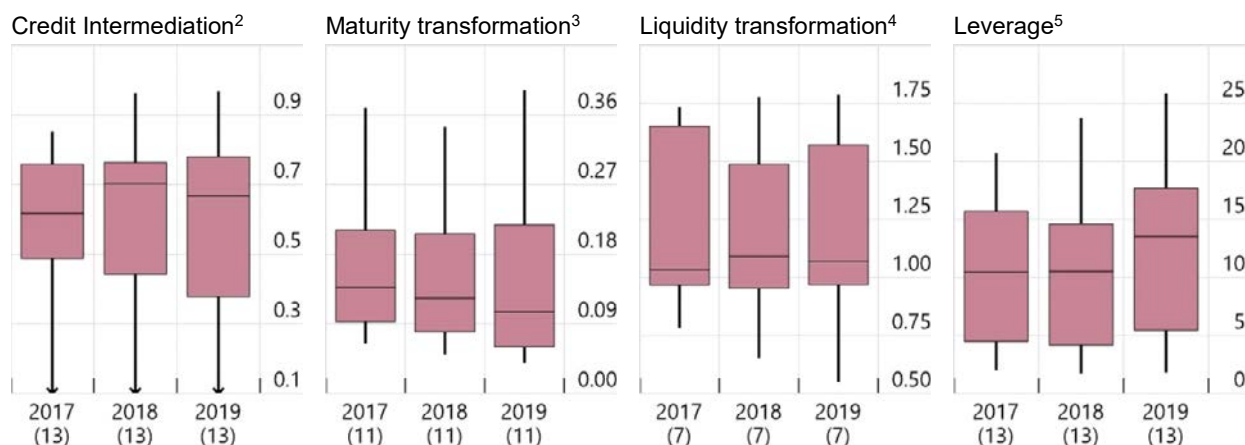
<sup>68</sup> In some jurisdictions (e.g. the US), the risks of broker-dealers are generally mitigated by the fact that the transactions are secured with liquid securities (i.e. securities that have a ready market) as collateral and the balance sheet of the broker-dealer are composed almost exclusively of cash and liquid securities.

funding models, these activities may involve liquidity risks, including intra-day liquidity risk. These entities may also be vulnerable to roll-over risk or runs by lenders if they are leveraged, particularly if their funding is primarily dependent on short-term wholesale funding (e.g. repos). Their business funding model relies on repo markets functioning properly. During market stress, such low-cost funding can evaporate. Furthermore, as broker-dealers are part of critical market infrastructure, in particular in market-making and price discovery, should their activities be disrupted, there may be important consequences for financial stability.

## Leverage of broker-dealers increased in 2019

Risk metrics for broker-dealers<sup>1</sup>

Graph 3-16



The median value is represented by a horizontal line, with 50% of the values falling in the 25th to 75th percentile range shown by the box. The upper and lower end points of the thin vertical lines show the range of the entire sample. Changes in the distribution across years might be related to changes in the sample of jurisdictions that provided data.

<sup>1</sup> The number in parentheses indicates the number of jurisdictions submitting the relevant data. Each jurisdiction's data submission reflects data from many individual entities within that jurisdiction. The coverage for these risk metrics is higher than 100% in some instances due to some jurisdictions using a sample that includes entities prudentially consolidated into banking groups to calculate risk metrics, while such entities are excluded from those classified into the narrow measure. <sup>2</sup> Credit assets / total financial assets (C11). The sample of reporting jurisdictions in 2019 represents more than 100% of broker-dealers' total assets. <sup>3</sup> (Long-term assets – equity – long-term liabilities) / total financial assets (MT1). The sample of reporting jurisdictions in 2019 represents more than 100% of broker-dealers' total assets. <sup>4</sup> (Total financial assets – liquid assets (narrow) + short-term liabilities) / total financial assets (LT1). The sample of reporting jurisdictions in 2019 represents more than 100% of broker-dealers' total assets. <sup>5</sup> Total financial assets/equity (L1). The sample of reporting jurisdictions in 2019 represents more than 100% of broker-dealers' total assets.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**Credit intermediation of broker-dealers was little changed in 2019 (Graph 3-16, LHS).** In several jurisdictions, broker-dealers' credit intermediation activities continue to mainly be through debt securities and reverse repos, with only a small fraction involved in direct lending. The median ratio of credit assets to total financial assets, or C11,<sup>69</sup> for broker-dealers was slightly lower than in the previous year at 0.67 in 2019 versus 0.70 in 2018. Some jurisdictions reported considerably lower levels of the ratio of loans to total liabilities (C12 – see Annex 4), compared to C11, confirming that most broker-dealers' credit intermediation activities are largely done through debt securities and reverse repos, with only a fraction involving direct lending.

**Maturity transformation for broker-dealers continued to decrease in 2019.** Maturity transformation is not a major activity of most broker-dealers, and in 2019 more than half of the jurisdictions reported less long-term assets that are funded by short-term liabilities. The median ratio of long-term assets funded by short-term liabilities (MT1) decreased marginally to 0.11 in

<sup>69</sup> Excluding reverse repos (or repo assets).

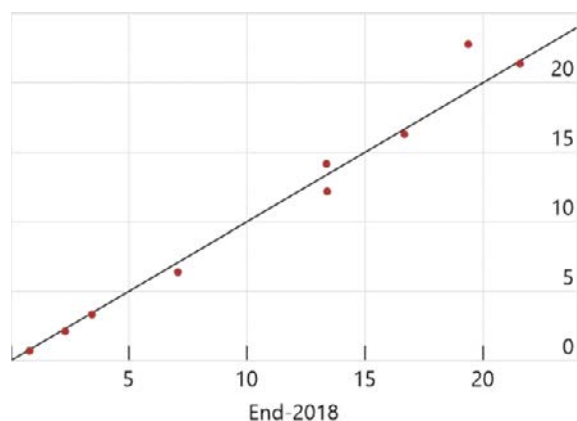
2019 from 0.12 in 2018. The ratio of short-term liabilities to short-term assets (MT2 – see Annex 4) remained below one, indicating negative maturity transformation in general with the exception of three jurisdictions, which continued to have short-term funding dependencies.

**The median of broker-dealers’ liquidity transformation decreased slightly in 2019, while dispersion increased.** The median ratio of less-liquid assets funded by short-term liabilities, using a narrow definition of liquid assets (LT1) decline to 1.07 in 2019 compared to 1.09 in 2018. The LT1 for two jurisdictions, however, were above 1.7, indicating significant liquidity transformation in these jurisdictions. The median ratio of less-liquid assets funded by short-term liabilities, using a broad definition of liquid assets (LT2 – see Annex 4) increased slightly to 0.82 in 2019, from 0.80 in 2018. Together, these metrics imply that short-term liabilities broadly equalled liquid assets under the narrow definition of liquid assets, while short-term liabilities were larger than liquid assets under the broad definition of liquid assets.

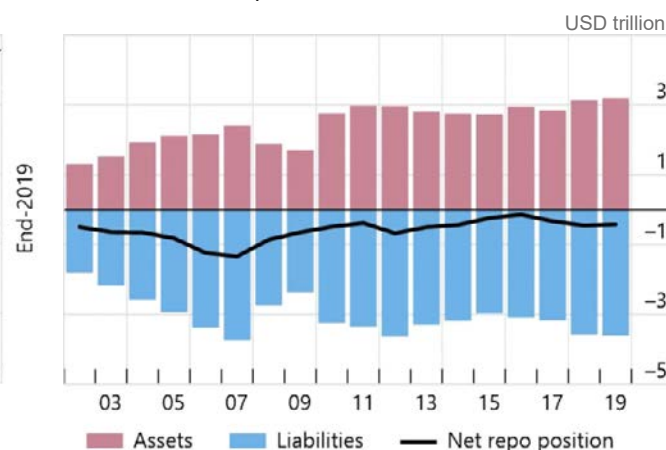
### Broker-dealers continued to be net recipients of funding from the repo market in 2019

Graph 3-17

Debt-to-equity ratios<sup>1</sup>



Broker-dealers’ repo assets and liabilities<sup>2</sup>



<sup>1</sup> For CA, FR, HK, IN, JP, MX, RU, SG and the US. <sup>2</sup> For AU, BR, CL, ES, FR, ID, IN, JP, KR, MX, SG, UK and the US.

Sources: Jurisdictions’ 2020 submissions (national sector balance sheet and other data); FSB calculations.

**Leverage of broker-dealers increased in the majority of jurisdictions in 2019.** The median value of the ratio of total financial assets to equity capital (L1) was 13.5 in 2019, continuing its upward trend (from 10.5 in 2018). The increase in L1 indicates that broker-dealers continue to use balance sheet leverage. Three jurisdictions reported L1 above 20 (Graph 3-16). Despite the overall increase in leverage over the past decade, in aggregate, the median leverage ratio remains below those observed prior to the 2008 financial crisis. This is because of significant post-crisis deleveraging in one large jurisdiction.

**Broker-dealers continued to be net recipients of funding from repo markets in 2019.** While jurisdictions reported an increase in both aggregated repo assets and liabilities, the growth in repo assets was higher than that of liabilities (Graph 3-17, RHS). This resulted in a marginal

increase in broker-dealers' net repo position (repo assets minus repo liabilities). Nevertheless, broker-dealers continued to be greater net recipients of funding from repo markets in 2019.<sup>70</sup>

### 3.6. Insurance or guarantees of financial products (EF4)

EF4 comprises entities that insure or guarantee financial products by writing insurance on structured securities and other financial products such as residential mortgages, effectively providing credit enhancements to loans (e.g. guarantees or credit derivatives) made by banks as well as non-bank financial firms. For example, financial guarantors or monoline insurers extend guarantees to bank and non-bank financial firms, using off-balance sheet commitments and derivatives. By doing so, EF4 entities facilitate credit creation by attracting lenders seeking to increase the probability of full repayment, even in cases where the borrower cannot meet their obligations.

**If credit, liquidity or counterparty risks are mispriced, or incentives are misaligned, EF4 entities may contribute to the creation of excessive risk-taking, potentially contributing to boom-bust cycles.** The pricing of insurance protection should in principle reflect the creditworthiness of both the borrower and guarantor, but asymmetric information or other market frictions can cause imperfect credit risk transfer.

**EF4's impact and importance may be significantly understated due to the difficulty of adequately capturing their off-balance sheet exposures.** The analysis in this section relies on credit insurers' balance sheets, which are often modest (given the nature of their business). Only four jurisdictions included off-balance sheet assets into EF4.

**Risk metrics for EF4 are not published due to the difficulty in interpreting the relatively sparse risk data provided by jurisdictions.**<sup>71</sup> Due to the small size of EF4 assets, the relatively sparse risk data provided by jurisdictions (jurisdictions do not need to report risk metrics if an entity type's aggregate size is below 1% of their jurisdiction's total financial assets) and the unique nature of EF4, it is currently difficult to conduct risk analysis with regards to EF4.

#### 3.6.1 Trends in Economic Function 4

**While EF4 was the fastest growing economic function in 2019, with a growth rate of 16.6%, it remains the smallest share of the narrow measure (0.8% or \$468 billion)** (Graph 3-18). The growth in global EF4 assets was broad-based (11 out of the 19 reporting jurisdictions reported an increase in 2019), but largely driven by Ireland's investment funds (\$58 billion increase) and Korea's broker-dealers (\$7 billion increase). Since 2017, certain investment funds in Ireland, particularly fixed income funds, have shown an increase in the use of credit derivatives

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<sup>70</sup> In the majority of the 13 jurisdictions that provided this data, broker-dealers were net recipients of funding, except in Brazil, France, Indonesia, Spain and the UK.

<sup>71</sup> The Experts Group will continue work to identify more relevant metrics for EF4 entity types.

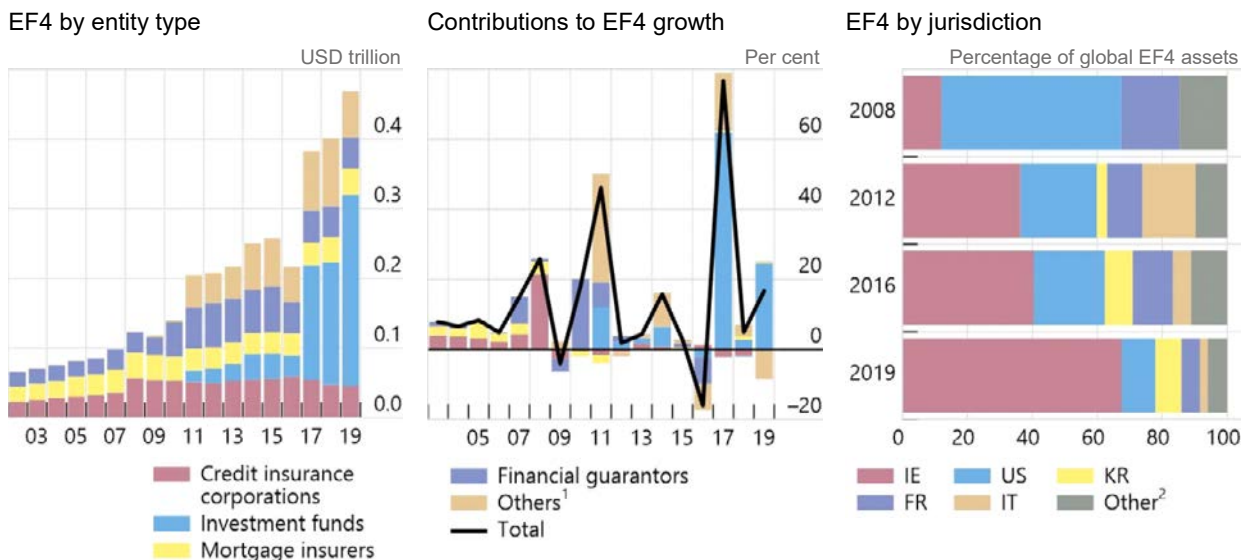


(credit default swaps), and have therefore been reclassified from EF1 to EF4.<sup>72</sup> As a result, Ireland's share of global EF4 assets, increased from 40% in 2016 to 67% in 2019.

### Investment funds contributed to most of the growth in EF4 and accounted for 59% of EF4 assets in 2019

29-Group

Graph 3-18



<sup>1</sup> Includes broker-dealers, SFVs and SPVs. <sup>2</sup> Other jurisdictions in 29-Group not displayed separately.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**Around 60% of EF4 assets were held by investment funds in 2019; however credit insurers are the most common EF4 entity type.**<sup>73</sup> Only Ireland classified investment funds into EF4, while 10 jurisdictions included insurance companies (credit insurers) in EF4. Mortgage insurers, as well as financial guarantors, are reported as EF4 entities in six jurisdictions. Insurance corporations, financial guarantors and mortgage insurers together accounted for 27% of total EF4 assets. On other entity types classified into EF4, Korea's EF4 is composed exclusively of broker-dealers that provide securitisation services to SFVs and also guarantees, credit and liquidity lines as part of the service. Ireland also classified certain SFVs into EF4.

**The assets of mortgage insurers/guarantors have increased since 2017, while that of credit insurers have declined.** The US, which accounts for the second largest share of global EF4 assets, has mostly driven this trend. Mortgage insurers are now the dominant EF4 entity type in the US. The trend was driven by the diminishing returns and role of financial guarantee companies after the 2008 financial crisis, while mortgage guaranty companies saw growth over the last decade due to increased resiliency.

<sup>72</sup> Investment funds holding credit derivatives (credit default swaps) in excess of 5% of total assets are classified in EF4. A number of fixed income funds in Ireland passed this threshold during 2017 due to an increased use of credit derivatives and they have been reclassified from EF1 to EF4 since then. In 2019, several other funds in Ireland passed this threshold, with an average holding of credit assets of 8%, contributing significantly to the increase in EF4 assets.

<sup>73</sup> In order to improve the consistency in the classification of entities into EF4 across jurisdictions, the Experts Group will review EF4 classification and evaluate the inclusion of investment funds into EF4.

### 3.7. Securitisation-based credit intermediation (EF5)

EF5 includes entities that are involved in securitisation-based credit intermediation (e.g. asset- or mortgage-backed securities and CLOs) or funding of financial entities through investment funds or trust companies to finance illiquid assets by raising funds from markets. Both banks and non-bank financial intermediaries use securitisation for funding diversification, revenue generation, and regulatory capital and accounting benefits with or without the transfer of assets and risks from the securitisation entities.<sup>74</sup> By facilitating the transfer of credit risk off-balance sheet, securitisation reduces funding costs for both bank and non-bank financial entities, and facilitates the availability of credit to the real economy. Nonetheless, securitisation could contribute to a build-up of excessive credit, maturity/liquidity transformation, leverage, or regulatory arbitrage in the system. This may be a greater risk in financial systems with relatively weak lending standards. The securitisation market is also sensitive to sudden reductions in market liquidity, particularly in the case of complex or opaque securitisations.

#### 3.7.1 Trends in Economic Function 5

**Global EF5 assets grew 2.5% to \$4.8 trillion at end-2019, with growth of SFVs offsetting the decline in the assets of Chinese trust companies for the second consecutive year (Graph 3-19).** EF5 is composed primarily of SFVs and trust companies, with 82% and 18% of EF5 assets, respectively. However, the share of trust companies has shrunk since 2018, given the sustained decline in the assets of Chinese single trusts after the introduction in recent years of tighter regulations on trust companies as well as enhanced regulatory monitoring of them.<sup>75</sup>

**SFV assets continued their growth trend seen since 2017, but remained below levels prior to the 2008 financial crisis.** The increase of 10.4% reflects growth in 19 of 26 jurisdictions reporting SFVs, but was driven mainly by some euro-area reporting jurisdictions (in particular, Ireland, Italy and Luxembourg), the Cayman Islands and the US. Some EMEs, namely Brazil, South Africa and India, experienced very high growth rates, increasing by 61%, 45% and 43%, respectively, but from a relatively lower base. SFV assets in the US grew by 4.8% in 2019 after declining consecutively for 11 years. This increase reflects the steady growth of asset-backed securities, other than residential mortgage-backed securities (RMBS), in the US during the past decade, which had been previously offset by the decline of RMBS.<sup>76</sup>

**The drivers of the growth in SFVs' assets vary across jurisdictions.** In the Cayman Islands, where SFVs assets grew by 38%, almost 90% of new listings on the stock exchange (CSX) were specialised debt securities including CLOs, aircraft asset-backed securities deals, synthetic securitisations and listing of private placements. In Ireland, smaller securitisation vehicles

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<sup>74</sup> See IOSCO's Report on asset securitisation incentives (IOSCO 2011).

<sup>75</sup> In November 2017, a new policy was issued by the China Banking Regulatory Commission to regulate banks and trust corporations, requiring that trust companies do not provide financial institutions with a conduit service for the purpose of avoiding regulations such as investment or leverage constraints. This policy was followed by a series of guidelines for regulating the asset management businesses of financial institutions that were released jointly in April 2018 by the People's Bank of China, China Banking and Insurance Regulatory Commission, China Securities Regulatory Commission, and the State Administration of Foreign Exchange. Meanwhile, the China Banking and Insurance Regulatory Commission strengthened the monitoring of conduit trusts and took enforcement action against violations.

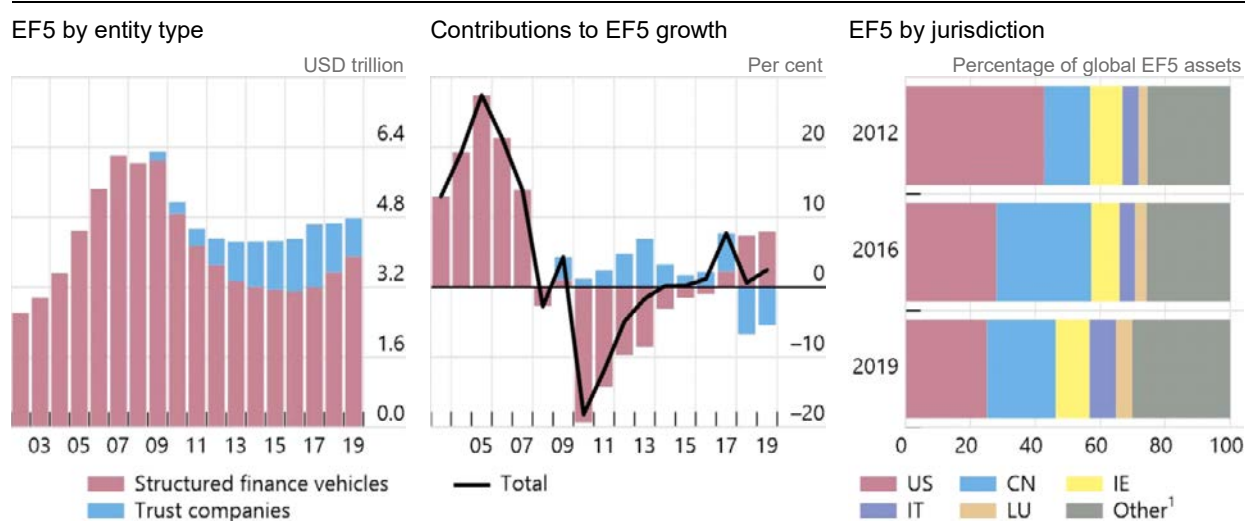
<sup>76</sup> The 11 year decline is a mechanical payoff and maturing of the 2008 financial crisis era RMBS that have run its course and that no longer dominates the ABS series.

sponsored by non-banks have replaced traditional large mortgage pool vehicles linked to banks or resolution entities. Part of the increase in Ireland is also explained by assets of Irish CLOs having grown significantly since 2014.<sup>77</sup> This increase reflects the search for yield in a low risk environment, which has forced down the cost of funding for the higher risk tranches of CLOs and allowed an increase in their supply. In contrast, the CLO issuance in China has been decreasing since 2015. However, auto loans and credit card ABS presented high growth in 2019, of 61% and 49%, respectively.<sup>78</sup> In Italy, a law on public guarantees, operating since June 2016, has helped revitalise the Italian SFV market, which has had a renewed appeal for banks seeking to sell off non-performing loans. Similarly, in India, the growth in assets of SFVs was largely driven by the acquisition of non-performing assets from banks.

### Growth of SFVs was offset by the decline in the assets of Chinese trust companies for the second consecutive year

29-Group

Graph 3-19



<sup>1</sup> Other jurisdictions in 29-Group not displayed separately.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

### 3.7.2 Financial stability risk metrics for EF5

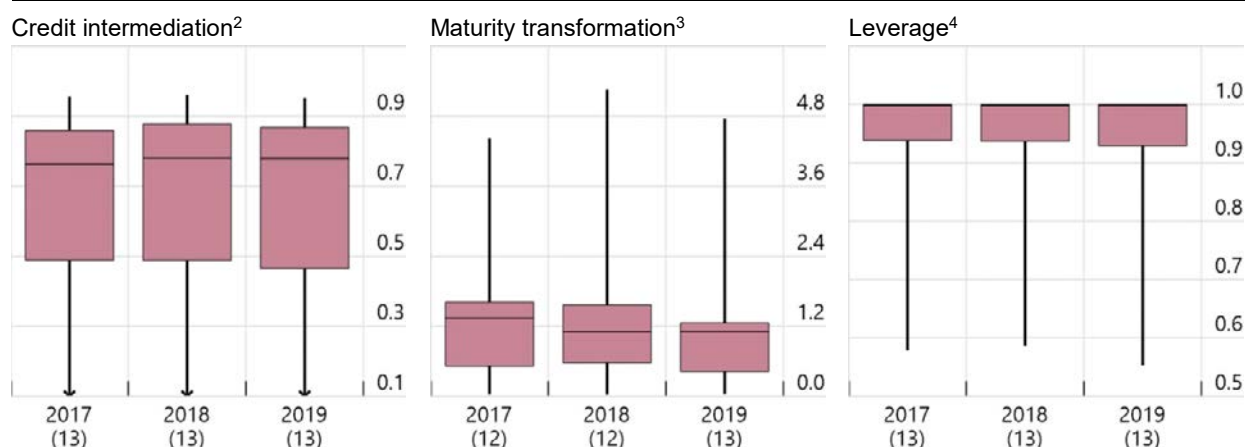
**SFVs classified into EF5 continue to engage in a significant degree of credit intermediation, particularly through the issuance of debt securities backed by loan portfolios.** The median ratio of loans on the asset side of the balance sheet to total financial assets, or CI2, remained at 0.78. The high values for CI2 indicate that SFVs typically intermediate more loans than bonds. However, in some jurisdictions SFVs also engage to a significant extent in credit intermediation through the securitisation of debt securities.

<sup>77</sup> McCarthy, B, T. Elbay, P. Daly and S Cima (2019).

<sup>78</sup> S&P Global (2020).

## Leverage increased, while other risk metrics for structured finance vehicles were little changed<sup>1</sup>

Graph 3-20



The median value is represented by a horizontal line, with 50% of the values falling in the 25th to 75th percentile range shown by the box. The upper and lower end points of the thin vertical lines show the range of the entire sample. Changes in the distribution across years might be related to changes in the sample of jurisdictions that provided data.

<sup>1</sup> The number in parenthesis indicates the number of jurisdictions submitting the relevant data. Each jurisdiction's data submission reflects data from many individual entities within that jurisdiction. <sup>2</sup> Loans / total financial assets (C12). The sample of reporting jurisdictions in 2019 represents 93% of SFVs total assets. <sup>3</sup> Short-term liabilities / short-term assets (MT2). The sample of reporting jurisdictions in 2019 represents 86% of SFVs total assets. <sup>4</sup> (Total financial assets – equity)/total financial assets (L5). The sample of reporting jurisdictions in 2019 represents 37% of SFVs total assets.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**Maturity transformation of SFVs has remained low in the majority of jurisdictions, indicating that liabilities and assets closely match in maturities.** The median ratio of short-term liabilities (<12 months) to short-term assets (<12 months) stayed slightly above one across the 13 reporting jurisdictions. SFVs in two jurisdictions continue to show high levels of maturity transformation, with short-term liabilities amounting to around three and five times the size of short-term assets.

**Leverage, measured as the ratio of total liabilities to total financial assets, increased in seven reporting jurisdictions in 2019.** Most jurisdictions presented a ratio higher than 0.9 and the median remained close to one.

## 4. Case studies

### 4.1. The impact of the COVID-19 stress on the NBFIs sector<sup>79</sup>

#### 4.1.1. Introduction

The COVID-19 pandemic placed the global financial system under strain with key funding markets experiencing acute stress in March 2020. Authorities responded with a wide range of measures to sustain the supply of credit to the real economy and to support financial

<sup>79</sup> This case study was prepared by Tom Fong (HKMA), Noemi Gander (SIF), Regula Hess (SIF), Jose Alonso Olmedo (Bank of Spain) and Jovan Stojkovic (SEC).

intermediation. The FSB has been supporting international cooperation and coordination on the COVID-19 response, and has been monitoring the financial stability implications of COVID-19 and the policy measures taken to address them.<sup>80</sup>

Given that the data collected for this report generally extends only up to end-2019, i.e. before the pandemic's severe financial and economic effects, the Experts Group undertook an additional data collection initiative, on a best efforts basis, to analyse the impact of the COVID-19 stress on the NBFIs sector during the first half of 2020.<sup>81</sup> Key points of the analysis are as follows:

- Based on the sub-sample of collected data, in Q1 2020 the NBFIs sector decreased by almost 4%, while total global financial assets increased - mainly driven by asset growth of central banks and banks, of 15% and 8%, respectively. This translated into a decrease of NBFIs sector's share of global financial assets. Moreover, the proxy for the narrow measure decreased by 0.5%.<sup>82</sup>
- Other investment fund assets decreased by 14% in Q1 2020, driven by declines in equity funds (-20%), fixed income funds (-4%) and mixed funds (-10%), while MMF assets increased by 16%.<sup>83</sup> CIVs with features that make them susceptible to runs (EF1) decreased overall by 3%. Fixed income funds increased their exposure to short-term and more liquid assets and decreased credit intermediation in Q1 2020, but reverted to previous levels in Q2 2020.
- Assets of entities engaged in market intermediation dependent on short-term funding (EF3) and securitisation-based credit intermediation (EF5) increased by 10% and 2.5% respectively in Q1 2020.

#### 4.1.2. Data sub-sample

**The 2020 Global Monitoring Report on NBFIs is based on annual data up to end-2019; hence, the effects of the COVID-19 stress are outside its scope.** The analysis in this case study tries to bridge the monitoring gap by collecting quarterly data from the first quarter of 2019, a year before the crisis, to the second quarter of 2020. A sub-sample of 20 jurisdictions participated in the data collection exercise, which covered financial sector/entity aggregates and the largest entities in economic functions, together with the entities' respective risk metrics.<sup>84</sup> Given that not all 20 jurisdictions provided the entire dataset, and that overall less data were available for the second quarter, the analysis focuses on entities for Q1 2020. Notes under each exhibit specify the coverage of each part of the analysis.

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<sup>80</sup> See FSB (2020c).

<sup>81</sup> Due to data limitations, the focus of this case study is on Q1 2020. For Q2 2020, data samples are less representative, but where meaningful samples are available these changes are discussed.

<sup>82</sup> This case study did not collect data on all entities in the narrow measure, but instead only the largest ones in each of the economic functions. This sample represents almost 60% of total assets of the narrow measure at end-2019, and as such does not capture all entities or jurisdictions. As a result, the narrow measure used in this case study is a close proxy of the narrow measure discussed in Section 3 of this report.

<sup>83</sup> The FSB Holistic Review (FSB, 2020c) and the MMF case study (Section 4.2) analyse MMFs during the COVID-19 shock in more detail.

<sup>84</sup> The following 20 jurisdictions provided data for the case study: AR, AU, BE, BR, CA, CH, DE, ES, FR, HK, ID, IT, JP, LU, MX, NL, TR, UK, US, and ZA. The following entities and corresponding risk metrics are collected on a best efforts basis for each of the six quarters from Q1 2019 to Q2 2020:

- I. Entities: MMFs, fixed income funds, mixed funds, and other funds, finance companies, broker-dealers, financial guaranty insurers, mortgage guaranty insurers, structured finance vehicles and trust companies.
- II. Risk metrics: credit intermediation, maturity transformation, liquidity transformation, leverage, and non-performing loans.

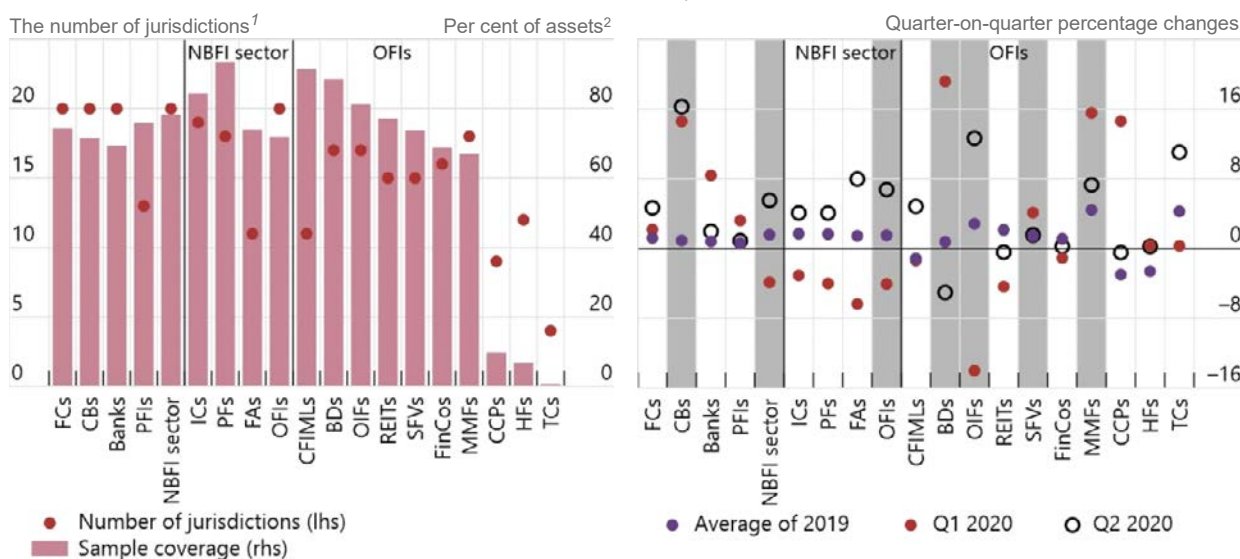


## Coverage of the case study data and quarterly growth of financial assets of selected entities

Graph 4-1

Coverage of case study relative to the global monitoring report as of end-2019

Quarterly percentage change in financial assets per entity<sup>3</sup>



FCs = financial corporations; CBs = central banks; PFIs = public financial institutions; NBFI sector = non-bank financial intermediations; ICs = insurance corporations; PFs = pension funds; FAs = financial auxiliaries; OFIs = other financial intermediaries; CFIMLS = captive financial institutions and money lenders; BDs = broker-dealers; OIFs = other investment funds; REITs = real estate investment trusts and real estate funds; SFVs = structured finance vehicles; FinCos = finance companies; MMFs = money market funds; CCPs = central counterparties; HFfs = hedge funds; TCs = trust companies.

<sup>1</sup> The number of jurisdictions that participated on a best efforts basis. <sup>2</sup> Percent of reported assets in case study as of 4Q 2019 relative to global financial assets at the end of 2019 for each entity shown. <sup>3</sup> Quarter-on-quarter percentage changes in financial assets by entity type. Entities that are analysed in more depth in this case study are shaded. Figures are calculated so that the compositions of jurisdictions are consistent over the two consecutive quarters. Average of 2019 is a simple average of quarterly-on-quarter percentage changes through 2019. All the data is submitted on a best efforts basis, with Q2 2020 data presented as empty circles being smaller coverage compared with other quarters.

Sources: Member responses to the survey (national sector balance sheet and other data); FSB calculations.

**This case study focuses on entities where the largest percentage changes were observed in Q1 2020, with the highest data coverage.** Data used in this case study represents 74% of global financial assets and 78% of global NBF assets based on end-2019 data (Graph 4-1, LHS). Data from the 20 jurisdictions that participated in the case study capture significant market shares globally for several financial entities – with over 70% for the majority of entities and sectors. Given that data are significantly more limited for trust companies and hedge funds, these entities are not further analysed in this case study. Instead, this case study focuses on entities, and their components of the proxy narrow measure, where (i) the sample coverage provides a representative basis to discuss the impact of the COVID-19 shock and (ii) the largest changes were observed in the first quarter of 2020 (see shaded areas in Graph 4-1, RHS). Within the NBF sector, this includes broker-dealers, other investment funds (OIFs), MMFs and SFVs.

### 4.1.3. The impact of COVID-19 on global financial assets

**Based on available data, global financial assets increased by 2% in Q1 2020 mainly as a result of an expansion of bank and central bank assets.** Bank assets increased by 8%, (Graph 4-2, RHS), reflecting a notable increase in bank lending in Q1 2020, as large non-financial corporates initially tapped credit lines to cover funding shortfalls from reduced operations due to lockdowns in many jurisdictions and from reduced supply of short-term non-



bank finance.<sup>85</sup> This increase shows banks' active role as financial intermediaries during the financial distress. Similarly, the assets of public financial institutions (PFIs) also increased. The significant growth of central banks' balance sheets reflects the provision of large amounts of liquidity to financial systems.<sup>86</sup> The largest proportionate increases of central bank assets in Q1 2020 are observed in Australia, the US and Canada, where balance sheets increased by 48% (\$59 billion), 41% (\$1.8 trillion), and 38% (\$67 billion), respectively.<sup>87</sup> However, even with these high proportionate increases, some of these jurisdictions (such as Australia) nonetheless have comparatively low central bank balance sheets when measured relative to GDP.

**In contrast, the NBFi sector decreased by 4%.** Pension funds, insurance corporations and other financial intermediaries (OFIs) decreased by 4%, 3% and 4% respectively in Q1 2020. The largest declines within OFIs was a decrease of 15% in 'other investment funds' (OIFs). OIF sub-categories, namely equity-, mixed-, and fixed income funds, decreased by 20%, 10%, and 4%, respectively,<sup>88</sup> predominantly as a result of valuation effects rather than changes in flows.<sup>89</sup>

**As a result, the share of financial assets held by the NBFi sector saw the largest decline in Q1 2020 since the 2008 financial crisis.** Across the 20 reporting jurisdictions, the NBFi sector as a share of global financial assets fell from close to 57% at end 2019 to just under 54% as at end March 2020. This is the largest such decline in the share of assets held by the NBFi sector since the 2008 financial crisis, when for the same jurisdictions the share of the NBFi sector declined from 49% in 2007 to 45% in 2008.

**The Q1 2020 decrease in NBFi sector assets was observed across almost all jurisdictions.**<sup>90</sup> The US saw the largest decline of 6% from \$70 trillion to \$65.8 trillion. In other jurisdictions with large NBFi sectors, such as Luxembourg, Japan, and the Netherlands, NBFi assets declined by 4% (\$568 billion), 2% (\$179 billion), and 3% (\$299 billion), respectively (Graph 4-2, LHS).

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<sup>85</sup> See FSB (2020b).

<sup>86</sup> IMF report "Central Bank Support to Financial Markets in the Coronavirus Pandemic", notes that many central banks have provided substantial liquidity to help alleviate the sharp tightening of financial conditions associated with the COVID-19 pandemic.

<sup>87</sup> For example, the US Federal Reserve expanded its securities holdings to restore market functioning in Treasury and agency MBS markets, and established several emergency lending programs aimed at supporting the flow of credit to households, businesses, nonprofits, and state and local governments. See Board of Governors of the Federal Reserve System (2020).

<sup>88</sup> Other funds declined by 8%.

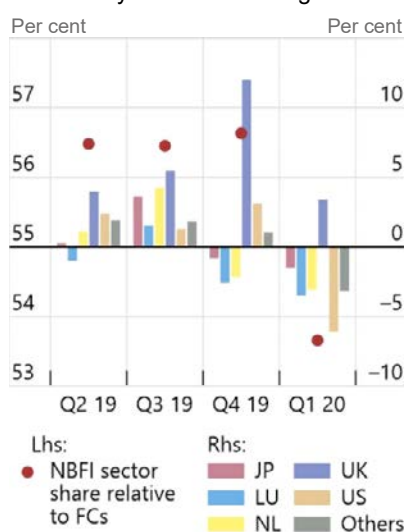
<sup>89</sup> The changes due to flow and valuation might not add up to changes in total AUM due to minor differences in samples.

<sup>90</sup> Only AR, HK, MX, UK, and TR experienced increases in NBFi assets. All of these jurisdictions reported growth rates lower than 3%.

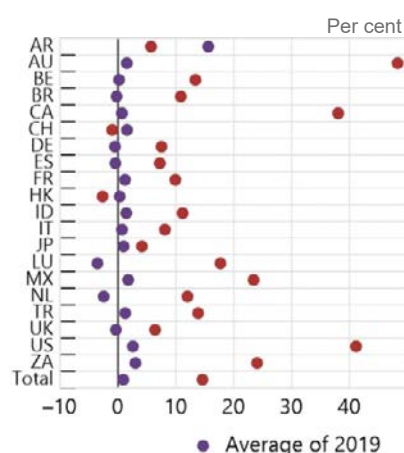
## Global financial assets increased in Q1 2020 driven by banks and central banks; the NBFi sector assets decreased

Graph 4-2

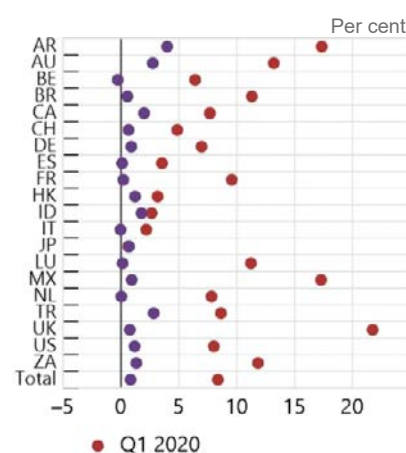
NBFI sector share of the global financial system and asset growth<sup>1</sup>



Central bank asset growth



Bank asset growth



<sup>1</sup> When calculating the figures of NBFI sector share, missing values are imputed for each sector of each jurisdiction where appropriate in order to mitigate the effect of missing values over time.

Sources: Member responses to the survey (national sector balance sheet and other data); FSB calculations.

### 4.1.4. Impact on Investment Funds and EF1

**Other investment funds decreased by 14% (\$4.9 trillion), mainly as the result of a decrease in assets in equity funds** (Graph 4-3, LHS). The 20% (\$4.5 trillion) decrease in equity fund assets was observed across all jurisdictions in the sample, with the exception of Turkey. The US experienced the largest absolute decrease (\$3.4 trillion, 22%) followed by Luxembourg (\$309 billion, 17%) and the UK (\$212 billion, 19%) (Graph 4-4, LHS). Declines were also observed in fixed income funds of 4% (\$432 billion), mixed funds of 10% (\$638 billion), and other funds of 8% (\$174 billion).<sup>91</sup> In Q2 2020, the valuation of equities recovered and with it the level of equity funds' assets.

**Equity funds had a greater decrease in assets relative to fixed income funds mainly due to more pronounced valuation impacts.** In contrast, the value of bonds was more stable and the decrease of assets of fixed income funds was driven both by outflows and valuation effects. Overall, the data suggest that in the face of heightened uncertainty some investors may have increased their demand for funds that invest in shorter term and more liquid assets (Graph 4-3 RHS).

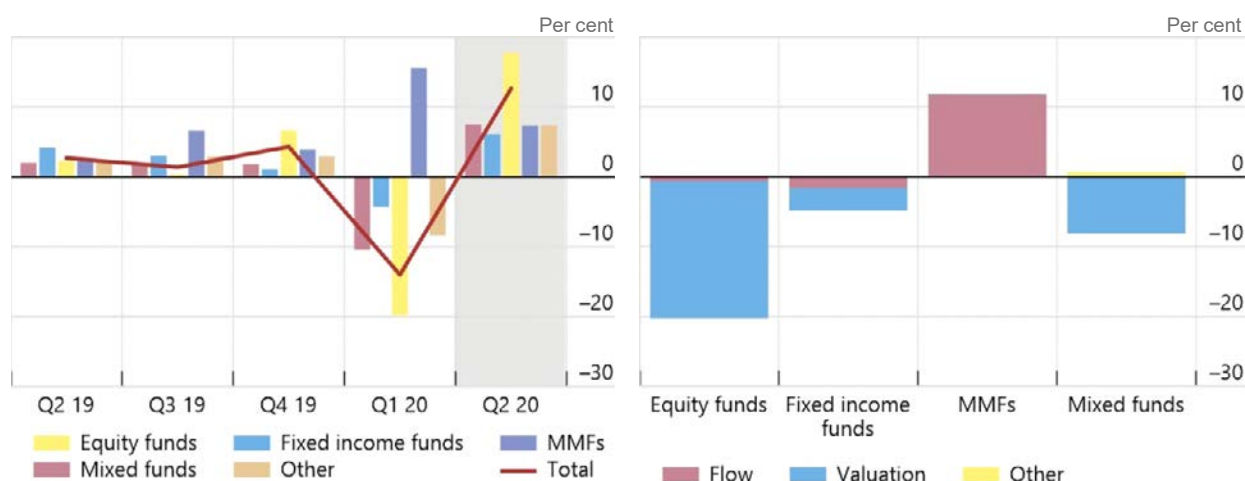
<sup>91</sup> The sample up to Q1 2020 includes: AR, BE, CA, CH, DE, ES, FR, HK, IT, JP, LU, MX, NL, TR, UK, US, ZA. The Q2 2020 sample includes: AR, BE, CH, ES, FR, HK, IT, JP, LU, MX, NL, TR, UK, US, and ZA.

**Investment funds declined in Q1 2020 mainly due to valuation effects, with the exception of MMFs. A rebound in assets is seen in the following quarter.**

**Graph 4-3**

Investment fund asset growth

Change in funds' total assets split between flows and valuation effects in Q1 2020<sup>1</sup>



Shaded area for Q2 2020 indicates the coverage of the period is smaller than other periods.

<sup>1</sup> 'Other' represents change attributable to factors other than fund flows and valuation (e.g. changes in leverage and sample adjustments).

Sources: Jurisdictions' 2020 submissions and member responses to the survey (national sector balance sheet and other data); FSB calculations.

**Investment funds included in the narrow measure of NBF1 (EF1) decreased by 2.8% in Q1 2020.** Aggregate assets of EF1 decreased in Q1 2020 by 2.8% (\$662 billion) after three quarters of steady increases.<sup>92</sup> This aggregate change includes increases in MMF assets (16%) but declines in assets of mixed funds, other funds, and fixed income funds assets of 10%, 8% and 4% respectively.

**The aggregate 16% increase in MMF assets was overwhelmingly driven by the US where MMF assets increased by \$704 billion.** This increase explains 96% of the Q1 2020 increase in the sample with further notable increases in Luxembourg and the UK, by 7% (\$26 billion) and 10% (\$3 billion), respectively. The increase continued in Q2 2020. However, these aggregate numbers hide important information about movements in and out of specific types of MMFs that are described in Section 4.2.

**Aggregate assets of fixed income funds decreased by 4% in Q1 2020.** This decrease was mostly driven by the US where fixed income assets decreased by 5% (\$300 billion) and Luxembourg, where assets of fixed income funds decreased by 7% (\$120 billion). However, assets of fixed income funds in France grew by 9% (\$35 billion).<sup>93</sup>

<sup>92</sup> The analysis for collective investment vehicles with features that make them susceptible to runs (EF1) includes the same funds as in OIFs, but excludes equity funds. The EF1 measure in the case study is also narrower than that of the report, as hedge funds are not included.

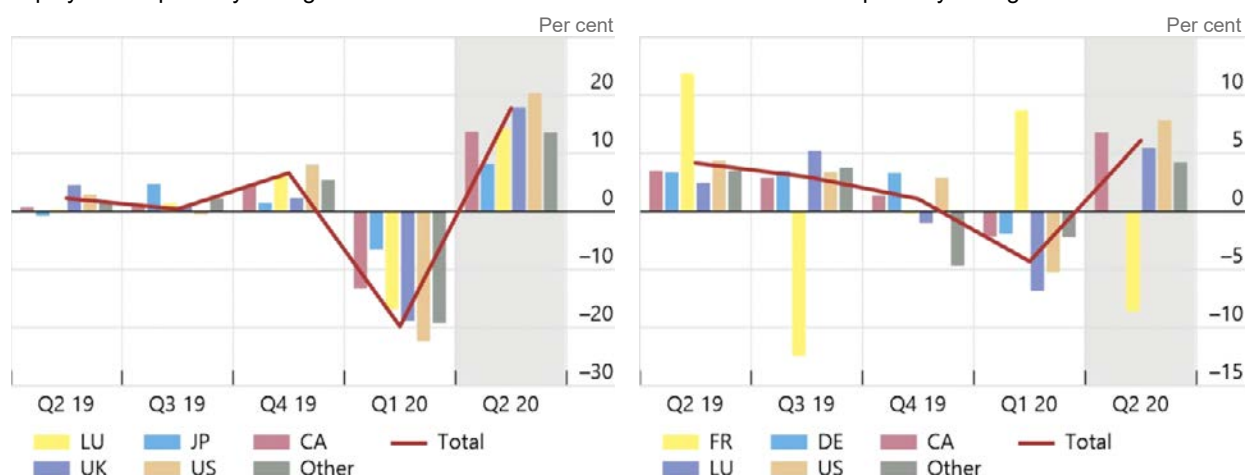
<sup>93</sup> In France, the increase can be explained by hedging activities which are included as part of total assets but which hide a decrease in net asset values for the same funds.

## Equity funds and fixed income funds decreased in Q1 2020, but rebounded in the second quarter

Graph 4-4

Equity funds quarterly changes<sup>1</sup>

Fixed income funds quarterly changes<sup>2</sup>



<sup>1</sup> 18 jurisdictions reported equity funds data through Q1 2020: AR, AU, BE, CA, CH, DE, ES, FR, HK, IT, JP, LU, MX, NL, TR, UK, US, and ZA (86% of total assets), while 17 shared data for Q2 2020: AR, AU, BE, CA, CH, ES, FR, HK, IT, JP, LU, MX, NL, TR, UK, US, and ZA (85% of total assets). <sup>2</sup> 17 jurisdictions reported fixed income funds data through Q1 2020: AR, BE, CA, CH, DE, ES, FR, HK, IT, JP, LU, MX, NL, TR, UK, US, and ZA (77% of total assets), while 16 shared data for Q2 2020: AR, BE, CA, CH, ES, FR, HK, IT, JP, LU, MX, NL, TR, UK, US, and ZA (72% of total assets).

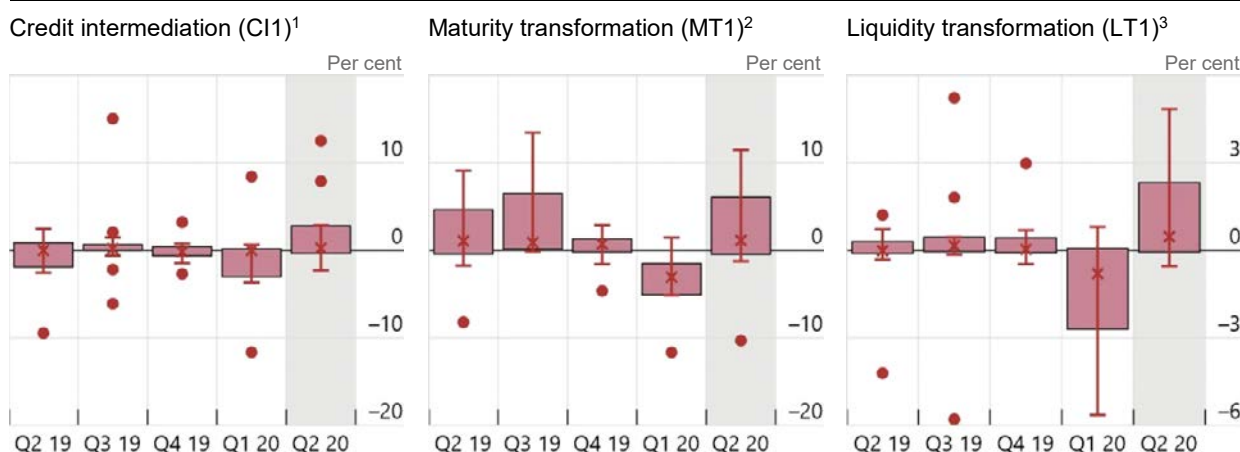
Sources: Member responses to the survey (national sector balance sheet and other data); FSB calculations.

### 4.1.5. Fixed Income Funds Risk Metrics

**In most jurisdictions, fixed income funds increased their exposure to shorter-term and more liquid assets in Q1 2020, while decreasing credit intermediation.** Graph 4-5 displays the quarterly percentage change of fixed income funds risk metrics (credit intermediation, maturity and liquidity transformation), from Q2 2019 to Q2 2020. In Q1 2020, credit intermediation decreased in 7 jurisdictions,<sup>94</sup> indicative of credit assets declining by more than total assets (CI1). For the same sample, similar trends are observed for maturity transformation as measured by the portion of long-term assets funded by short-term liabilities. Liquidity transformation, measured by less liquid assets funded by short-term liabilities, decreased in seven jurisdictions,<sup>95</sup> increased slightly in one jurisdiction and remained about the same in three others. Most of the jurisdictions that experienced a decrease in credit intermediation, maturity, and/or liquidity transformation saw these risk metrics revert in Q2 2020. The observed movements, especially for liquidity transformation, are the largest seen compared to the last three quarters from Q2 2019 to Q4 2019.

<sup>94</sup> AR, BE, CH, FR, LU, MX, and NL.

<sup>95</sup> BE, CH, DE, FR, JP, LU, and ZA.



Figures display the percentage change of the respective risk metrics across quarters where for each jurisdiction the percent change from one quarter to the other is calculated and plotted. Boxes represent third and first quartiles. Dots represent outliers that are defined if it is 1.5 times the interquartile range (the difference between 75th and 25th percentiles) larger than the third quartile or 1.5 times the interquartile range smaller than the first quartile. Bars shows maximum and minimum excluding outliers and cross marks represent median.

<sup>1</sup> Credit assets / total financial assets (CI1). 15 jurisdictions reported CI1 metrics through Q1 2020: AR, BE, CA, CH, DE, ES, FR, IT, JP, LU, MX, NL, UK, US, and ZA (76% of total assets), while 14 shared data for Q2 2020: AR, BE, CA, CH, ES, FR, IT, JP, LU, MX, NL, UK, US, and ZA (72% of total assets). <sup>2</sup> (Long-term assets – equity – long-term liabilities) / total financial assets (MT1). 10 jurisdictions reported MT1 metrics through Q1 2020: BE, CH, DE, FR, JP, LU, MX, UK, US, and ZA (70% of total assets), while 9 shared data for Q2 2020: BE, CH, FR, JP, LU, MX, UK, US, and ZA (65% of total assets). <sup>3</sup> (Total financial assets – liquid assets (narrow) + short-term liabilities) / total financial assets (LT1). 11 jurisdictions reported LT1 metrics through Q1 2020: AR, BE, CH, DE, FR, IT, JP, LU, NL, US, and ZA (70% of total assets), while 10 shared data for Q2 2020: AR, BE, CH, FR, IT, JP, LU, NL, US, and ZA (66% of total assets).

Sources: Member responses to the survey (national sector balance sheet and other data); FSB calculations.

#### 4.1.6. Impact on Broker-dealers and Structured Finance Vehicles

**Broker-dealer total assets in the sub-sample of this case study increased by 19% in Q1 2020** (Graph 4-6, LHS). The largest percentage increases occurred in euro area jurisdictions: Assets of broker-dealers in the Netherlands, Germany, France, and Spain increased by 116% (\$18 billion), 67% (\$11 billion), 50% (\$208 billion) and 40% (\$4 billion) respectively. Assets in the three jurisdictions with the largest broker-dealer assets also increased: in the UK by 34% to \$3.9 trillion, the US by 8.1% to \$3.7 trillion, and Japan by 7% to \$1.8 trillion. The large moves in the UK are partly attributable to increases in the market value of derivatives, which also explains some of the increases in assets of UK banks. For most jurisdictions broker-dealer assets decreased in Q2 2020. In aggregate, EF3 total assets (with broker-dealers being its largest component) increased by 10% in Q1 2020.

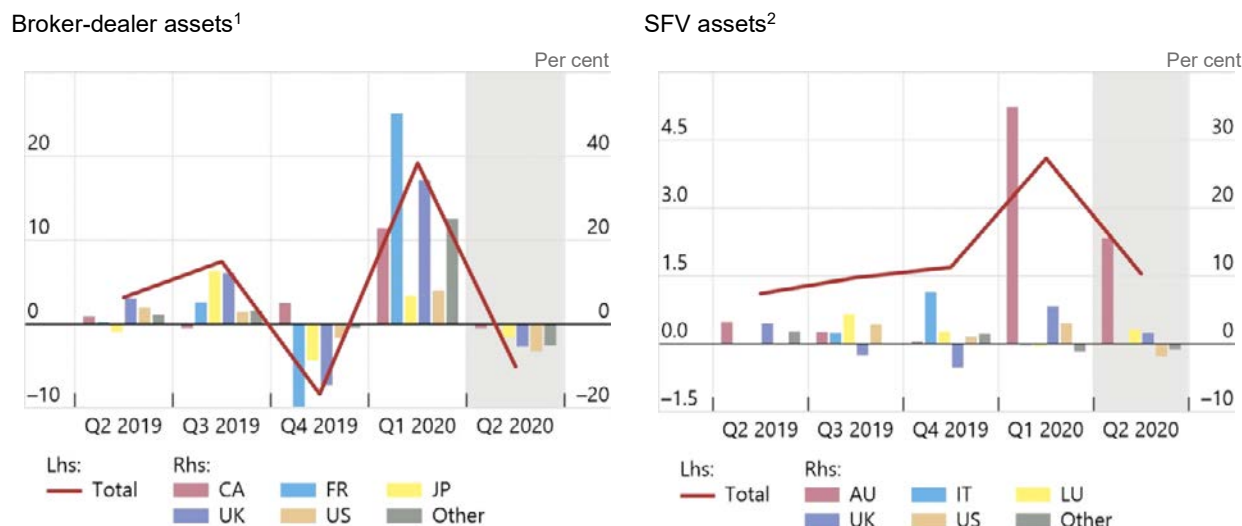
**Structured finance vehicles (SFVs) total assets in the sub-sample of this case study increased by 4% (\$159 billion) in Q1 2020.** The largest percentage increases are observed in Australia (from \$348 billion to \$469 billion, a 35% increase), primarily driven by an increase in banks' self-securitisations, which are used as collateral for central bank borrowing in Australia.<sup>96</sup> Significant increases were also observed in the US and Japan, of 3.1% (\$37 billion) and 3.5% (\$7 billion) respectively. For most jurisdictions the trend reversed in Q2 2020 to pre-Q1 2020 levels with the exception of Australia which saw a continued increase in SFVs above 15%.

<sup>96</sup> Over the course of 2020, Australian banks created a large volume of self-securitisations to access the Reserve Bank of Australia's Term Funding Facility (TFF) which was announced on 19 March 2020. The TFF aims, through funding for the Australian banking system, to support business credit, especially to small and medium-sized businesses.

Overall, EF5 total assets - with SFVs being its largest component – decreased only marginally in Q2 2020.

### Broker-dealers' and SFVs' assets increased in Q1 2020 and decreased in the second quarter

Graph 4-6



<sup>1</sup> 15 jurisdictions reported broker-dealer data metrics through Q1 2020: AU, BE, BR, CA, DE, ES, FR, HK, IT, JP, LU, MX, NL, UK, and US (89% of total assets), while 12 shared data for Q2 2020: AU, BE, BR, CA, ES, HK, JP, LU, MX, NL, UK, and US (84% of total assets). <sup>2</sup> 15 jurisdictions reported SFV data through Q1 2020: AR, AU, BE, CA, DE, ES, FR, IT, JP, LU, MX, NL, UK, US, and ZA (74% of total assets), while 13 shared data for Q2 2020: AR, AU, BE, CA, ES, FR, JP, LU, MX, NL, UK, US, and ZA (62% of total financial assets).

Sources: Member responses to the survey (national sector balance sheet and other data); FSB calculations.

#### 4.1.7. Broker-dealers and SFVs Risk Metrics

**Leverage of broker-dealers increased in all but one jurisdiction in Q1 2020, and the majority of jurisdictions saw increased credit intermediation as measured by the proportion of credit assets to total assets (C11)** (Graph 4-7).<sup>97</sup> These adjustments in times of unexpected shocks allow broker-dealers to potentially provide additional liquidity and help serve their clients. On the other hand, SFVs decreased their maturity transformation in six<sup>98</sup> out of eight jurisdictions.

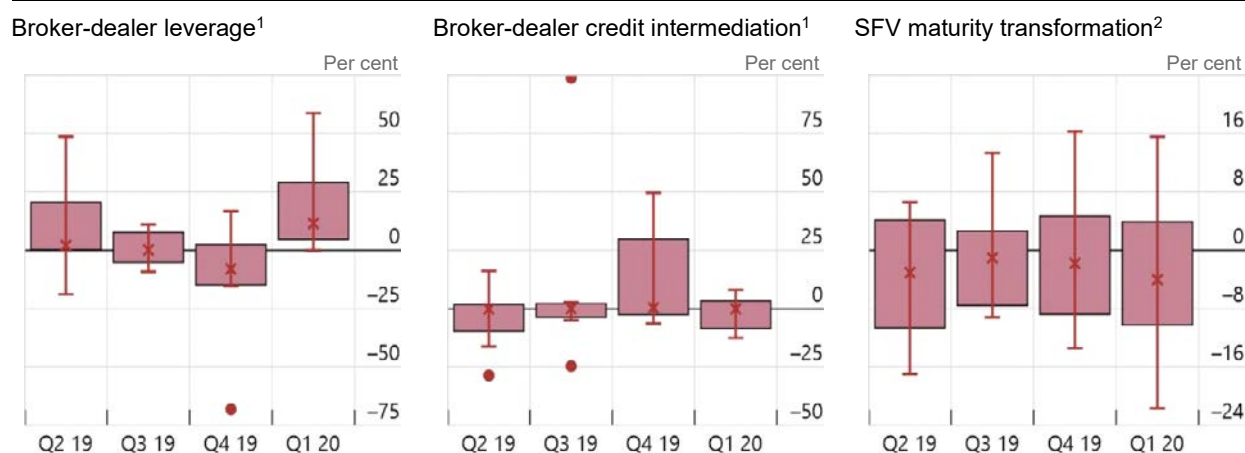
<sup>97</sup> In some cases, differences in the risk metrics across jurisdictions might be caused by differences as to whether prudentially consolidated broker-dealers are included in the data inputs or not. For example, the risk metrics data inputs for US broker-dealers include prudentially consolidated broker-dealers as the available data does not allow them to be separately identified (i.e. broker-dealers that are subsidiaries of banking groups are included in the risk metrics analysis).

<sup>98</sup> CA, ES, FR, LU, NL, and the US.



## Quarterly percent changes in risk metrics: Broker-dealers: Leverage and CI1; SFV: MT2

Graph 4-7



Figures display the percentage change of the respective risk metrics across quarters where for each jurisdiction the percent change from one quarter to the other is calculated and plotted. Boxes represent third and first quartiles. Dots represent outliers that are defined if it is 1.5 times the interquartile range (the difference between 75th and 25th percentiles) larger than the third quartile or 1.5 times the interquartile range smaller than the first quartile. Bars show maximum and minimum excluding outliers and cross marks represent median.

<sup>1</sup> Total financial assets/equity (L1). Credit assets / total financial assets (CI1). Nine jurisdictions reported L1 and CI1 metrics through Q1 2020: BE, BR, CA, ES, FR, JP, MX, NL, and US (60% of total assets). <sup>2</sup> Short-term liabilities / short-term assets (MT2). Eight jurisdictions reported MT2 metrics through Q1 2020: AU, BE, CA, ES, FR, LU, NL, and US (53% of total assets).

Sources: Member responses to the survey (national sector balance sheet and other data); FSB calculations.

### 4.1.8. Conclusion

**The analysis based on extra data reported by 20 participating jurisdictions shows that the NBFIs sector decreased notably in the first quarter of 2020.** Major declines were observed in OIFs' assets, mainly as a result of valuation effects across fund types. In response to market stress, fixed income funds, one of the largest entities in the sector, increased their exposure to shorter-term and more liquid assets while reducing credit intermediation. In contrast, broker-dealers expanded with increases in leverage, potentially providing additional liquidity and services to their clients, and SFVs continue to reduce their dependence on short-term funding.

**These developments reflect the impact of the COVID-19 stress and demonstrate how the FSB's annual monitoring exercise on NBFIs contribute to an understanding of economic impacts and trends in the NBFIs sector.** At the same time, the case study demonstrates some limitations of the annual monitoring exercise. In particular, this case study is based on entity types and risk metric definitions used in the rest of this report, applied to quarterly data. As a result, the analysis here is limited, because many developments during the COVID-19 turmoil happened *within* entity types (e.g. MMFs - government versus non-government MMFs) and over a time period shorter than one quarter. Accordingly, the case study helps to identify and consider potential enhancements to the data collection for further monitoring exercises, particularly with respect to more granular data collection and analysis regarding MMFs, open-ended funds and interconnectedness.

## 4.2. Money market funds during the COVID-19 shock<sup>99</sup>

### 4.2.1. Introduction

While there is no common definition of money market funds (MMFs) due to differences across jurisdictions, they can be described as investment funds that seek to preserve capital and provide daily liquidity, while offering returns consistent with money market rates. In many jurisdictions, MMFs are large and important sources of short-term funding for banks, non-financial corporates and the public sector. Under highly stressed market conditions, certain types of MMFs can experience large and unexpected redemptions, making them vulnerable to run risk, while those investing mainly in government securities can receive inflows.

To better assess the impact of the COVID-19 pandemic on MMFs, this case study examines their structure across key jurisdictions, the post-2008 financial crisis reforms to enhance their resilience, and developments in the sector during and after the peak of the COVID-19 shock in March 2020.<sup>100</sup>

#### Key findings:

- During the initial phase of the COVID-19 market turmoil, the post-2008 financial crisis MMF regulatory reforms were tested amid large withdrawals in some MMFs and liquidity stress in short-term funding markets. Parts of the sector experienced significant liquidity strains, as large redemptions coincided with a rapid deterioration in liquidity of non-government money market instruments.
- Significant outflows from USD-denominated non-government MMFs in some jurisdictions, in particular in the European Union (EU) and the US, imposed strains on some of these funds. In the EU stable low volatility net asset value (LVNAV) funds denominated in US dollars faced the largest liquidity strains while in the US, outflows were concentrated in prime MMFs offered to institutional investors. MMFs in Asia experienced little apparent stress.
- Liquidity pressures in these MMFs started to ease following monetary interventions by central banks, which calmed markets and restored confidence more broadly. This helped ease liquidity pressures, both in the funds and in the underlying markets. All MMFs met redemptions, including USD denominated non-government MMFs, which had experienced the most stress.

### 4.2.2. Post-2008 financial crisis reforms

Following the bankruptcy of Lehman Brothers in September 2008, a number of MMFs faced heavy redemption requests, which contributed to dislocations in short-term funding markets.<sup>101</sup> The 2008 financial crisis highlighted the risks that MMFs can pose to financial stability, prompting

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<sup>99</sup> This case study was prepared by Zara Colvile (UK FCA), Steven Dodkins (BoE), Peter Dunne (CBI), Tom Fong (HKMA), Kosuke Kishimoto (IOSCO), Nicolas Mème (Banque de France), Fernando Sepúlveda (Central Bank of Chile) and Christian Weistroffer (ECB).

<sup>100</sup> See also IOSCO (2020).

<sup>101</sup> Although MMFs did not cause the 2008 financial crisis, their performance during the financial turmoil highlighted their potential to spread or amplify a crisis.

various regulatory changes.<sup>102</sup> After the 2008 crisis, many jurisdictions implemented regulatory reforms to strengthen the resilience of MMFs. For example, in the European Union (EU), MMFs offering a constant 'net asset value' (CNAV) were required to adhere to heightened liquidity and credit quality requirements, and liquidity rules for variable net asset value (VNAV) funds were strengthened. Low volatility (LVNAV) funds were introduced as a third type, offering a stable share price to investors, but unlike CNAV funds they can invest in non-government debt.<sup>103</sup> In addition, external support for MMFs (i.e., from the fund sponsor) was prohibited in the EU.

In the US, in addition to strengthening liquidity, credit quality and portfolio diversification requirements, regulators required that non-government ('prime') and tax-exempt MMFs sold to institutional investors have variable NAVs. In addition, fund boards are allowed to impose redemption fees or to temporarily suspend redemptions if a MMF's weekly liquid assets (WLA) – as a share of total assets – falls below the minimum required 30%.<sup>104</sup> The composition of US MMFs shifted significantly after the reforms came into effect. Assets in prime MMFs fell from \$2.1 trillion in August 2008 to \$800 billion in February 2020. During the same period, government MMF assets grew from about \$900 billion to \$2.7 trillion.

### 4.2.3. *Overview of the global MMF industry*

In the NBF Global Monitoring Report, MMFs are classified into economic function 1 (EF1), as collective investment vehicles (CIVs) with features that make them susceptible to runs. MMFs are very diverse and as such demonstrate a range of characteristics dependent on their structure, which is reflected in the regulatory approach adopted by different jurisdictions. Generally, MMFs invest in high quality money market instruments, such as government securities, bank deposits, corporate commercial paper (both financial and non-financial), and other debt instruments with a residual maturity of not more than one year or floating rate securities with frequent interest rate resets.

The structure of global MMFs from several perspectives is discussed below, including MMF assets by currency denomination, accounting practice and investment strategy.

#### **There is a large concentration globally of MMFs by domicile and currency denomination.**

The global MMF industry reached \$7.04 trillion at end-2019, with assets concentrated in the US (57 per cent of global MMF assets) and the euro area (20 per cent of global MMF assets, Graph 3-6). Using data from Morningstar, a private data provider on investment funds, two-thirds of global MMFs were denominated in US dollars (Graph 4-8. LHS): all US MMFs and about one third of European funds are denominated in US dollars, followed by Chinese renminbi (15%), euro (9%)

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<sup>102</sup> IOSCO published a report in October 2012 detailing 15 recommendations seeking in particular to address vulnerabilities around the risk of runs and the first mover advantage in MMFs. See IOSCO Final Report on Policy Recommendation for Money Market Funds.

<sup>103</sup> LVNAV funds need to calculate a daily "shadow" NAV on a mark-to-market basis, which is then compared to the stable share price. If the NAV based on market prices deviates by more than 20 bps from the stable price, the fund has to price its units at the true or 'shadow' NAV, but there's no obligation to convert to a VNAV and the fund could revert to using the constant NAV again once the deviation between the real and constant NAV has fallen below 20 bps.

<sup>104</sup> In European CNAV and LVNAV funds, both a breach of the 30% weekly liquidity threshold and a simultaneous net outflow above 10% on the same day are needed to require the board to consider liquidity fees or redemption gates.

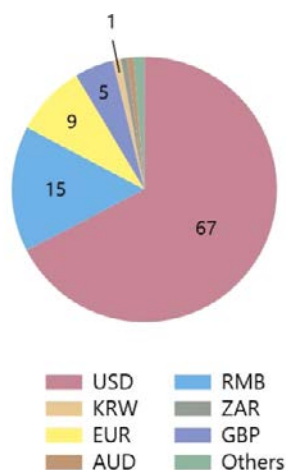
and British pounds (5%).<sup>105</sup> Almost all MMFs domiciled in the US and Asia Pacific were denominated in domestic currencies, whilst in the euro area and other regions a notable share of MMFs were denominated in foreign currencies. For instance, US dollar and British pound-denominated MMFs accounted for 34% and 19% of MMFs in the euro area, respectively (Graph 4-8, RHS).<sup>106</sup>

### All US MMFs and a large part of European MMFs are denominated in US dollars<sup>1</sup>

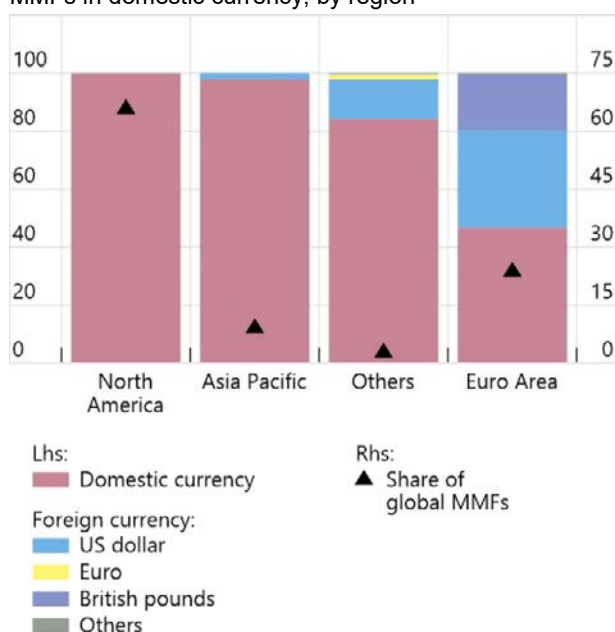
As a percentage of total AUM

Graph 4-8

By currency



MMFs in domestic currency, by region



<sup>1</sup> Data for December 2019. The graph only displays jurisdictions for which the data coverage in the Morningstar sample used in this case study is at least 20% compared to the data collected for the main part of this report. North America includes US and Canada; euro area includes, Belgium, France, Germany, Ireland, Italy, Luxembourg, Netherlands and Spain; Asia Pacific includes Australia, China, Hong Kong, India, Indonesia, Japan, South Korea and Singapore; Others include UK, Switzerland, Chile, Mexico and South Africa. The jurisdictions included in the graph account for 99% of global MMFs. A MMF is classified as domestic currency denomination if the denomination currency matches with the country of domicile. The black triangular mark in the right panel denotes the share of MMFs in each region to the all MMF size in the Morningstar data sample. The share is consistent with the distribution of MMFs based on jurisdictions' 2020 submissions.

Source: Morningstar; FSB calculations. Morningstar's data providers do not guarantee the accuracy, completeness or timeliness of any information provided by them and shall have no liability for their use.

**The composition of portfolio assets of MMFs offering a constant NAV (CNAV) differs widely across fund types and geographic regions.** CNAV MMFs<sup>107</sup> held half of their assets in government debt (Graph 4-9, RHS). These funds constitute about three quarters of global MMF assets, with most assets domiciled in North America (Graph 4-9, LHS). In contrast, assets of CNAV funds in the Asia-Pacific region were held mostly in cash,<sup>108</sup> without significant investment in government debt. MMFs domiciled in the euro area appear to allocate their assets more evenly

<sup>105</sup> Morningstar's data providers do not guarantee the accuracy, completeness or timeliness of any information provided by them and shall have no liability for their use.

<sup>106</sup> A main reason contributing to this is the fact that almost all the CNAV funds in the euro area, which have an obligation to invest in sovereign debt securities, are labelled either in USD or in GBP as sovereign debt securities in these currencies could still offer a positive yield.

<sup>107</sup> Shares of constant NAV MMFs can be purchased or redeemed at a constant share price generally equal to one, while those of variable MMFs are offered at a market-based share price, which fluctuates with the value of the underlying assets and therefore could be different from one.

<sup>108</sup> Cash denominated in the base currency of the fund according to Morningstar definition.

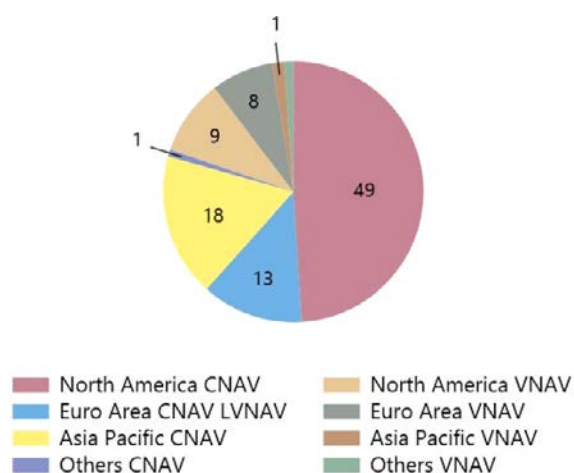
across different instruments, in particular, euro area investments in commercial paper (CP), certificates of deposit (CDs)<sup>109</sup> and time deposits were notably larger.<sup>110</sup> The more diverse allocation for euro area funds with stable NAV reflects that LVNAV funds can invest in non-government debt, but cannot be separately identified in the data source.

## MMFs across regions have significantly different investment strategies, as reflected by their portfolio compositions<sup>1</sup>

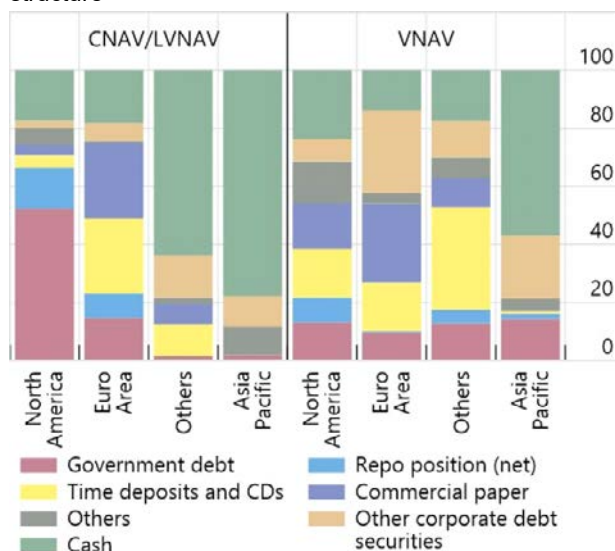
Allocation as a percentage of total AUM

Graph 4-9

Allocations of MMFs, by region and valuation structure



Portfolio compositions of MMFs, by region and valuation structure



<sup>1</sup> Data for December 2019. North America includes US and Canada; Euro area includes Belgium, France, Germany, Ireland, Italy, Luxembourg, Netherlands and Spain; Asia Pacific includes Australia, China, Hong Kong, India, Indonesia, Japan, South Korea and Singapore; Others include UK, Switzerland, Chile, Mexico and South Africa. For euro area, CNAV/LVNAV MMFs include both LVNAV and government debt CNAV MMFs. For right chart, i) we classify a MMF as CNAV/LVNAV when its NAV equals one and assign the rest as VNAV based on Morningstar data; ii) the ratio of CNAV/LVNAV and VNAV MMFs identified in this way is consistent with the left panel for all regions except for euro area and iii) it only covers MMFs that report portfolio composition (accounting for 66% of MMFs in Graph 4-9). Morningstar's data providers do not guarantee the accuracy, completeness or timeliness of any information provided by them and shall have no liability for their use.

Source: Jurisdictions' 2020 submissions (national sector balance sheet and other data); Morningstar and FSB calculations.

**As for variable NAV (VNAV) MMFs, their portfolio composition is more diversified across all regions.** For example, compared to their CNAV counterparts, (i) North America-domiciled VNAV MMFs' investments had a more even allocation to government debt, CPs, CDs and time deposits; and (ii) both the euro area and Asia Pacific-domiciled VNAV MMFs had a larger exposure to corporate debt. It should be noted that the marked difference between CNAV/LVNAV and VNAV MMFs is primarily driven by differences in regulatory requirements, which define eligibility and concentration limits that fund managers need comply with.

**Moreover, MMFs domiciled in North America and euro area tend to invest in a more diverse set of instruments, compared to those domiciled in the Asia Pacific.** North America-domiciled MMFs, largely domiciled in the US, mainly invest in government debt securities and repos backed by these securities. US MMFs invest a smaller share of their assets

<sup>109</sup> Equivalents in the EU comprise Negotiable European Commercial Paper and Euro Commercial Paper.

<sup>110</sup> NEU-CPs and EURO-CPs cover short-term securities issued by corporates (i.e. CPs in other regions) and banks (i.e. CDs in other regions).

in securities issued by banks such as time deposits and CDs, financial and nonfinancial corporations (CPs and other short-term corporate debt securities). Meanwhile, euro area-domiciled MMFs invest mainly in the debt of financial institutions and non-financial corporates (time deposits, CDs, CPs and corporate debt). These MMFs also invest in government securities but the exposure was lower in comparison to the US. MMFs domiciled in Asia-Pacific mainly invest in corporate debt and CP, CDs and time deposits issued by financial institutions.

#### *4.2.4. Events during the COVID-19 pandemic*

In the most acute phase of the stress in mid-March 2020, the COVID-19 pandemic led to deteriorating liquidity conditions in many markets. With a rapid increase in uncertainty, investors repositioned portfolio holdings towards cash and cash-like instruments (known as the ‘dash for cash’). Some investors faced increased liquidity needs driven by margin requirements originating from derivative positions.<sup>111</sup> Issuers and investors globally sought to reduce risk and preserve liquidity. This led to a deterioration in trading liquidity across most markets, including the short-term funding markets.

#### *4.2.5. Money Market Instruments*

Short-term funding markets are a critical source of financing for governments, financial institutions and non-financial companies. At the same time, investors rely on short-term instruments such as repos, CP and CDs which are seen as relatively low risk, liquid investment options.

In the first two weeks of March 2020 (peaking around 10 March), issuance of CP and CDs fell off sharply, rates increased significantly and there was little or no secondary market liquidity. Amid widening credit spreads, demand for most CP funding programs deteriorated and issuance was shut down temporarily. Stress in these short-term funding markets worsened as selling pressure from non-government debt MMFs in the US and Europe increased.

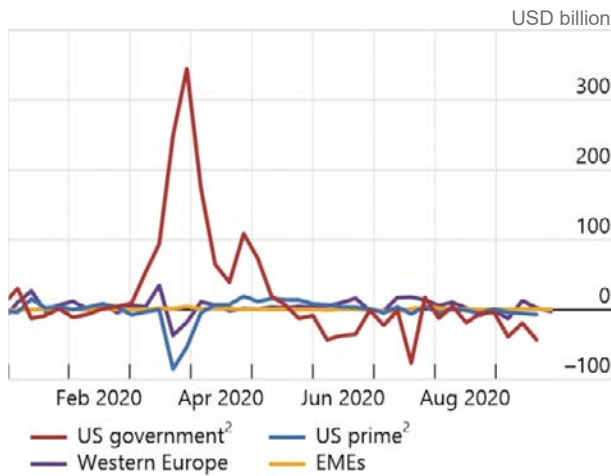
When selling pressures intensified in the secondary market, liquidity of money market instruments in certain sectors began to deteriorate rapidly, including CP and CDs, limiting MMFs’ ability to sell these instruments to bank intermediaries. MMFs holding a significant portion of CP and other short-term debt adjusted their portfolios by selling some of those instruments, and shortening the maturity of their holdings.

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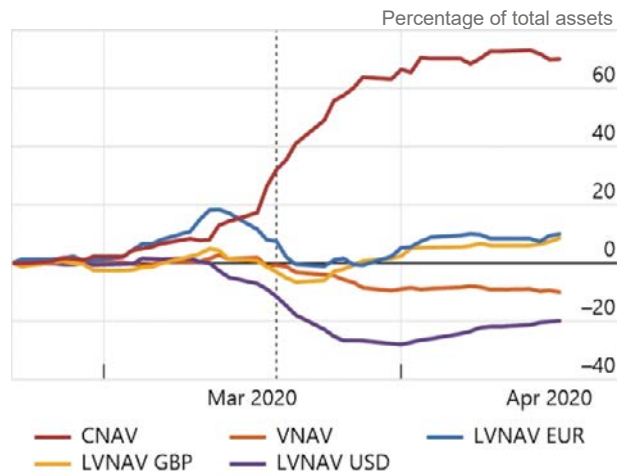
<sup>111</sup> See Bank of England (2020), Chart A.7; and ECB (2020), Special Feature, “Derivatives-related liquidity risk facing investment funds”.



MMF flows by region<sup>1</sup>



Cumulative net flows of euro area MMFs by regulatory fund type<sup>3</sup>



<sup>1</sup> Weekly changes in total net assets. According to ICI, changes in MMF assets are primarily driven by flows and can be used as a proxy for net new cash flows. <sup>2</sup> Government MMFs, formerly referred to as “Treasury (including agency and repo),” are MMFs that invest in cash, securities issued by the US Treasury (including repurchase agreements collateralised fully by US Treasury securities), and securities issued or guaranteed by the US government or its agencies, and repurchase agreements for those securities. <sup>3</sup> Cumulative daily net flows from 20 February, by MMF regulatory fund type. The sample covers around 70% of total euro area assets, while not covering all VNAV funds. The vertical dashed line shows the ECB’s announcement of the PEPP. CNAV: constant net asset value; LVNAV: low-volatility net asset value; VNAV: variable net asset value.

Sources: Crane Data; EPFR; ICI; ECB; FSB calculations.

#### 4.2.6. Flow patterns

While the impact of the COVID-19 shock differed significantly among jurisdictions, some common flow patterns were observed across US and European MMFs, reflecting a shift in investor preferences towards safe and liquid assets.

- **First, non-government debt MMFs experienced large redemptions over the recent period of market stress.** This trend has been observed in the US and Europe, including in the UK, although in different magnitudes depending on the funds’ currencies and types. US prime MMFs, which represented 27% of US MMF assets at the end of February 2020, experienced substantial redemptions beginning in the second week of March 2020.<sup>112</sup> In the US, total outflows from prime MMFs by the end of March amounted to \$125 billion (approximately 11% as of their net assets in February). Of that amount, \$77 billion was redeemed from prime institutional MMFs (or 12% of their net assets in February) and \$48 billion was redeemed from prime retail MMFs (or 10% of their net assets in February).<sup>113</sup> In the euro area, cumulative outflows from non-government debt USD funds amounted to more than 25% of total NAV (on average across both LVNAV and VNAV funds).<sup>114</sup> Non-government debt funds in euro and British pound likewise

<sup>112</sup> US prime MMFs can invest in a broad range of short-term, high quality assets such as US Treasury bills, federal government agency notes, CDs, CP, repos, and obligations of states, cities, or other types of municipal agencies.

<sup>113</sup> During the two week period from 11 to 24 March net redemptions in prime institutional funds offered to the public were reported to have totalled 30% of the funds’ assets (based on daily data on MMF flows from iMoneyNet). See Blass D (2020).

<sup>114</sup> Based on data from Crane.

experienced significant outflows, but somewhat less than US dollar funds in Europe. Patterns diverged across fund types and domiciles, but generally LVNAV funds experienced larger outflows than VNAV funds. Still, euro-denominated VNAVs in France, the largest domicile for such funds, experienced cumulative outflows of up to 15%.<sup>115</sup> In contrast to the US, which has a large retail MMF investor base, the European USD-denominated fund sector is largely institutional as were the redemptions.

- **Second, US dollar government debt MMFs experienced large net inflows.** US government MMFs, which represented 69% of US MMF assets at the end of February, experienced substantial inflows in excess of \$838 billion (or over 30% of their net assets in February).<sup>116</sup> Similar flow patterns could be observed in government debt USD funds in the EU (CNAVs).<sup>117</sup> These inflows are in part attributable to a reallocation from non-government MMFs and other short-term funding market investors. In Luxembourg, the amounts of outflows from non-government USD LVNAV funds match closely with the inflows into government USD CNAV funds, while in Ireland the outflows from USD LVNAV slightly exceeded the inflows into USD CNAV funds.<sup>118</sup> Government debt funds (CNAV) account for 7% of MMF assets in Europe of which almost all are USD-denominated. Owing to the low interest rate environment, there are few euro or British pound government debt funds.
- **Finally, in other jurisdictions and currencies, flows differed depending on market conditions, but were generally much less volatile.** In particular, money markets in Asia were comparatively calm. In China, the largest funding market, MMFs saw net inflows in Q1 2020, in what are primarily CNAV MMFs. In Japan, the MMF sector, like China, is primarily composed of retail CNAV MMFs. In Q1 2020, there was a modest outflow from Japanese MMFs of 5%.

**During this period, certain fund structures faced particularly large outflows.** In Europe, liquidity outflows were particularly pronounced in LVNAV funds, which represent almost one half of the European MMF sector in terms of total assets.<sup>119</sup> LVNAV funds offer a stable net asset value, but can invest in less liquid non-government debt. When the stable share price deviates from its fair value by more than 20 basis points, the fund may move to variable NAV in order to mitigate potential first mover advantages, or wait for the deviation to tighten. This mechanism, intended to stabilise the fund's value, may at the same time create unintended incentives for investors to redeem in anticipation of a potential change in fund pricing structure to variable

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<sup>115</sup> This also holds true for Irish VNAV funds, whereas in Luxembourg those funds experienced net inflows (based on data from Morningstar and Lipper)

<sup>116</sup> US government MMFs invest 99.5% or more of their total assets in short-term Treasury securities, securities issued by governmental agencies, repos backed by these securities, or cash.

<sup>117</sup> See European Central Bank (2020), Section 5.3.

<sup>118</sup> Luxembourg and Ireland are the main domiciles for USD-denominated MMFs in Europe. See also IOSCO (2020), "Money Market Funds during the March-April Episode", Thematic Note OR03/2020.

<sup>119</sup> See ECB (2020), 'Box 7: Recent stress in money market funds has exposed potential risks for the wider financial system' and Section 5.3, Chart 5.3.

NAV.<sup>120</sup> Among all LVNAV funds, the US dollar funds represent about 43% in terms of total assets, British pound funds about 38% and euro funds about 19%.

In the US, a number of US prime MMFs approached the minimum required 30% WLA. Preliminary analysis suggests that outflows increased as the WLA for some funds approached 30%.<sup>121</sup> Liquidity pressures in these MMFs started to ease following monetary interventions. None experienced credit issues and all met redemptions.<sup>122</sup> Two fund sponsors purchased securities from three prime institutional MMFs.<sup>123</sup>

#### 4.2.7. *Public sector response*

Public sector authorities responded to the financial market strains by providing liquidity support into funding markets through a wide variety of programs. In the US, the Federal Reserve in mid-March established the Money Market Mutual Fund Liquidity Facility (MMLF) to provide loans to financial institutions to purchase certain types of money market securities from prime and tax-exempt MMFs. The Fed also established the Primary Dealer Credit Facility and the Commercial Paper Funding Facility to provide liquidity to, and stabilise, short-term funding markets. Market conditions in the US began to improve after the announcement of the Fed's programs to support the short-term funding markets, which included encouraging banks to draw down capital buffers to support their trading books. Outflows from prime MMFs subsided quickly following these efforts.

In Europe monetary policy action helped to improve financial market conditions more broadly, thereby also alleviating liquidity strains in the MMF sector. In particular, the inclusion of non-financial commercial paper in the ECB's corporate sector purchase programme (CSPP)<sup>124</sup> and the ECB's US dollar operations provided important liquidity support in these markets. The Eurosystem also increased the concentration limits for bank-issued unsecured debt in its collateral framework, which incentivised banks to buy other banks' short-term debt, thereby supporting liquidity in the CP market.<sup>125</sup> Finally, the ECB introduced the pandemic emergency longer-term refinancing operations (PELTROs), which contributed to preserving the smooth functioning of money markets after the expiry of previous longer-term refinancing operations.

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<sup>120</sup> Similar structures are not available to institutional investors in the US. However, US retail investors may to invest in stable NAV prime MMFs.

<sup>121</sup> See Li, L, Y Li, M Machiavelli and X Zhou (2020).

<sup>122</sup> US MMF regulations allow fund boards to impose redemption fees or temporarily suspend redemptions if the fund's WLA fall below the 30 percent minimum required. In addition, funds must impose a one percent redemption fee if WLA falls below 10 percent of total assets unless the fund's board determines that it is not in the best interests of the fund. WLA is required to be disclosed daily on the fund's website. Some market participants have suggested that investors may have become concerned that redemptions would be limited (or suspended), in certain MMFs which might have led to additional outflows.

<sup>123</sup> Fitch Ratings, "Fed's intervention stems US Prime MMF liquidity strains" (Apr. 8, 2020). The SEC permits MMF affiliates (such as sponsors) to purchase securities from MMFs subject to certain conditions. See 17 CFR 270.17a-9. See also SEC Staff No-action Letter (Mar. 19, 2020).

<sup>124</sup> The ECB's Governing Council decided to expand the eligibility of non-financial CP to securities with a remaining maturity of at least 28 days. Previously, only CP with a remaining maturity of at least six months had been eligible for purchase under the CSPP.

<sup>125</sup> The ECB's Governing Council decided to increase, from 2.5% to 10%, the maximum share of unsecured debt instruments issued by any single other banking group in a credit institution's collateral pool.

Following monetary policy interventions, it took some time until purchases of money market instruments returned to pre-stress levels, as some MMFs maintained higher liquidity ratios even after redemption pressures had eased.

#### *4.2.8. Conclusion*

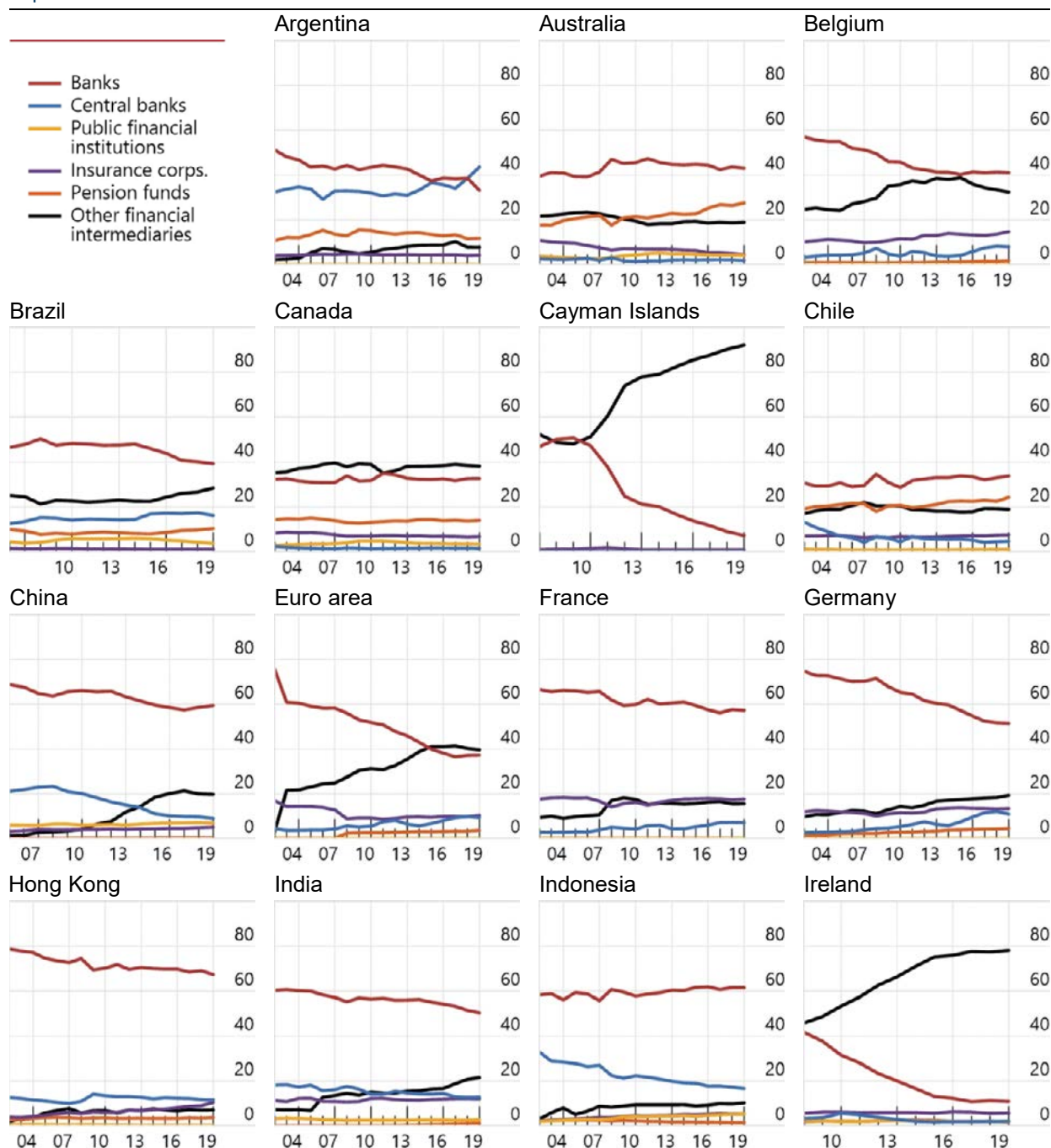
MMFs are an important part of the NBFIs sector in many jurisdictions, chief among them the US and the EU. As with other parts of the financial system, they were affected by the COVID-19 pandemic during the height of the market turmoil in March and April 2020. Non-government MMFs in the US and Europe experienced significant liquidity strains, as large redemptions coincided with a rapid deterioration in the liquidity of money market instruments. Stress in these short-term funding markets worsened as selling pressure from non-government debt MMFs in the US and Europe increased. Interventions by central banks helped ease liquidity pressures in non-government MMFs and restored confidence in the money markets more broadly. Investors in these MMFs were able to access their funds at all times.

# Annex 1: Jurisdiction-specific financial sectors

## Share of total national financial assets by jurisdiction<sup>1</sup>

In per cent

Graph A1-1



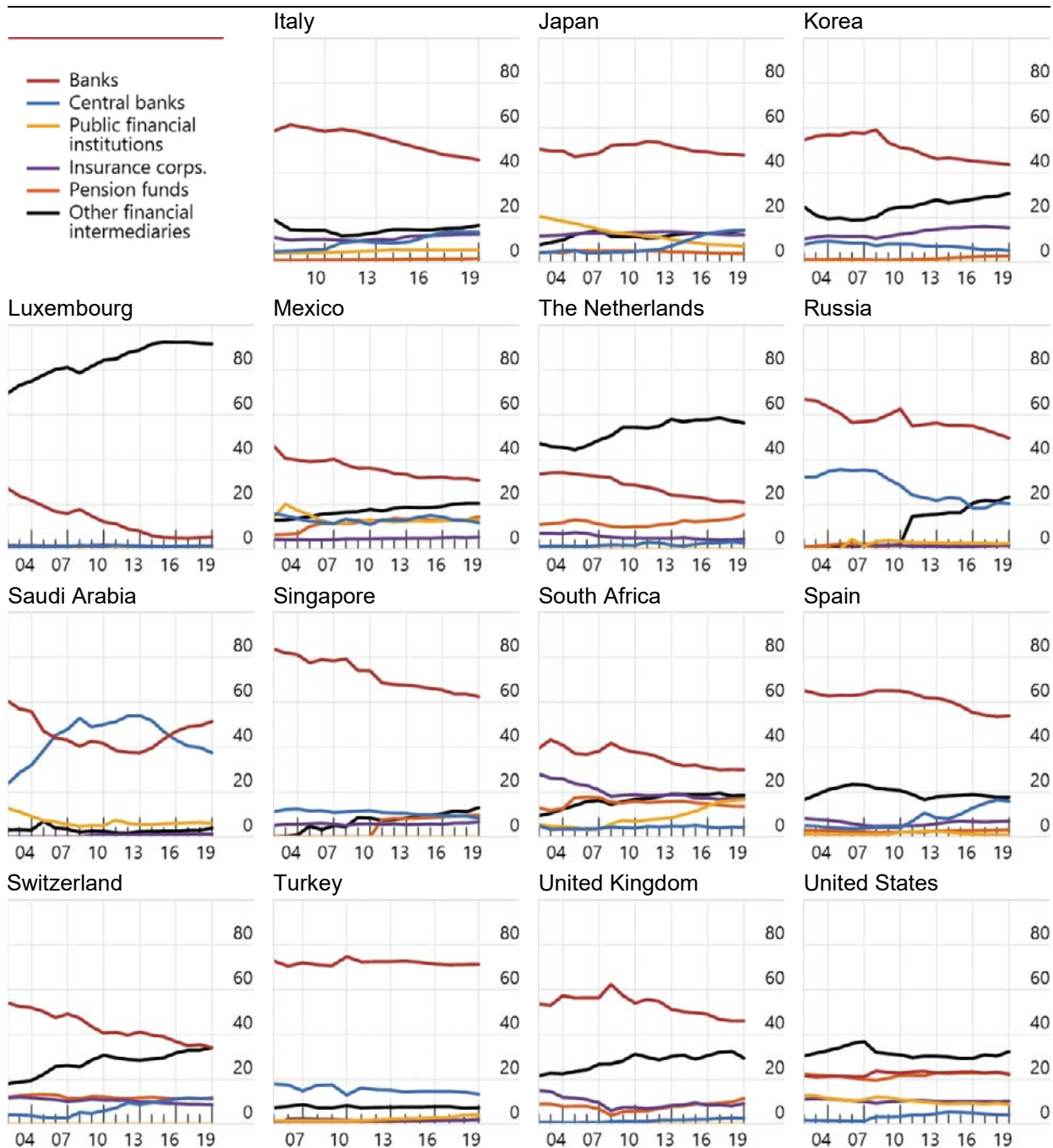
<sup>1</sup> Based on historical data included in jurisdictions' 2020 submissions. Exchange rate effects have been netted out by using a constant exchange rate from 2019. See the Monitoring Dataset of this report for the underlying data of this graph.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

# Share of total national financial assets by jurisdiction<sup>1</sup>

In per cent

Graph A1-2



<sup>1</sup> Based on historical data included in jurisdictions' 2020 submissions. Exchange rate effects have been netted out by using a constant exchange rate (from 2019). See the Monitoring Dataset of this report for the underlying data of this graph.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.



## Annex 2: Summary table

### Moving from NBFIs to the narrow measure: 29-Group, in USD trillion

	NBFIs sector	NBFIs components				Excluded from narrow measure <sup>1</sup>	Narrow measure of NBFIs	Narrow measure components (by economic function (EF))					Unallocated
		ICs	PFs	OFIs	FAs			EF1	EF2	EF3	EF4	EF5	
<b>2006</b>	90.9	19.7	20.0	49.9	1.2	63.6	27.2	11.3	3.2	6.9	0.1	5.5	0.4
<b>2007</b>	102.4	20.6	21.1	59.4	1.3	70.6	31.8	13.8	3.4	7.8	0.1	6.2	0.4
<b>2008</b>	99.6	19.4	19.8	59.1	1.3	68.1	31.5	14.1	3.6	6.1	0.1	6.0	1.5
<b>2009</b>	104.5	20.9	21.5	60.5	1.7	73.3	31.3	15.0	3.4	5.5	0.1	6.3	1.0
<b>2010</b>	112.8	22.3	23.5	65.2	1.8	83.4	29.4	16.2	3.3	3.5	0.1	5.2	1.1
<b>2011</b>	116.8	23.1	24.5	67.5	1.7	86.3	30.5	18.0	3.3	3.6	0.2	4.5	0.8
<b>2012</b>	127.0	24.8	26.2	74.1	1.8	93.4	33.6	21.6	2.9	3.7	0.2	4.3	0.9
<b>2013</b>	138.2	26.1	29.1	81.3	1.8	101.7	36.5	24.5	3.0	3.7	0.2	4.2	0.8
<b>2014</b>	151.9	28.1	30.8	91.2	1.9	111.7	40.2	27.6	3.1	4.1	0.3	4.2	0.8
<b>2015</b>	159.5	29.0	31.6	96.9	2.0	116.2	43.3	30.6	3.1	4.0	0.3	4.3	1.0
<b>2016</b>	171.8	30.6	33.4	105.7	2.2	125.2	46.7	33.5	3.3	3.9	0.2	4.3	1.4
<b>2017</b>	184.6	32.1	35.6	114.5	2.4	133.9	50.7	36.7	3.5	4.1	0.4	4.6	1.5
<b>2018</b>	184.3	32.2	36.0	113.5	2.5	132.9	51.4	36.7	3.7	4.4	0.4	4.7	1.5
<b>2019</b>	201.5	35.4	39.5	123.8	2.7	144.4	57.1	41.7	3.9	4.7	0.5	4.8	1.7

NBFIs = Non-bank financial intermediation; ICs = Insurance corporations; PFs = Pension funds; OFIs = Other financial intermediaries; FAs = Financial auxiliaries; Unallocated = included in narrow measure but not allocated to a particular EF. Some exchange rate effects have been netted out by using a constant exchange rate (from 2019). As in previous Reports, the 29-Group sample is used for the narrowing down section of this Report because of its greater granularity. Therefore, all the aggregates shown in this table relate to the 29-Group sample and might deviate from the aggregates discussed in Section 1 (which relies mainly on the 21+EA-Group).

<sup>1</sup> Includes NBFIs entities classified outside the narrow measure, prudentially consolidated into banking groups, or that are part of the statistical residual.

Sources: Jurisdictions' 2020 submissions (national sectoral balance sheet and other data); FSB calculations.

## Annex 3: Exclusion of NBF entity types from the narrow measure of NBF

Obtaining the narrow measure involves the following steps:

1. **Insurance corporations, pension funds, financial auxiliaries and OFIs not classified into any of the five EFs are excluded.** These entities, which do not tend to directly engage in credit intermediation or have been assessed as not being involved in liquidity/maturity transformation, leverage, and/or imperfect credit risk transfer, totalled \$132.5 trillion at end-2019. OFIs not classified into any EFs in the 2020 monitoring exercise include mainly CFIMs (\$20.0 trillion) and equity funds (\$24.7 trillion). Details of these and other OFIs not included in the narrow measure are listed below.
2. **Entities prudentially consolidated into banking groups are excluded.** These entities are part of a banking group and already subject to consolidated prudential regulation and supervision (i.e. Basel II/III framework), including for maturity/liquidity transformation, leverage, and imperfect credit risk transfer, and are therefore excluded from the narrow measure.<sup>126</sup> These banking group consolidated entities typically include bank-owned/affiliated broker-dealers, finance companies and SFVs. Self-securitisation (or retained securitisation) assets are also excluded from the narrow measure, as under prudential consolidation rules they are treated as banking groups' own assets.<sup>127</sup> The amount of prudentially consolidated assets, including self-securitisation, as of end-2019 was \$9.7 trillion.
3. **The statistical residual category**, consisting of residuals generated in some jurisdictions' national financial accounts (NFA), is excluded from the narrow measure. These residuals are the difference between a jurisdiction's total OFI financial assets, as they are published in sectoral balance sheet statistics, and the sum of all known sub-sectors therein. While in theory this residual should be zero, in practice it is quite large in some jurisdictions. This may be the consequence of inconsistencies between "top-down" NFA estimates and "bottom-up" coverage of OFI sub-sectors, as well as challenges in aligning these two approaches, and differences in data granularity. These residuals totalled \$2.2 trillion at end-2019 (1.1% of NBF assets). While further understanding of the identified residuals is needed going forward, the narrow measure excludes these residuals, given uncertainty about the actual entities/activities included in this residual, and in order to avoid major inconsistencies across jurisdictions.<sup>128</sup>

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<sup>126</sup> Non-bank entities that are not prudentially consolidated into banking groups, but are individually subject to Basel-equivalent regulation, are not excluded from the narrow measure in this step.

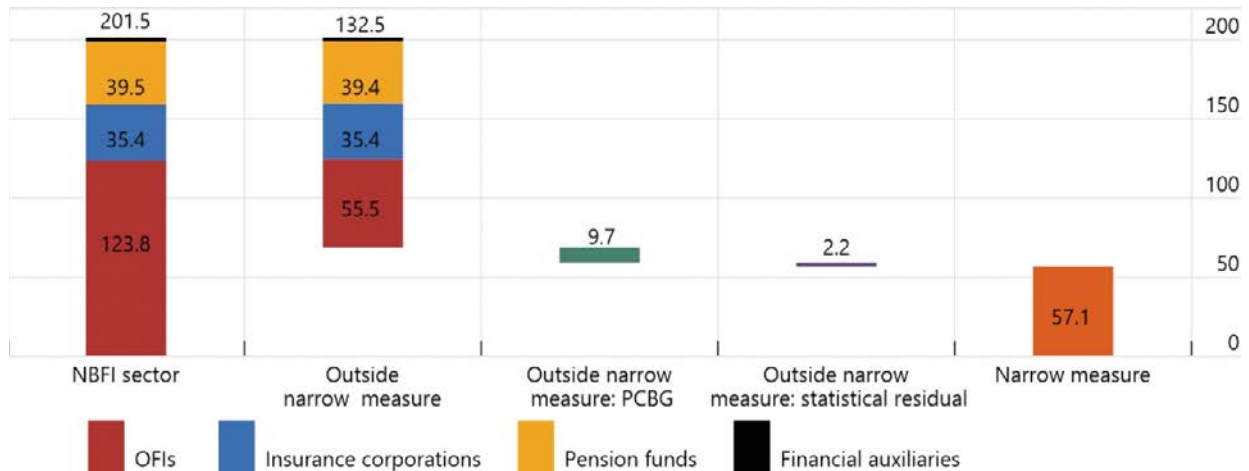
<sup>127</sup> Self-securitisation/retained securitisation vehicles take loans from a bank and turn these into debt securities to be used by the same bank as collateral, should the need arise, for accessing central bank funding.

<sup>128</sup> Residuals were reported by China, Germany, Ireland, Italy, Japan, the Netherlands, Russia, and Saudi Arabia and Switzerland. The \$2.5 trillion includes assets of OFIs that were neither classified into the narrow measure nor identified by jurisdictions as being outside the narrow measure. However, if conservatively assessed, this statistical residual of \$2.5 trillion may be added to the \$57.1 trillion narrow measure. The statistical residual should be distinguished from the unallocated category described below, through which authorities included entities in the narrow measure that could not clearly be assigned to a specific EF.

## Narrowing down the NBF sector

29 jurisdictions at end-2019, in trillions of US dollars

Graph A3-1



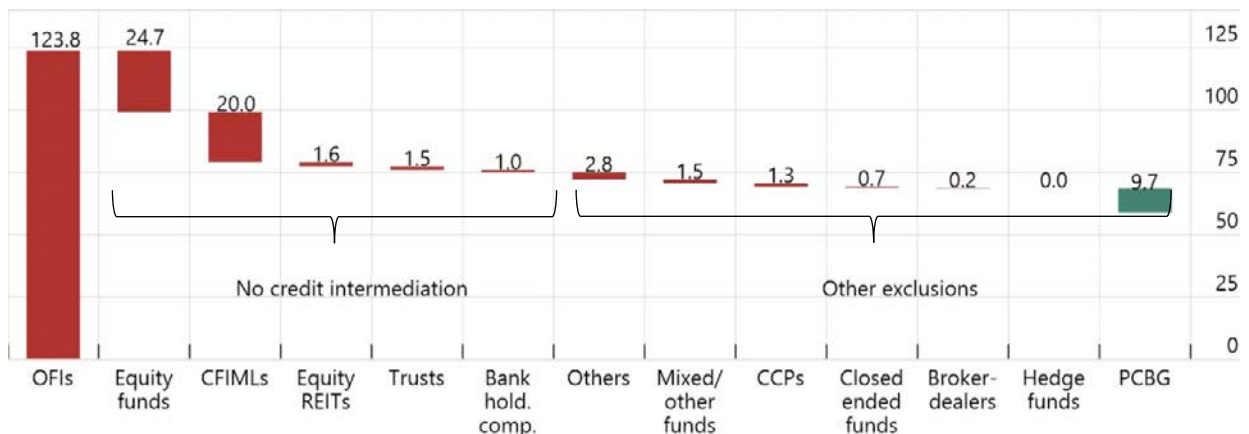
PCBG = assets of classified entity types which are prudentially consolidated into a banking group; Statistical residual = reported residual for OFIs generated by the difference between total OFIs and the sum of all known sub-sectors therein.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

## Exclusion of OFI entity types from the narrow measure

USD trillion, for 29 jurisdictions, end-2019

Graph A3-2



OFIs also includes CFIMs; CFIMs = captive financial institutions and money lenders; Equity REITs = real estate investment trusts and real estate funds; Bank hold. comp. = bank holding companies; Trusts = trust companies; CCPs = central counterparties; PCBG = prudentially consolidated into banking groups.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**In addition to the five EFs, the narrow measure also includes \$1.7 trillion of assets which are included in an “unallocated” category.** This category includes non-bank financial entities that authorities did not assign to a specific EF, but either assessed these entities to be involved in credit intermediation or could not determine that they should be excluded from the narrow measure.<sup>129</sup>

<sup>129</sup> Over time the size of this unallocated NBF category may decrease to some extent as authorities, with better data and analysis, will be able to classify them into one of the five EFs or exclude them from the narrow measure. In some cases, however, the

The FSB's monitoring methodology allows for excluding from the narrow measure entities included in NBFIs that either do not engage in significant credit intermediation, or engage in credit intermediation but were prudentially consolidated into a banking group. Accordingly, for the 2020 monitoring exercise, authorities performed a classification assessment and a series of mutual reviews to arrive at the narrow measure, and excluded \$55.5 trillion of OFI assets that were included in the NBFIs sector. This Annex provides a breakdown of those non-bank entity types that were excluded from the narrow measure and the reasons for exclusion.

- **CFIMs** are either: (i) part of non-financial corporations and used for the pass-through of capital; or (ii) consolidated into banking groups and thus excluded from the narrow measure.
- **Equity funds** invest principally in equity securities, and are not involved in credit intermediation. Equity funds and ETFs referencing equity indices that do not hold more than 20% of their AUM in credit-related assets are excluded from the narrow measure. These funds often hold a modest amount of cash and highly liquid fixed income assets for cash management purposes.
- **Trust companies** exist in several jurisdictions. In Singapore and South Africa, they provide a range of administrative and advisory services to individual clients, but are not CIVs. Korean trust accounts are separately managed (not CIVs) and closed-ended with limited leverage. Mexican trust companies that were not classified in the narrow measure invest mainly in equities of non-listed companies and infrastructure projects. Several types of Chinese trusts were excluded from the narrow measure including property trusts (which can only invest in non-financial assets), some non-bank-affiliated single money trusts and collective investment trusts (unleveraged, closed-ended and/or invest primarily in equity assets).
- **Equity REITs** and real estate funds that invest in equities or directly in real estate have been excluded from the narrow measure as they do not engage in credit intermediation (in contrast with mortgage REITs).
- **Others** consist of relatively small OFI entity types, including: the European Financial Stability Facility (Luxembourg); non-securitisation or publicly issued SPVs (Brazil, Ireland and Korea), microfinance entities and peer-to-peer lenders (China); venture capital and private equity entities that are not, or are only marginally, engaged in credit intermediation (Belgium, Indonesia, Italy, Mexico, Spain and Turkey); central mortgage bond institution (Switzerland); Brazilian raffle savings companies; Indian self-help group loans; and Stokvels (informal savings clubs in South Africa).
- **Mixed/other funds** in Brazil, Hong Kong, India, Ireland, Korea, Luxembourg, the Netherlands and Turkey were assessed to be either not engaged in material credit intermediation, or presenting only negligible liquidity and maturity transformation risks and with immaterial leverage, or are not CIVs. For example, Discretionary Funds in Indonesia have been assessed not to be CIVs as they are separately managed and

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entities or activities will remain in the unallocated category, as they are assessed to be involved in credit intermediation but do not fit into one of the EFs.

invest mostly in equities. South Africa did not classify fund of funds that invest in only equity or real-estate funds in the narrow measure.

- **CCPs** were excluded from the narrow measure due to the absence of credit intermediation. With both sides of the balance sheet typically matched, CCPs are not engaged in bank-like activities such as leverage or liquidity/maturity transformation. However, their collateral management activities may involve elements of liquidity/maturity transformation.
- **Closed-ended funds** with limited maturity/liquidity transformation, and that are not leveraged, are not considered susceptible to runs in the same way that open-ended funds are, and have generally not been classified in the narrow measure unless a jurisdiction chose to include them following a conservative approach.
- Certain **broker-dealers** in some jurisdictions (Belgium, Hong Kong, Indonesia, Ireland, and the Netherlands) were excluded from the narrow measure as these entities are not engaged in credit intermediation (i.e. they act as “pure” brokers/agents for clients).
- **Finance companies** in Indonesia and India whose short-term funding is less than 10% of overall assets, as well as finance companies in China that provide internal financing and serve more as a treasury function, were not classified in the narrow measure.
- Certain **hedge funds** in Canada, India, and Ireland that largely do not engage in credit intermediation are excluded from the narrow measure. A small portion of hedge funds in Luxembourg was excluded from the narrow measure as they are closed-ended and employ no leverage, and thus were assessed to not pose significant financial stability risks from NBFIs.

## Annex 4: Risk metrics

### Box A4-1: Financial stability risk metrics

#### On- and off-balance sheet items and risk metrics\*

##### Examples of risk metrics

##### Credit intermediation (CI)

$$CI1 = \frac{\text{credit assets}}{\text{total financial assets}}$$

$$CI2 = \frac{\text{loans}}{\text{total financial assets}}$$

##### Maturity transformation (MT)

$$MT1 = \frac{(\text{long-term assets} - \text{equity}) - \text{long-term liabilities}}{\text{total financial assets}}$$

$$MT2 = \frac{\text{short-term liabilities}}{\text{short-term assets}}$$

##### Liquidity transformation (LT)

$$LT1 = \frac{(\text{total financial assets} - \text{liquid assets (narrow)}) + \text{short-term liabilities}}{\text{total financial assets}}$$

$$LT2 = \frac{(\text{total financial assets} - \text{liquid assets (broad)}) + \text{short-term liabilities}}{\text{total financial assets}}$$

##### Leverage (L)

$$L1 = \frac{\text{total financial assets}}{\text{equity}}$$

$$L2 = \frac{\text{total financial assets} + \text{total off balance sheet exposures}}{\text{equity}}$$

$$L3 = \frac{\text{gross notional exposure (GNE)}}{\text{net asset value (NAV)}}$$

$$L4 = \frac{\text{total liabilities}}{\text{equity}}$$

$$L5 = \frac{(\text{total financial assets} - \text{equity})}{\text{total financial assets}}$$

##### Definition and range

These metrics compare the amount of credit assets and loans held by a particular entity type to its total assets (**CI1** and **CI2**, respectively). As loan assets are part of wider credit assets, **CI2** can be viewed as a sub-set of **CI1**.

These metrics fall between 0 and 1, with higher values showing more involvement in credit intermediation while “0” indicating no involvement in credit intermediation.

**MT1** is the portion of long-term assets (>12 month maturity) funded by short-term liabilities (≤ 30 days) (i.e. not funded by equity or long-term liabilities), scaled by the entity type’s total financial assets. It falls between –1 and +1, with 0 indicating no maturity transformation, and negative values implying negative maturity transformation.

**MT2** is the ratio of short-term liabilities (plus redeemable equity in the case of EF1 entity types) to short-term assets. A value of 1 indicates that short-term liabilities (plus redeemable equity for EF1) are fully covered with short-term assets. Above 1, increases in the ratio indicate that there could be short-term funding dependence. Ratios from 0 to 1 indicate negative maturity transformation.

**LT** measures the amount of less liquid assets (total financial assets minus liquid assets) funded by short-term liabilities (and/or shares redeemable for cash or underlying assets in the case of CIVs), approximated by short-term liabilities minus liquid assets (under a narrow definition for **LT1** and a broad definition for **LT2**).\*\* Total financial assets are also added to the numerator to obtain interpretable results, with a value of “1” indicating no liquidity transformation (i.e. all near-term demands on liquidity are supported by liquid assets) and “2” indicating that assets are less liquid and are funded by short-term liabilities, including redeemable equity.

**L1** is the ratio of total financial assets to equity (or AUM to NAV in the case of CIVs). The results can be interpreted as a financial leverage ratio or equity multiplier; however, these are not risk-based measures. Although this measure enables comparisons across entity types, **L2** tries to take into account non-bank financial entities’ leveraging or de-leveraging through the use of derivatives and other off-balance sheet transactions (i.e. synthetic leverage). Additional measures for leverage were considered based on data availability. For example, a non-equity ratio (**L5**) was used for SFVs instead.

\* For EF1 entity types, the collected balance sheet data and calculated risk metrics were expanded to also include assets under management (AUM) instead of total financial assets, Gross Notional Exposure and Net Asset Value (to calculate leverage ratios), and non-/redeemable equity (as a form of long-/short-term liability). Ratios related to imperfect credit risk transfer were also considered in past monitoring exercises. However, collected data were not sufficient to allow any meaningful conclusions. In particular, off-balance sheet data items such as off-balance sheet credit exposures were often not available across jurisdictions.

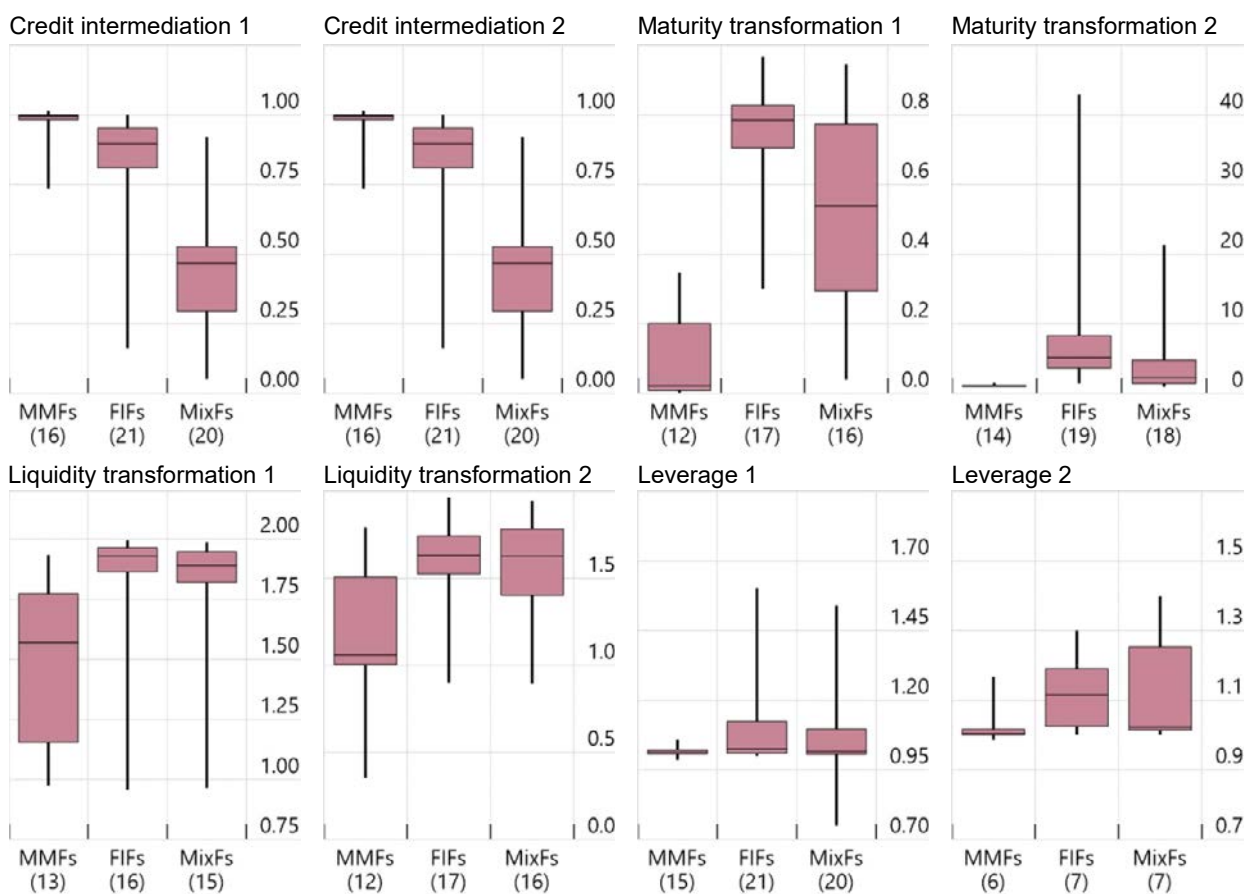
\*\* Liquid assets are difficult to measure as the liquidity of an asset at any given time is contingent on a number of external factors. For the purposes of the FSB’s monitoring exercise, liquid assets are considered to be all assets that can be easily and immediately converted into cash at little or no loss of value during a time of stress (see also characteristics and definition of High Quality Liquid Assets (HQLAs) in Part 1, Section II.A in BCBS (2013). Two definitions of liquid assets are used in this exercise: in the narrow definition, liquid assets only include cash and cash equivalents; in the broad definition, liquid assets include HQLAs, which can include cash and cash equivalents, but also certain debt and equity instruments that meet certain liquidity characteristics (subject to concentration limits and haircuts).



## EF1: Risk metrics for MMFs, fixed income funds and mixed-funds

At end-2019

Graph A4-1



The median value is represented by a horizontal line, with 50% of the values falling in the 25th to 75th percentile range shown by the box. The upper and lower end points of the vertical lines show the range of the entire sample. In some cases, arrows at the top of the vertical line indicate jurisdictions with ratios outside the range shown in the graph.

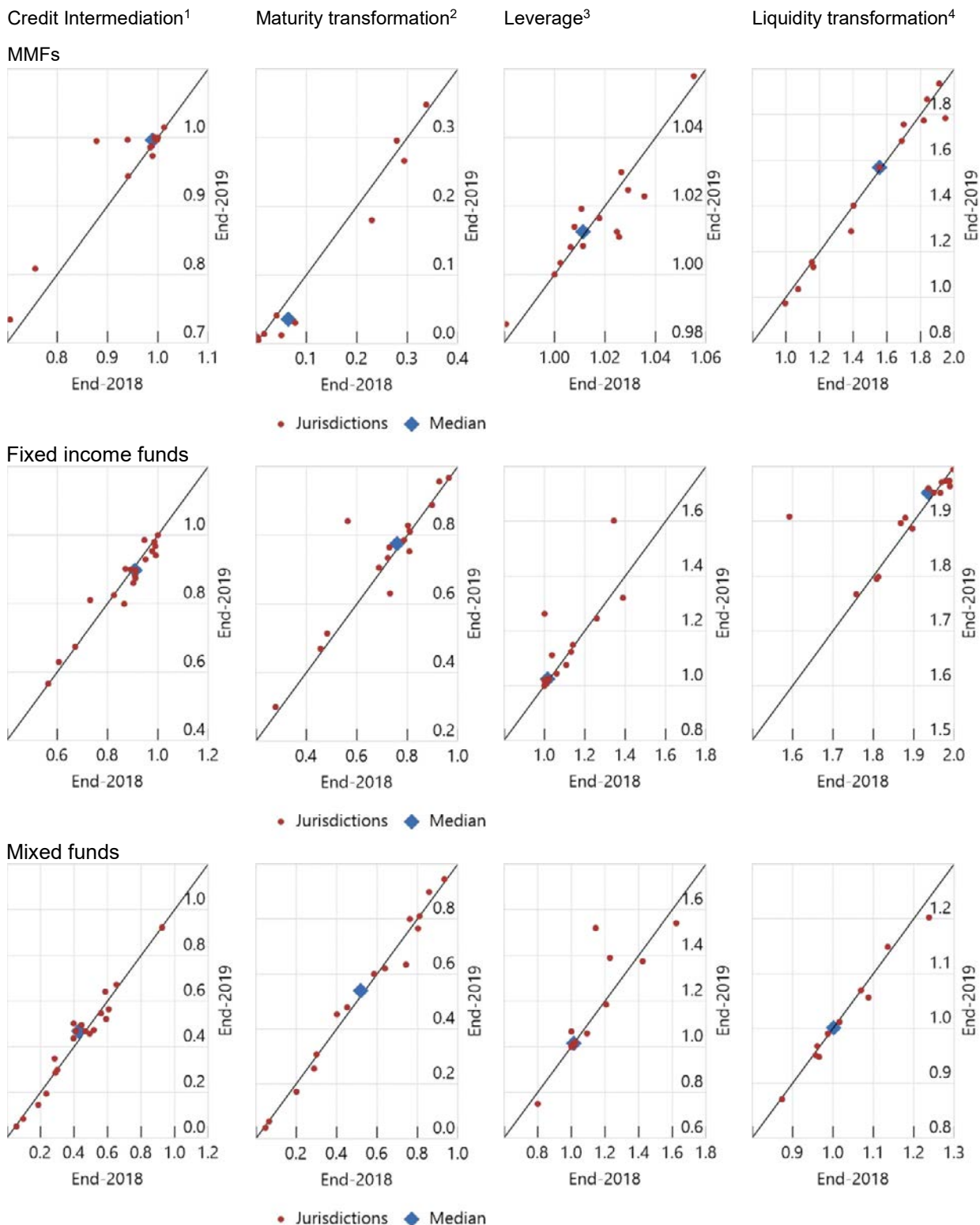
See Box A4-1 for metrics definitions.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations

## EF1: Focus on selected risk metrics for investment funds in 2018 and 2019 across jurisdictions

End-2019 versus end-2018

Graph A4-2



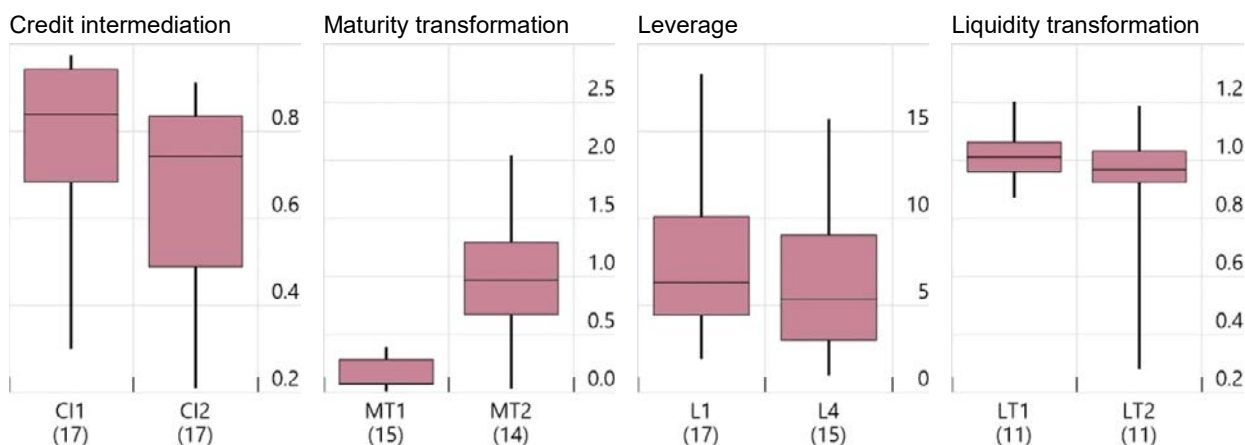
<sup>1</sup> Credit assets / total financial assets (C1). <sup>2</sup> (Long-term assets – equity – long-term liabilities) / total financial assets (MT1). <sup>3</sup> Total financial assets / equity (leverage 1). <sup>4</sup> Long-term assets – equity – long-term liabilities) / total financial assets (LT1).

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

## EF2: Risk metrics for finance companies

At end-2019

Graph A4-3



The median value is represented by a horizontal line, with 50% of the values falling in the 25th to 75th percentile range shown by the box. The upper and lower end points of the vertical lines show the range of the entire sample. In some cases, arrows at the top of the vertical line indicate jurisdictions with ratios outside the range shown in the graph.

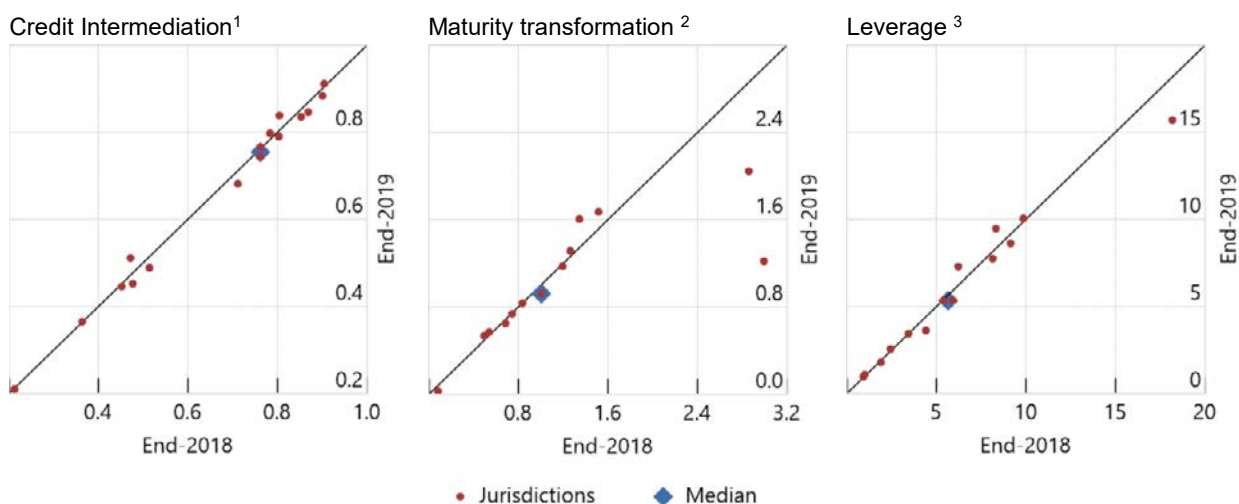
See Box A4-1 for metrics definitions.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

## EF2: Focus on selected risk metrics for finance companies in 2018 and 2019 across jurisdictions

End-2019 versus end-2018

Graph A4-4



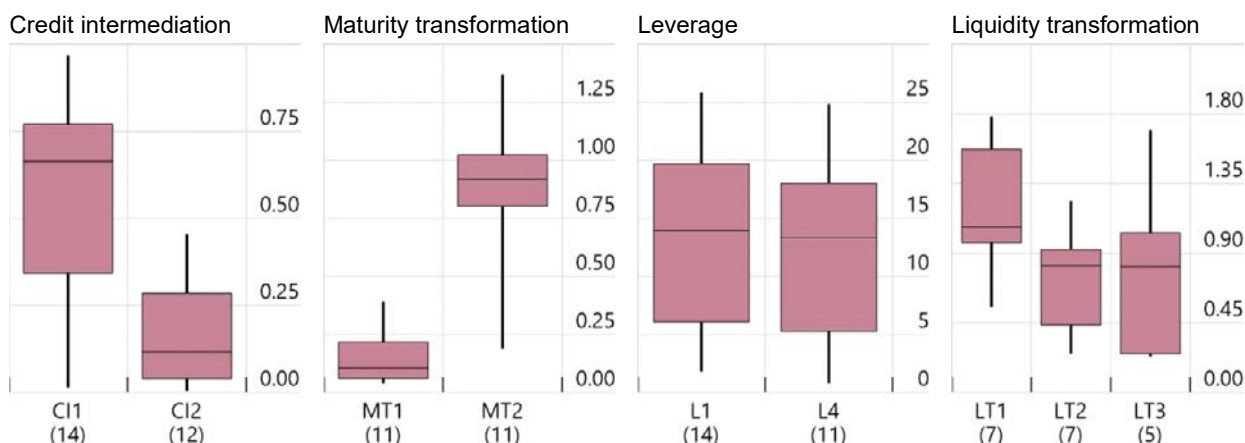
<sup>1</sup> Credit assets / total financial assets (CI2). <sup>2</sup> Short-term liabilities / short-term assets (MT2). <sup>3</sup> Total liabilities/equity (L4).

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

### EF3: Risk metrics for broker-dealers

At end-2019

Graph A4-5



The median value is represented by a horizontal line, with 50% of the values falling in the 25th to 75th percentile range shown by the box. The upper and lower end points of the thin vertical lines show the range of the entire sample.

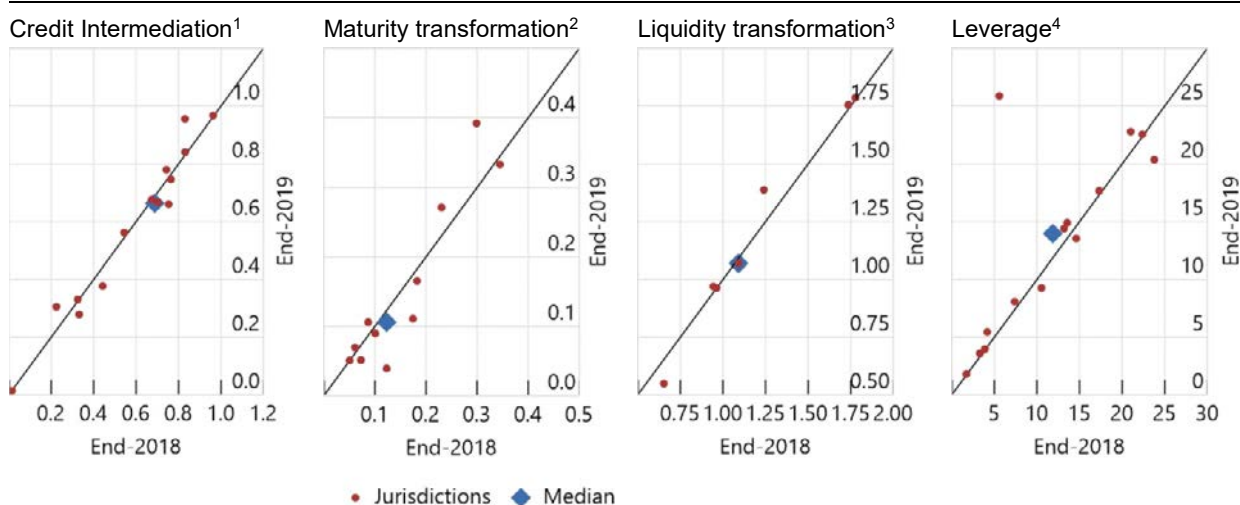
See Box A4-1 for risk metrics definitions.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

### EF3: Focus on selected risk metrics for broker-dealers in 2018 and 2019 across jurisdictions

End-2019 versus end-2018

Graph A4-6

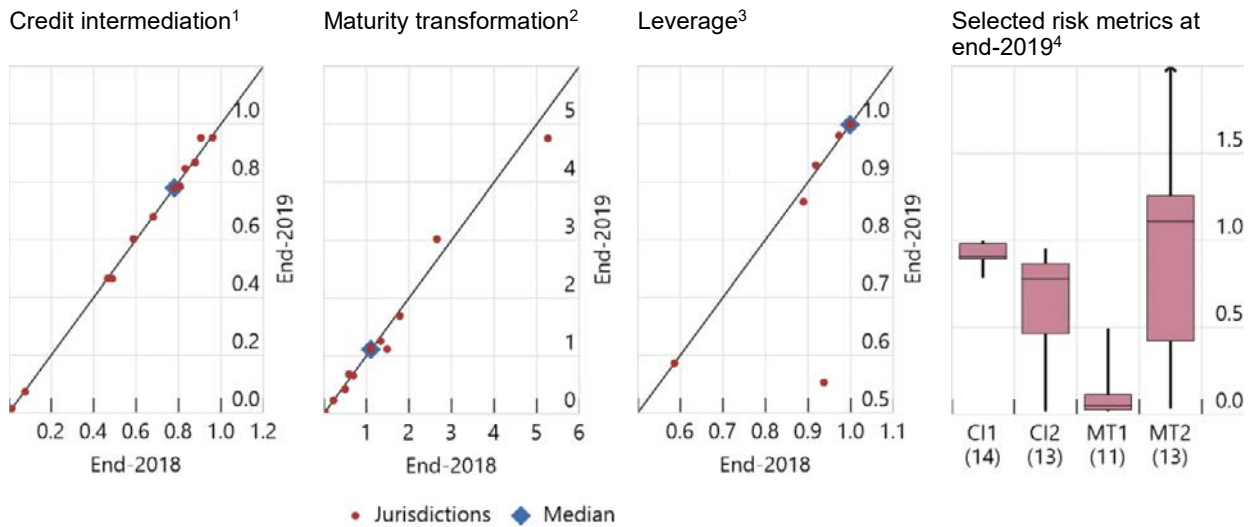


<sup>1</sup> Credit assets / total financial assets (CI1). <sup>2</sup> (Long-term assets – equity – long-term liabilities) / total financial assets (MT1). <sup>3</sup> (Total financial assets – liquid assets (narrow) + short-term liabilities) / total financial assets (LT1). <sup>4</sup> Total financial assets/equity (L1).

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

**EF5: Focus on selected risk metrics for structured finance vehicles in 2018 and 2019 across jurisdictions**

**Graph A4-7**



<sup>1</sup> Loans / total financial assets (CI2). <sup>2</sup> Short-term liabilities / short-term assets (MT2). <sup>3</sup> (Total financial assets – equity)/total financial assets (L5). <sup>4</sup> The median value is represented by a horizontal line, with 50% of the values falling in the 25th to 75th percentile range shown by the box. The upper and lower end points of the thin vertical lines show the range of the entire sample. In some cases, arrows at the top of the vertical line indicate jurisdictions with ratios outside the range shown in the graph. The numbers in parenthesis indicates the number of jurisdictions that reported such risk metrics.

See Box A4-1 for risk metrics definitions.

Sources: Jurisdictions' 2020 submissions (national sector balance sheet and other data); FSB calculations.

## Abbreviations

AEs	Advanced economies
BDs	Broker-dealers
CIVs	Collective investment vehicles
CCPs	Central counterparties
CFIMLs	Captive financial institutions and money lenders
CLOs	Collateralised loan obligations
EFs	Economic functions
EF1	Collective investment vehicles with features that make them susceptible to runs
EF2	Lending dependent on short-term funding
EF3	Market intermediation dependent on short-term funding
EF4	Facilitation of credit intermediation
EF5	Securitisation-based credit intermediation
EMEs	Emerging market economies
FIFs	Fixed income funds
FinCos	Finance companies
HFs	Hedge funds
IC	Insurance corporations
MMFs	Money market funds
NBFI	Non-bank financial intermediation
OFls	Other financial intermediaries
OIFs	Investment funds other than MMFs and hedge funds
PF	Pension funds
REITs	Real estate investment trusts and real estate funds
RoW	Rest of the world
SFVs	Structured finance vehicles
SPVs	Special purpose vehicles
TCs	Trust companies



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