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# Global Monitoring Report on Non-Bank Financial Intermediation

2022



20 December 2022

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## Executive summary

**This report assesses global trends in the non-bank financial intermediation (NBFi) sector for the year ending 31 December 2021.** It presents the results of the 12th annual FSB global monitoring exercise, covering 29 jurisdictions that account for around 80% of global GDP. It describes broad trends in financial intermediation before narrowing its focus to the subset of NBFi activities that may be more likely to give rise to vulnerabilities. The report mainly covers developments in 2021, during which most economies experienced a better-than-expected recovery from the COVID-19 shock, in many ways because of the extraordinary steps taken by official sector authorities to support key financial markets and the real economy.

**The NBFi sector exhibited strong growth in 2021, in large part because of higher valuations and inflows into investment funds, which benefited from the economic recovery.** The NBFi sector grew by 8.9%, higher than its five-year average growth of 6.6%, and its share of total global financial assets was stable at 49.2%. The stabilisation can be explained in part by the slower expansion in central bank balance sheets and in bank and public financial institution assets in 2021, as measures put in place to support the economy and restore market functioning in 2020 were gradually relaxed or replaced by more targeted measures in 2021. Accommodative monetary policies and the low interest rate environment in 2021 contributed to rising asset prices, in the context of a continued search for yield. This benefited investment funds, which experienced both inflows and, particularly for equity funds, higher valuations of a wide range of their investments, which led to overvaluation concerns. The importance of the NBFi sector continued to increase at a faster pace in emerging market economies than in advanced economies. Graph 0-1 provides the size of the main monitoring aggregates.

**The assets of non-bank financial entities classified into the five economic functions set out in the FSB monitoring approach grew by 9.9% in 2021, broadly in line with the overall growth of the NBFi sector.** The narrow measure of the NBFi sector reached \$67.8 trillion in 2021, representing 28.3% of total NBFi assets and 14.1% of total global financial assets. While assets of all economic functions and in most jurisdictions have grown, the largest growth was observed for collective investment vehicles with features making them susceptible to runs (EF1), which remained by far the largest economic function. Table 0-1 provides an overview of the size and growth of each economic function.

**Since 2013, NBFi sector linkages with the banking sector have continued to decrease.** This was the case both in terms of funding and exposures. The other financial intermediaries' sector – a subset of the overall NBFi sector that excludes insurance corporations, pension funds, and financial auxiliaries (see Graph 0-1) – had the largest cross-border linkages across all financial sectors, as in previous years. Information on linkages is gradually improving; however, it is not available for all jurisdictions and is subject to comprehensiveness and consistency challenges. This report describes linkages for each economic function, includes maps to illustrate interconnectedness for key entities, and details areas where data could be improved.

**The NBFi sector overall continued to be a net provider of cash in the repo market, and its net level of repo assets rebounded strongly in 2021.** Money market funds, trust companies, structured finance vehicles and, since 2021, hedge funds tended to be cash providers through reverse repo transactions. Meanwhile, other investment funds, broker-dealers, and finance

companies tended to be net recipients of cash. The reliance of other financial intermediaries on (mostly long-term) wholesale funding decreased slightly in 2021.

**Most balance sheet measures of vulnerability for the economic functions remained stable over the past years, with some entity types showing high degrees of liquidity and maturity transformation.** Aggregate measures of credit intermediation, liquidity and maturity transformation for EF1 entities remained at elevated levels. Balance sheet leverage appeared low on average for most jurisdictions, although some jurisdictions exhibited higher levels. Leverage was also an important characteristic of EF2 entities such as finance companies, which showed a large dispersion of values across jurisdictions. Measures of credit intermediation, liquidity and maturity transformation, and leverage for EF3 entities – mostly broker-dealers – decreased, reflecting less volatile financial markets, but the distribution of values across jurisdictions was broader than for other economic functions. Risk metrics for EF4 are not included in this report because of the difficulty in interpreting the relatively sparse risk data provided by jurisdictions. Entities in EF5, such as securitisation and structured finance vehicles, continued to engage in a significant degree of credit intermediation, particularly through issuance of debt securities backed by loan portfolios.

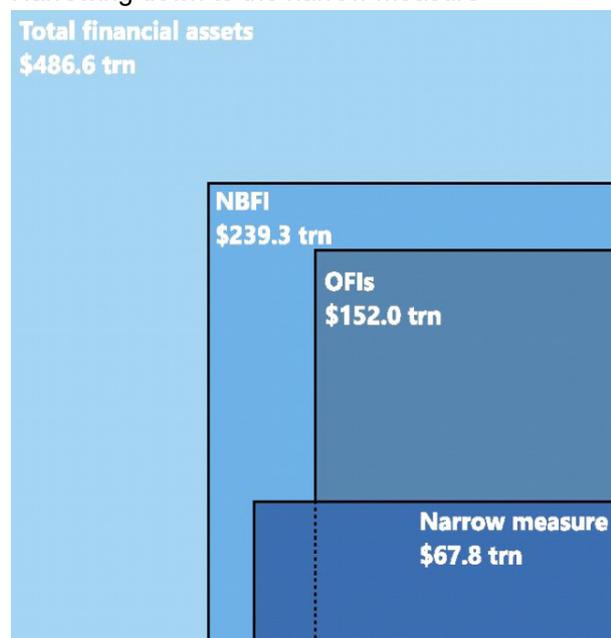
**Global economic and financial conditions have deteriorated significantly since the beginning of 2022, with knock-on effects on the NBFIs sector.** While most of the analysis in this report is based on data through the end of 2021, economic and financial conditions have changed markedly since then. In 2022, slowing global growth, the war in Ukraine, commodities price pressures, supply-chain disruptions, higher-than-expected inflation and rising interest rates have provided a testing environment for the financial system including the NBFIs sector and particularly its narrow measure. Box 1-1 of this report provides some detail on these recent market developments. As part of its work programme to enhance the resilience of the NBFIs sector, the FSB has identified key amplifiers of liquidity stress in the sector and will continue to develop metrics and tools to monitor associated vulnerabilities. These developments and experiences may shape future iterations of the annual monitoring exercise.

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

At end-2021

Graph 0-1

### Narrowing down to the narrow measure<sup>1</sup>



### Monitoring aggregates

The following monitoring aggregates are referenced throughout this report:

- (i) The **NBFI** sector is a broad measure of all non-bank financial entities, composed of all financial institutions that are not central banks, banks or public financial institutions.
- (ii) **Other financial intermediaries (OFIs)** are a subset of the NBFI sector, composed of all financial institutions that are not central banks, banks, public financial institutions, insurance corporations (ICs), pension funds (PFs), or financial auxiliaries. OFIs include money market funds (MMFs), hedge funds (HFs), other investment funds (OIFs), captive financial institutions and money lenders, central counterparties (CCPs), broker-dealers (BDs), finance companies (FinCos), trust companies (TCs), and structured finance vehicles (SFVs).
- (iii) The **narrow measure of NBFI** is composed of NBFI entities 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 NBFI monitoring exercise.

<sup>1</sup> Total financial assets, NBFI and OFIs include participating jurisdictions and all of the euro area countries, whereas the narrow measure includes only participating jurisdictions. The semi-dashed area in the LHS graph showing the narrow measure represents assets that were not from OFIs and that correspond to ICs included in EF4 and to other financial auxiliaries unallocated to the five economic functions. This graph does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

## Composition of the narrow measure

Table 0-1

At end-2021

Economic Functions	Typical entity types <sup>1</sup>	Size <sup>2</sup> (USD trn)	Share (%)	Change in 2021 (%)
EF1 (collective investment vehicles with features that make them susceptible to runs)	MMFs, fixed income funds, mixed funds, credit hedge funds <sup>3</sup> , real estate funds	51.6	76.2	10.6
EF2 (lending dependent on short-term funding)	Finance companies, leasing/factoring companies, consumer credit companies	4.6	6.8	7.7
EF3 (market intermediation dependent on short-term funding)	Broker-dealers, custodial accounts, securities finance companies	4.6	6.8	5.6
EF4 (facilitation of credit intermediation)	Credit insurance companies, financial guarantors, monoline insurers	0.2	0.2	4.0
EF5 (securitisation-based credit intermediation)	Securitisation vehicles, structured finance vehicles, asset-backed securities	5.1	7.5	9.0
Unallocated	Other financial auxiliaries	1.7	2.4	10.8
<b>Total</b>		<b>67.8</b>	<b>100</b>	<b>9.9</b>

<sup>1</sup> The FSB's [Policy Framework](#) acknowledges that the narrow measure may take different forms across jurisdictions because of 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 introduce vulnerability, by examining underlying economic functions. Thus, the entity types listed should be taken as typical examples. <sup>2</sup> Net of prudential consolidation into banking groups. <sup>3</sup> Credit hedge funds are hedge funds that invest primarily in credit assets (e.g. bonds, loans). This table does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

## Introduction

**The comprehensive monitoring of global trends, risks, and innovations of the NBFi sector is a key part of the FSB's ongoing efforts to enhance financial system resilience.**<sup>1</sup> The FSB's annual global monitoring exercise uses sectoral balance sheet data from national financial accounts statistics ("flow of funds"), complemented with supervisory and other publicly available data where appropriate.<sup>2</sup> This year's edition mostly uses data as of end-2021 and therefore discusses developments related to the NBFi sector up until that date.

**The monitoring exercise adopts a two-step approach.**<sup>3</sup> The first step takes a comprehensive look at the NBFi sector to ensure that data gathering and monitoring covers all areas where vulnerabilities might arise and amplify or transmit shocks to the financial system, including from recent NBFi-related innovations (see Section 1.4). As part of the comprehensive review of the NBFi sector, this report provides an assessment of interconnectedness between different types of NBFi entities and banks, as well as cross-border linkages (see Section 1.5). The second step of the monitoring approach focuses on vulnerabilities associated with the NBFi sector that resemble those in the banking system, or where there are indications of regulatory arbitrage that could undermine the goals of regulatory reforms enacted after the global financial crisis. To arrive at the narrow measure of the NBFi sector, the participating jurisdictions classify a subset of NBFi entities on the basis of their economic functions (or activities) that may give rise to vulnerabilities because they involve liquidity/maturity transformation, imperfect credit risk transfer or use of leverage (see Section 2).<sup>4</sup> To enhance consistency across jurisdictions, this classification is done on a conservative and inclusive basis, reflecting the assumption that policy measures and/or risk management tools have not been exercised (i.e. on a pre-mitigant basis). Consequently, 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 may have significantly reduced or addressed financial stability risks.

**Each year, the FSB aims to enhance the annual monitoring exercise by deepening its analysis and learning from the experiences of previous exercises.** The FSB regularly assesses the effectiveness of these enhancements and makes adjustments as needed to further improve its understanding of NBFi trends and associated vulnerabilities. This year's monitoring exercise includes an overview of policy tools available in participating jurisdictions (see Box 2-1). This provides an insight into the resilience of the NBFi sector given that authorities classify entities on a pre-mitigant basis in this report – that is, authorities assume a scenario in which

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<sup>1</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 29 participating jurisdictions (see Table 0-2), 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>2</sup> The FSB's NBFi 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 NBFi. 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.

<sup>3</sup> The two-step approach in this report is based on the monitoring framework to assess bank-like financial stability risks from NBFi as set out in FSB (2011), *Shadow Banking: Strengthening Oversight and Regulation*, October.

<sup>4</sup> The focus on economic functions is based on an approach that was introduced in FSB (2013), *Policy Framework for Strengthening Oversight and Regulation of Shadow Banking Entities*, August (the "FSB Policy Framework").

policy tools have not been adopted or risk management tools are not exercised.<sup>5</sup> Jurisdictions also provided information on data, classification and policies on FinTech credit (see Box 1-2). Furthermore, the 2022 monitoring exercise expands on the interconnectedness discussion for each individual economic function. Given that the macro-financial conditions of 2022 were very different from those of 2021, this year's edition also features an analysis of their likely impact on the NBFIs sector (see Box 1-1).

**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 (Table 0-2).** The first sample, denoted as *29-Group*, comprises 29 individual jurisdictions and includes more granular information for non-bank financial sectors. The second sample, denoted as *21+EA-Group*, is a more comprehensive sample 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* sample.<sup>6</sup> The *21+EA-Group* sample is used in parts of Section 1, where it provides wider jurisdictional coverage, though it is not as comprehensive in its coverage of financial sectors. The *29-Group* is used in Section 2 because of a better coverage of NBFIs sub-sectors.<sup>7</sup>

**Table 0-2: 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)*	Türkiye (TR)**	
Luxembourg (LU)*	Chile (CL)**	Mexico (MX)**	United Kingdom (UK)*	
Netherlands (NL)*	China (CN)**	Russia (RU)** <sup>1</sup>	United States (US)*	
Spain (ES)*				

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

<sup>1</sup> This report does not include data for Russia for 2021, though data for previous years (based on last year's submission) are included in the analysis where appropriate. Where growth rates are calculated in this report, or comparison with previous years is made, Russian data are not included in order to keep a consistent data sample. Graph footnotes in the report describe whether Russian data are used.

**Measures of growth and results throughout this report are mainly based on either annual historical data covering end-2002 to end-2021 or cross-sectional data as of end-2021.** Some exchange rate effects have been corrected when presenting growth rates by applying a constant end-2021 exchange rate across all past years to convert each jurisdiction's local currency data into U.S. 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 to those presented in previous reports because of jurisdictions' revisions to historical data,

<sup>5</sup> This is consistent with FSB (2021), *Financial Stability Surveillance framework*, September, which aims to provide a picture of vulnerabilities gross and net of resilience.

<sup>6</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.

<sup>7</sup> Throughout the report, 29-Group and 21+EA-Group refer to the sample of jurisdictions used for analysis, although for some analyses, data corresponding to a subset of jurisdictions are available.

improvements in national statistics and more granular reporting. When material, these revisions are noted in footnotes throughout this report.

## 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 NBFIs sector, which includes ICs, PFs, OFIs and financial auxiliaries. Section 1.2 focuses on trends and the main drivers of growth in the NBFIs sector. Credit intermediation and wholesale funding trends of OFIs are analysed in Section 1.3. Section 1.4 gives an account of the financial innovations reported by member jurisdictions. Section 1.5 discusses the direct domestic balance sheet interconnectedness between banks, ICs, PFs and OFIs, as well as cross-border linkages.

### 1.1. Global financial system assets exhibited strong growth in 2021, mainly driven by non-bank financial intermediaries

**Driven mainly by the NBFIs sector's expansion, total global financial assets continued to exhibit strong growth in 2021, increasing by 7.7% to \$486.6 trillion** (Graph 1-1).<sup>8</sup> The NBFIs sector grew by 8.9% in 2021, reaching a size of \$239.3 trillion (for the 21+EA-Group). While the growth of NBFIs sector assets was below that of central banks in 2021 (12.0%), it was higher than its 5-year average from 2016–20 (6.6%). The strong growth in central bank, bank, and public financial institution assets exhibited in 2020, and explained by the response to the outbreak of the COVID-19 pandemic, slowed down in 2021 in most jurisdictions. This likely reflected that some of the pandemic-related measures put in place to support the economy and the functioning of key financial markets started to be gradually relaxed in 2021 and/or focused on more targeted measures.<sup>9</sup> Accordingly, the total NBFIs sector increased its relative share of total global financial assets from 48.6% to 49.2% in 2021.

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<sup>8</sup> Growth rates have been calculated based on historical data included in jurisdictions' 2022 data submissions.

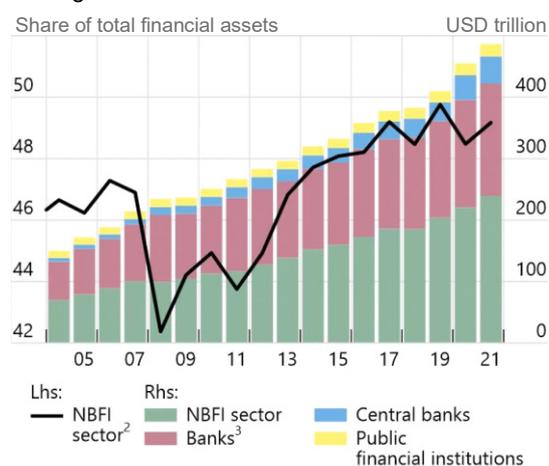
<sup>9</sup> See FSB (2022), *Exit Strategies to Support Equitable Recovery and Address Effects from COVID-19 Scarring in the Financial Sector: Interim report*.

## NBFI as a share of total global financial assets increased in 2021, after a decrease in 2020

21+EA-Group

Graph 1-1

Total global financial assets<sup>1</sup>



Composition of the global financial system<sup>4</sup>

	Total global financial assets	Central banks	Banks <sup>3</sup>	PFIs <sup>5</sup>	NBFI sector
<b>Size at end-2021</b> (USD trillion)	486.6	44.1	182.9	20.3	239.3
<b>Share of total global financial assets (%)</b>	100.0	9.1	37.6	4.2	49.2
<b>Growth in 2021</b> (year-over-year, %)	7.7	12.0	5.5	4.5	8.9
<b>Growth 2016–20</b> (annualised growth, %)	6.5	11.1	5.5	5.0	6.6

<sup>1</sup> Includes data for Russia up until 2020. <sup>2</sup> NBFI includes ICs, PFs, OFIs and financial auxiliaries. <sup>3</sup> All deposit-taking corporations. <sup>4</sup> Does not include data for Russia. <sup>5</sup> Public financial institutions.

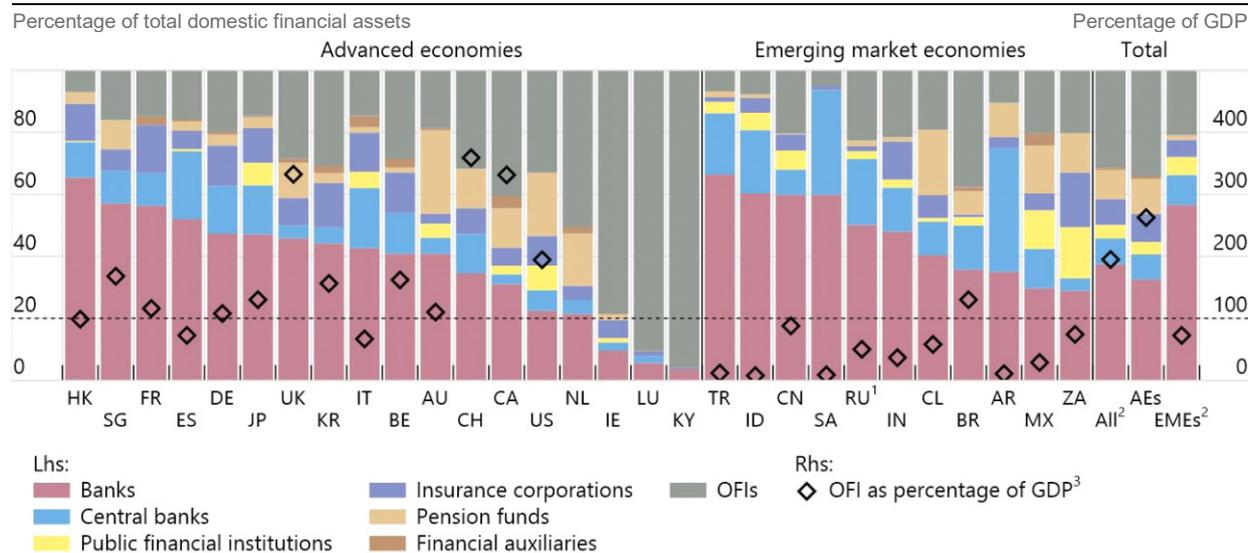
Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

**Although the NBFI sector's share of total global financial assets has increased in 2021, banks continued to be the largest entity type in 21 jurisdictions, holding 37.6% of total global financial assets** (Graph 1-2). With a share of 31.2% of total global financial assets in 2021, OFIs represented again by far the largest component of the NBFI sector while also being the largest entity type in seven jurisdictions. In most of those cases, OFI assets amounted to several times the respective jurisdictions' GDP. The shares of PFs and ICs were broadly stable, representing 9.2% and 8.3% of total global financial assets in 2021, respectively.

## The structure of the financial system differed across jurisdictions, with banks comprising the single largest sector in most jurisdictions

29-Group at end-2021

Graph 1-2



<sup>1</sup> Data for Russia as of 2020. <sup>2</sup> Russia not included in aggregates. <sup>3</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 (280,518), Luxembourg (21,060), Ireland (1,457) and the Netherlands (686) are not shown since they are particularly high compared to the rest of the jurisdictions.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

**In 2021, macro-economic conditions continued to be dominated by the policy response to COVID-19, which contributed to a quicker-than-expected economic recovery from the pandemic.** While public authorities continued to support the economy, uncertainty remained at high levels with the possible risk of a resurgence of the pandemic. Indebtedness across selected sovereigns, non-financial corporates and households continued to be at high levels. Central banks kept their monetary policy accommodative and interest rates low, which generally contributed to higher valuations.

**In early 2022, macro-financial conditions changed dramatically with the war in Ukraine, market volatility and commodities' price pressure.** In addition, continued supply-chain difficulties contributed to concerns that inflation could become more persistent than expected. Central banks raised their policy rates in response to changing global financial conditions. Box 1-1 takes stock of the situation in which the NBFIs sector entered the year 2022 and provides insights on how vulnerabilities could develop given the changing macro-financial conditions.

### Box 1-1: Effects of inflation and rising rate environment on the NBF1 sector in 2022

Compared to 2021, macro-financial conditions changed significantly in 2022, against the backdrop of the highest inflation rates for decades in many advanced economies (AEs) and emerging market economies (EMEs). In reaction to this high inflation, most central banks have tightened their monetary policy stance and nominal interest rates have increased significantly. The suddenness of the change in nominal interest rates has quickly tightened financial conditions, which have affected bond issuers, investors, and financial intermediaries. In particular, the NBF1 sector faces various challenges depending on the heterogeneous characteristics of this sector.

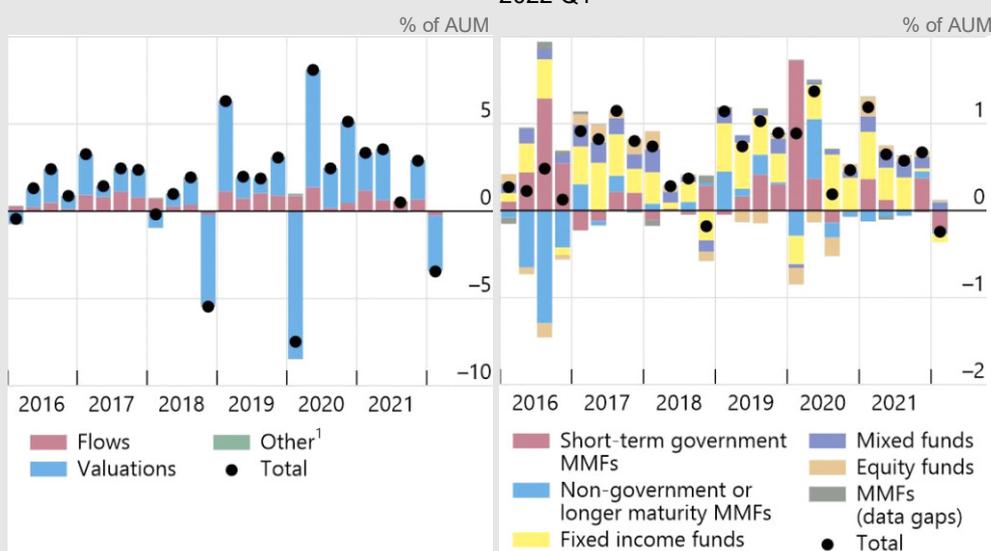
**Investment funds suffered a significant decrease in the value of their assets under management (AUM) in the first quarter of 2022 primarily because of valuation effects, although net outflows were also historically high.** During the first quarter of 2022, the AUM in investment funds decreased by 3.5%, quarter on quarter (i.e. \$2.4 trillion, see graph B1, LHS). 93% of the decrease in AUM, was attributable to valuation effects. The main equity indices dropped in the first quarter of 2022 and affected the valuation of equity funds; as nominal interest rates went up, bonds prices also decreased, and this negatively affected the valuation of bond funds. This was the third largest valuation decrease in a decade. Whereas the two last significant declines – in the last quarter of 2018 and in the first quarter of 2020 – were quickly reversed, this decrease continued throughout 2022. Although net flows explained only 7% of the decrease in AUM, the first quarter of 2022 saw the highest amount of net outflows in the last decade, because redemptions from MMFs and fixed income funds were not compensated by inflows into other funds.

#### Changes in AUM and disaggregation of net flows of investment funds

Graph B1

Significant decrease in AUM in 2022 Q1

MMFs and fixed income funds net outflows in 2022 Q1<sup>2</sup>



MMFs = money market funds. This Graph does not include data for Russia.

<sup>1</sup> "Other" represents change attributable to factors other than fund flows and valuation (e.g. changes in leverage and sample adjustments). <sup>2</sup> The panel shows the disaggregation of the flows observed in the LHS panel (in red).

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

**Net outflows in investment funds during the first quarter of 2022 were mainly driven by short-term government MMFs and fixed income funds (cf. graph B1, RHS) without any major strains on liquidity.** Net outflows from short-term government MMFs and fixed income funds could be attributable to a change in investors' appetite to hold cash and bond instruments. Although net outflows from short-term government MMFs in the first quarter of 2022 were of similar magnitude to the ones

observed in non-government/longer maturity MMFs in the first quarter of 2020 during the COVID-19 outbreak, they did not trigger major strains in liquidity. This is likely because these outflows happened steadily over the quarter, as opposed to over a few weeks as in 2020. The resilience during this period could also be attributed to the different underlying assets, since short-term government MMFs mainly hold short-term government debt, as opposed to short-term corporate debt.<sup>10</sup> Fixed income funds also experienced net outflows during the first quarter of 2022, but their magnitude was lower than that of net outflows from short-term government MMFs' and of net outflows observed during the COVID-19 outbreak.

**Increases in inflation and interest rates may raise the risk of additional net outflows in open-ended funds and increase credit risk of households and corporates.** Higher inflation, higher interest rates, and lower growth have led to a reduction in asset values and have likely contributed to the trend in net outflows observed in the first three quarters of 2022, which would typically test funds that exhibit high levels of liquidity transformation. These inflation and interest rate developments have also increased difficulties for the most indebted households and non-financial corporates to repay or service their loans, potentially contributing to an increase in funds' redemptions.

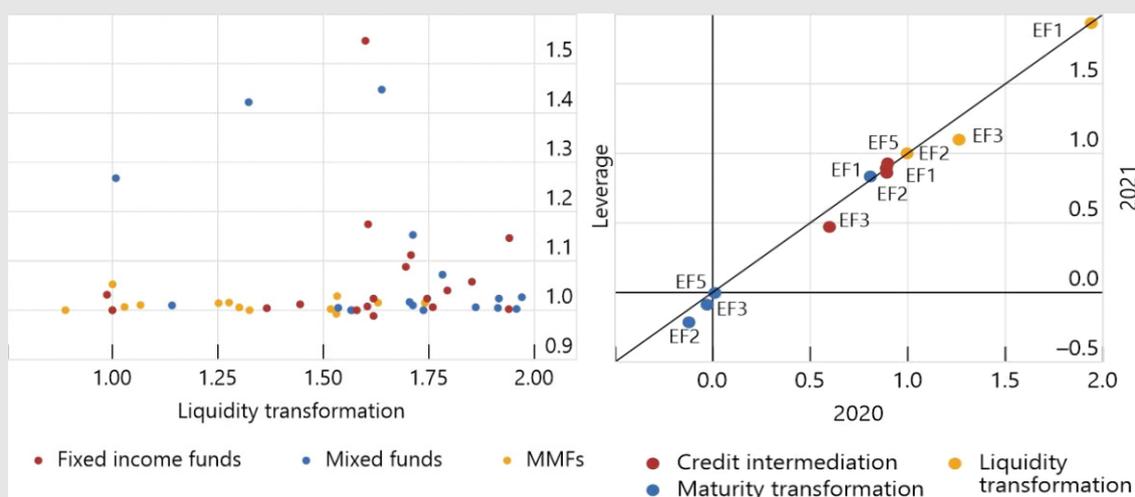
**The risk metrics collected by the FSB in 2021 suggest that EF1, EF2, and EF5 entities may be the most sensitive to the new macro-financial conditions.** In most of the jurisdictions that reported liquidity transformation risk metrics for fixed-income funds, the metric values are between 1.5 and 2.0. As this risk metric is floored at a value of 1.0 (meaning no liquidity transformation) and capped at 2.0 (indicating that assets are less liquid and are funded by short-term liabilities), this constitutes a vulnerability that could be acted upon in case of significant unexpected outflows, although existing policy tools are expected to increase the resilience of funds – see Box 2-1. Some jurisdictions also reported higher levels of leverage for these entities, which could serve as an amplifier (see Graph B2, LHS). EF1, EF2 (mostly FinCos) and EF5 (mostly SFVs) have high levels of credit intermediation risk metrics, which could expose them to increased credit risk levels (see Graph B2, RHS). Section 2 provides a more detailed assessment of risk metric values for each economic function.

### Scatter plot of risk metrics medians

Graph B2

Liquidity transformation vs. leverage within EF1

Risk metrics across economic functions



MMFs = money market funds. On LHS, each point represents a jurisdiction. This Graph does not include data for Russia.  
Source: IMF; Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

<sup>10</sup> The FSB has monitored different types of MMFs since its monitoring report published in December 2021. See also Section 2.3.

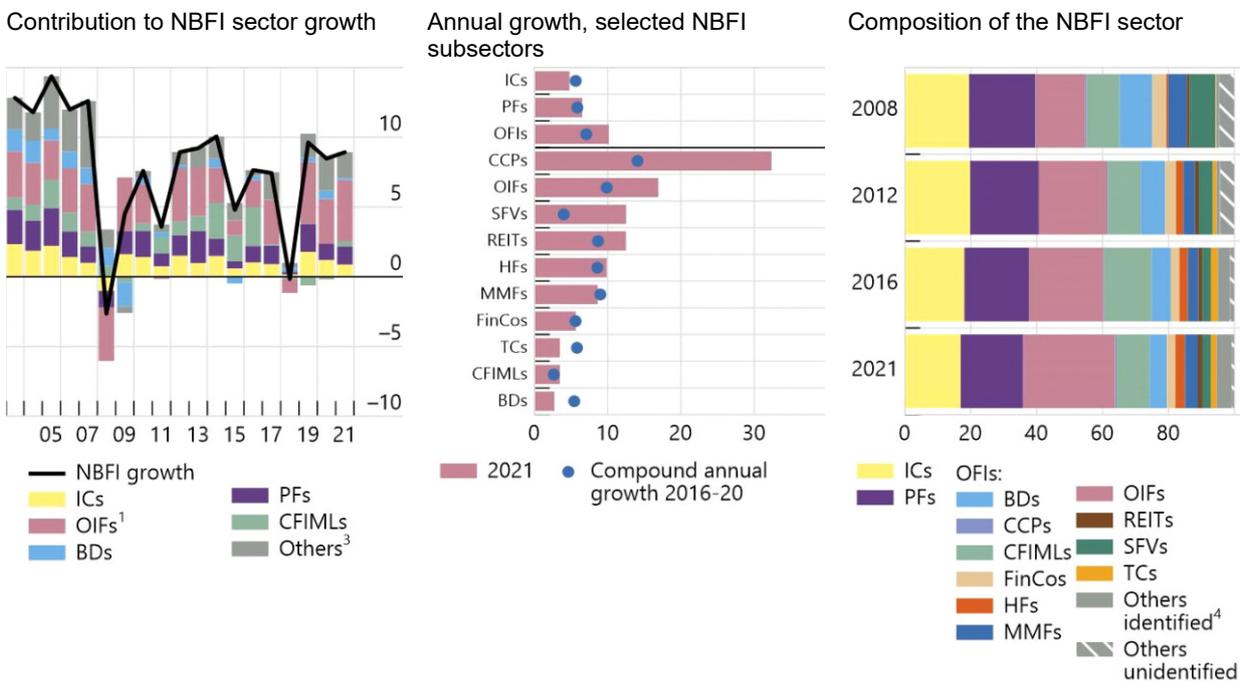
## 1.2. Investment funds contributed the most to growth in NBFI sector assets in 2021

**NBFI sector growth in 2021 was, once again, mainly driven by investment funds, particularly equity funds.** The growth in investment fund assets was supported by a combination of flows and valuation effects, with equity funds' growth driven mostly by increases in valuations during 2021 (see Box 2-2). Growth in other investment fund (OIF) assets, i.e. excluding HFs, real estate investment trusts and real estate funds (REITs), and MMFs, were responsible for just over a half of the overall change in NBFI sector assets in 2021, while ICs and PFs were collectively responsible for a quarter of NBFI sector asset growth (Graph 1-3, LHS). Graph 1-5 and table 1-1 provide an overview of the main developments in the NBFI sector assets in 2021.

### OIFs<sup>1</sup> were the largest contributor to growth of NBFI assets in 2021<sup>2</sup>

In per cent, 29-Group

Graph 1-3



<sup>1</sup> Investment funds other than HFs, REITs and MMFs. 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> Does not include data for Russia. <sup>3</sup> Others include MMFs, HFs, SFVs, TCs, REITs and CCPs. <sup>4</sup> "Others identified" comprise a variety of jurisdiction-specific entities that did not fit any of the explicit categories included in the monitoring exercise.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

**CCPs, REITs, and OIFs exhibited the highest growth in 2021 (Graph 1-3, middle panel) resulting in OFI growth.** CCP assets experienced relatively strong growth in the United Kingdom and the United States, but their share of NBFI assets remained below 1%. In both jurisdictions, the increasing volume of cleared repo transactions explained the growth. REIT assets grew by 12.5%, mainly driven by Singapore and the United States.<sup>11</sup> Also noteworthy

<sup>11</sup> In Singapore, the growth was due to (i) a broad improvement in economic prospects across various segments and markets, following the reopening and resumption of economic activity globally and in Singapore as COVID-19 restrictions were progressively relaxed over 2021; and (ii) increased valuations in the commercial real estate market on the back of resilient demand and occupancy improvements across regional markets and Singapore. In the United States, industrial and apartment focused equity REITs have led the recovery. Equity REITs have retraced their pre-pandemic losses and, as of September 2021, the FTSE NAREIT Equity REITs Index was 6.5% above year-end 2019 levels (FSOC, 2021 Annual Report).

was the growth of close to 10% of HFs assets (mainly driven by China, Cayman Islands and Ireland, which together account for nearly 90% of HF assets)<sup>12</sup> and of MMF assets (in particular short-term government MMFs; see also Section 2.3). The latter can be attributed, at least in part, to a corresponding growth in usage of the Federal Reserve’s overnight repo facility, in which many U.S. MMFs participated (see also Section 1.3.2). As in 2020, higher global equity valuations buoyed OIF assets in 2021, which are broad based, particularly for equity funds (see Box 2-2).

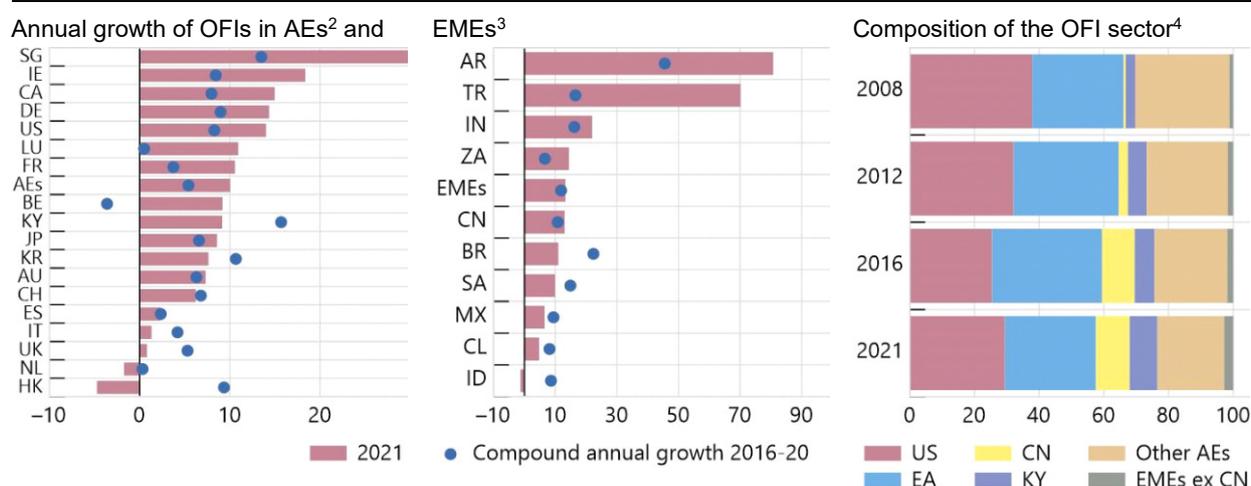
**Asset growth of ICs and PFs moderated in 2021 across most jurisdictions.** IC assets grew in 24 jurisdictions, and PF assets grew in 24 out of the 27 jurisdictions that reported PFs in their financial systems. On a global level, IC asset growth slowed from 6.7% in 2020 to 4.9% in 2021, reaching a total of \$40 trillion at end-2021. PF assets grew by 6.7% in 2021 compared to 6.0% in 2020 and amounted to \$45 trillion. The shares of both ICs and PFs in total global financial assets remained stable over the year.

**OFI assets increased in 25 jurisdictions (Graph 1-4 LHS and middle panels).** Sixteen of those jurisdictions experienced a higher OFI growth in 2021 relative to the average growth between 2016–20. The OFIs assets in the United States increased by 14.0% and accounted for the largest share of global OFI assets (29.5%), followed by the euro area (28.2%) (Graph 1-4, RHS panel). EMEs experienced higher OFI asset growth (13.3%) than AEs (10.3%) in 2021 and represented 13.3% of total OFI assets. A few jurisdictions saw a decrease in OFI assets.

### OFI assets increased in most jurisdictions in 2021<sup>1</sup>

In per cent

Graph 1-4



<sup>1</sup> Does not include data for Russia. <sup>2</sup> In the Netherlands, the decline by €104 billion (-1.7%) was driven by pension funds withdrawing assets from investment funds in order to reinvest them in-house, and by one-off events (such as the departure from the Netherlands of a large non-financial company and its related financial holding company). In Hong Kong, the decline was due to the contraction in total financial assets of BDs, which is in line with the fluctuation of the market activities, and FinCos, mainly due to the economic situation amidst the pandemic. <sup>3</sup> In Indonesia, the decline was driven by a contraction in total financial assets of FinCos, due to the COVID-19 pandemic, and fixed income funds, due to policy changes that resulted in more competitive tax rates for other instruments. Growth rates in Argentina and Türkiye reflected inflation rates. In Türkiye, the growth in AUM of fixed-income funds, HFs and other funds was also driven by (i) lower interest rates on traditional time deposits, which shifted investors’ behaviours towards funds; (ii) tax incentives for certain types of funds; and (iii) the introduction of a new electronic platform which enables access from a single terminal to all mutual funds authorised in Türkiye. <sup>4</sup> OFI assets by jurisdiction, 21+EA-group.

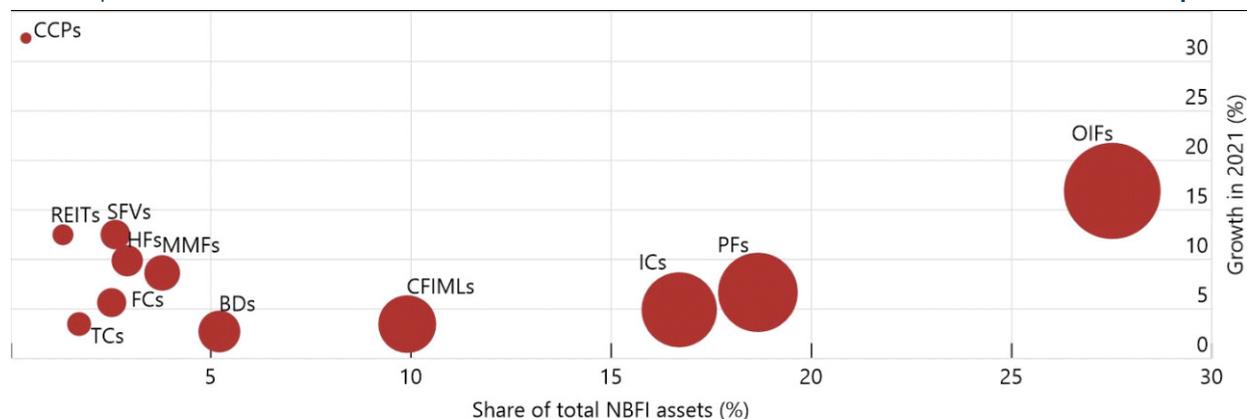
Source: Jurisdictions’ 2022 submissions (national sector balance sheet and other data); FSB calculations.

<sup>12</sup> In Ireland, this was due to new entities with large credit asset exposures, as well as to the sharp positive equity revaluations in 2021.

## Size vs. growth in 2021 of major NBF subsectors<sup>1</sup>

29-Group at end-2021

Graph 1-5



<sup>1</sup> The size of a circle corresponds to the size of the entity relative to the total NBF sector. Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

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

	Trends in 2021
<b>Insurance corporations (ICs)</b>	<ul style="list-style-type: none"> <li>• Size at end-2021: \$40 trillion.</li> <li>• Growth in the financial assets of ICs (4.9%) slowed somewhat in 2021 and was slightly below the previous five-year average of 5.6%.</li> <li>• IC assets grew in 24 jurisdictions, with EMEs contributing most of the overall growth.</li> <li>• Global IC assets were held mainly in the United States (32.4%), the eight participating euro area jurisdictions (25.8%), and Japan (11.6%), while EMEs held 13.2%.</li> </ul>
<b>Pension funds (PFs)</b>	<ul style="list-style-type: none"> <li>• Size at end-2021: \$45 trillion.</li> <li>• The growth rate of PF assets accelerated slightly in 2021 (6.7%) compared to 2020 (6.0%) and was above the previous five-year average (5.8%).</li> <li>• Out of the 27 reporting jurisdictions, 24 showed increases in PF assets during 2021.</li> <li>• PFs in AEs still held more than 96.8% of global PF assets. PF assets continued to grow rapidly in some EMEs, such as Türkiye (43.1%) and India (38.5%). PF assets in South Africa also increased significantly (growth of 26.0%), but this is only a catch-up effect due to partial reporting in 2020.</li> </ul>
<b>Money market funds (MMFs)</b>	<ul style="list-style-type: none"> <li>• Size at end-2021: \$9 trillion.</li> <li>• MMF assets' growth rate halved in 2021 (8.6%) compared to 2020 (17.6%).</li> <li>• MMF assets decreased in 12 jurisdictions.</li> <li>• In the United States, MMF assets grew by 9.2% in 2021, contributing to 61.0% of the total increase in global MMF assets. MMF assets in the eight participating euro area jurisdictions grew by 2.4%, contributing to 5.5% of the total increase.</li> </ul>

	Trends in 2021
	<ul style="list-style-type: none"> <li>• MMFs' trends and risks are discussed in more detail in Section 2.3.</li> </ul>
<b>Investment funds other than MMFs, REITs and HF (OIFs)</b>	<ul style="list-style-type: none"> <li>• Size at end-2021: \$66 trillion.</li> <li>• OIF assets grew by 16.9% in 2021, with fixed income funds, equity funds, and other funds growing by 7.9%, 21.2% and 17.5%, respectively. OIF assets increased because of both inflows and valuation effects. Equity funds growth, which contributed to most of the OIF growth, benefitted from rising equity prices, while fixed income fund assets increased because of inflows and, to a lesser extent, valuation effects.</li> <li>• The United States and the eight participating euro area jurisdictions continued to account for a substantial majority of OIF assets, representing 45.1% and 26.3% of global OIF assets, respectively.</li> <li>• OIFs' trends and risks are discussed in more detail in Box 2-2.</li> </ul>
<b>Hedge funds (HFs)</b>	<ul style="list-style-type: none"> <li>• Size at end-2021: \$7 trillion.</li> <li>• HF assets' growth in 2021 (9.9%) was similar to the growth in 2020 (8.2%).</li> <li>• Out of the 15 jurisdictions that reported HF assets in 2021, two observed a negative growth. The global growth was mainly driven by China (66.8%).</li> <li>• HF assets in the Cayman Islands and China accounted for 69.9% and 14.2% of all HF assets, respectively.</li> <li>• HFs' trends and risks are discussed in more detail in Section 2.3.</li> </ul>
<b>Real estate investment trusts and real estate funds (REITs)</b>	<ul style="list-style-type: none"> <li>• Size at end-2021: \$3 trillion.</li> <li>• REIT assets rebounded in 2021 (12.5%), after declining by 1.1% in 2020.</li> <li>• Equity REIT assets, which were 53.2% of total REITs, grew by 11.1% in 2021, driven mainly by growth in Singapore (47.2%), and the United States (15.3%). Mortgage REITs, which were 23.8% of total REITs, increased by 6.2%.</li> <li>• REITs' trends and risks are discussed in more detail in Section 2.3.</li> </ul>
<b>Finance companies (FinCos)</b>	<ul style="list-style-type: none"> <li>• Size at end-2021: \$6 trillion.</li> <li>• In 2021, FinCo assets grew by 4.2% in AEs, and 12.3% in EMEs.</li> <li>• FinCo assets increased in 17 out of 24 reporting jurisdictions.</li> <li>• India, Germany, the United States, and Japan were the largest contributors to the growth: asset growth in these four jurisdictions represented 82.9% of total FinCo asset growth in 2021.</li> <li>• FinCos' trends and risks are discussed in more detail in Section 2.4.</li> </ul>
<b>Broker-dealers (BDs)<sup>13</sup></b>	<ul style="list-style-type: none"> <li>• Size at end-2021: \$13 trillion.</li> <li>• BD assets growth slowed down in 2021 (2.7%) compared to the previous year's (10.9%).</li> <li>• 18 AEs and EMEs contributed to overall growth.</li> <li>• The strong growth observed in China (27.1%) and France (24.7%) did offset declines in eight jurisdictions, most notably in the UK (-6.3%), Hong Kong (-13%) and Spain (-54.3%).<sup>14</sup></li> </ul>

<sup>13</sup> This category includes not only BDs, but also other entities with similar structures, such as securities dealers and money market dealers.

<sup>14</sup> In Spain, the decrease was linked to the transformation of the biggest BD into a bank.

	Trends in 2021
	<ul style="list-style-type: none"> <li>• BDs' trends and risks are discussed in more detail in Section 2.5.</li> </ul>
<b>Structured finance vehicles (SFVs)</b>	<ul style="list-style-type: none"> <li>• Size at end-2021: \$6 trillion.</li> <li>• SFV assets continued to follow the upward trend that began in 2017 and grew by 12.5% in 2021.</li> <li>• Out of 25 reporting jurisdictions, 17 reported an increase in SFV assets in 2021.</li> <li>• As in previous years, the increase was mostly driven by AEs, particularly in the Cayman Islands, Ireland and the United States.</li> <li>• SFVs' trends and risks are discussed in more detail in Section 2.7.</li> </ul>
<b>Trust companies (TCs)</b>	<ul style="list-style-type: none"> <li>• Size at end-2021: \$4 trillion.</li> <li>• TC assets grew by 3.5% in 2021 after three consecutive years of decrease.</li> <li>• Singapore was the main contributor to this growth, with a growth rate of 32.6% in 2021: the government successfully set up efforts to attract family offices and high net worth individuals, whose assets are managed by TCs. China accounted for 79.0% of global TC assets in 2021. This share has been declining since 2018 because of a regulation issued in 2017 on banks and TCs.<sup>15</sup> TC assets in China amounted to \$3.2 trillion, a reduction of about 22% compared to 2017.</li> <li>• TCs' trends and risks are discussed in more detail in Section 2.7.</li> </ul>
<b>Captive financial institutions and money lenders (CFIMLs)</b>	<ul style="list-style-type: none"> <li>• Size at end-2021: \$24 trillion.</li> <li>• Captive financial institution and money lender assets increased in 2021 (3.5%), after three consecutive years of declines.</li> <li>• Ten jurisdictions reported an increase.</li> <li>• Canada was the major contributor to this growth, where CFIML assets increased by 18.5% in 2021 because of higher valuations of their ownership interest in other entities. Captive financial institution and money lender assets are concentrated in AEs, which held a share of 94.3% of total global CFIML assets.</li> </ul>
<b>Central counterparties (CCPs)</b>	<ul style="list-style-type: none"> <li>• Size at end-2021: \$1 trillion.</li> <li>• CCP assets grew strongly in 2021 (32.4%).</li> <li>• The United Kingdom's and the United States' increases (respectively, 32.4% and 39.4%) explained almost 95% of the growth. In both cases, this increase was due to a higher volume of cleared repo transactions. These two jurisdictions accounted for 90% of CCP assets, however, in some jurisdictions where CCPs also held a banking licence, they were counted as banks and not reported separately.</li> </ul>
Does not include data for Russia.	
Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.	

<sup>15</sup> The policy issued by Chinese authorities in 2017 requires that TCs 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.

### 1.3. Credit assets held by the NBFIs sector continued to increase, albeit at a lower rate than in the banking sector

#### 1.3.1. Credit and loan assets

The credit activities of NBFIs entities are of particular importance to financial stability because maturity/liquidity transformation, leverage and imperfect credit transfer can give rise to vulnerabilities that may amplify or transmit shocks. Moreover, in jurisdictions where the NBFIs sector plays a more significant role in credit intermediation, NBFIs entities that are not sufficiently resilient to shocks could slow the flow of credit to the wider economy, especially during downturns. Credit assets of financial intermediaries include loans,<sup>16</sup> debt securities,<sup>17</sup> and cash on deposit, or “deposit assets”. A discussion of the deposit assets of financial intermediaries is included in Section 1.5.2.

**In 2021, credit assets held by banks (including deposits) increased at a faster pace than credit assets held by ICs, PFs and OFIs, as was the case in 2020.** Credit assets held by banks accounted for 64.3% of total credit assets in the financial system (Graph 1-6, LHS). In 2021, banks’ credit assets grew by 7.0% and banks’ loan assets grew by 7.5%. Banks continued to hold the largest share of credit assets in the financial system and remained the single largest source of loans, accounting for 84.5% of global loan assets at end-2021. For ICs, credit asset growth slowed considerably from 6.5% in 2020 to 1.3% in 2021, well below the five-year average from 2016–20 (5.4%). For PFs, credit assets’ growth rate (5.1%) also slowed in 2021 compared to 2020 (7.9%) (Table 1-2).

**Table 1-2: Credit asset composition and growth in 2021, 21+EA-Group**

	Total	Banks	ICs	PFs	OFIs
<b>Credit assets (including deposits)</b> (USD trillion at end-2021)	236.3	151.8	20.7	10.9	52.9
Growth (% in 2021)	6.3	7.0	1.3	5.1	6.7
<b>Credit assets (excluding deposits)</b> (USD trillion at end-2021)	212.5	134.2	19.6	10.2	48.7
Growth (% in 2021)	6.5	7.3	1.2	5.3	6.6
<b>Loan assets</b> (USD trillion at end-2021)	117.0	98.9	2.5	0.3	15.4
Growth (% in 2021)	7.2	7.5	1.3	9.8	6.4

Does not include data for Russia.

Source: Jurisdictions’ 2022 submissions (national sector balance sheet and other data); FSB calculations.

<sup>16</sup> These are also referred to as loan assets, which include overdrafts, instalment loans, hire-purchase credits, and loans to finance trade credit.

<sup>17</sup> Examples of debt securities include bills, bonds, commercial paper.

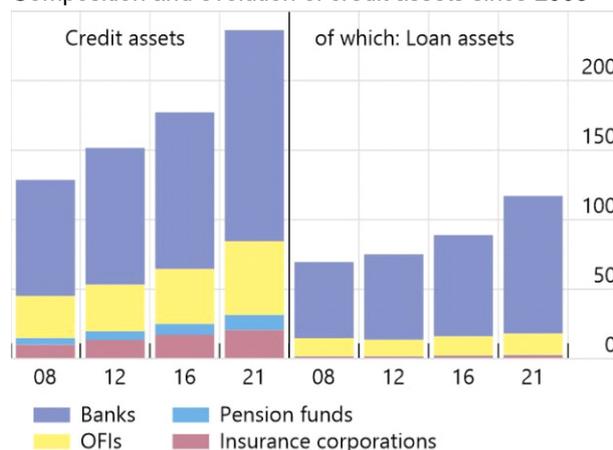
**Drivers of credit growth differed across financial institutions on the basis of their business models.** OFIs' credit assets have increased significantly since 2008 (by \$30.2 trillion) and amounted to \$52.9 trillion in 2021 (Table 1-2). In contrast to banks, this increase was mostly related to growth in credit assets other than deposits and loans. Bank business models included extending loans to borrowers, whereas OFIs, in aggregate, were less involved in the direct provision of credit through lending.

### OFIs' share of credit assets continued to increase in 2021, although growth was lower compared to 2020

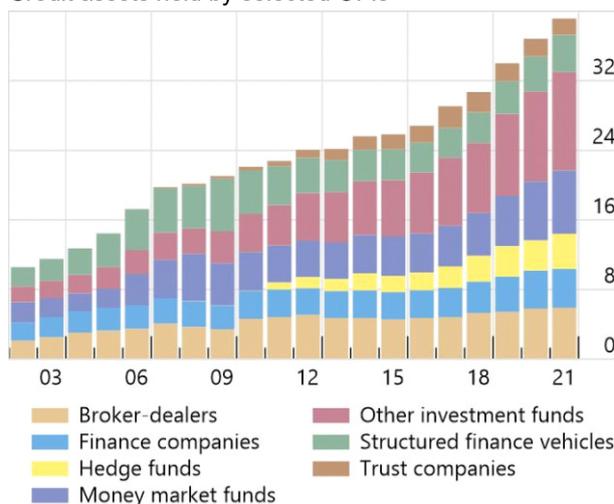
In USD trillions, 21+EA-Group

Graph 1-6

Composition and evolution of credit assets since 2008<sup>1</sup>



Credit assets held by selected OFIs<sup>1</sup>



<sup>1</sup> Includes data for Russia up until 2020.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

**Among other financial intermediaries, other investment funds continued to hold the largest share of credit assets (21.4%) (Graph 1-6).** Credit assets of OFIs increased in most jurisdictions except for Indonesia (-1.6%), Spain (-4.2%), Chile (-7.5%) and the Netherlands (-2.7%). Among OFIs, credit assets held by SFVs increased by 7.8 %, mainly driven by the United States (growth of 11.8%).<sup>18</sup> Credit assets held by OIFs increased by 8.3%, driven by the United States (9.2%), Luxembourg (10.9%), and Japan (6.5%). Credit assets held by HFs increased the most (by 16.9%).

#### 1.3.2. Wholesale funding and repos

Wholesale funding instruments are important funding sources for financial intermediaries, such as banks in certain jurisdictions. These include repurchase agreements (repos), which are a major channel for circulating cash and collateral through the financial system. As a means of funding inventory, these instruments support price discovery and secondary market liquidity for a wide variety of securities.

<sup>18</sup> In the United States, the favourable funding market conditions for specialty finance companies were driven in part by the Federal Reserve's establishment of the Term Asset-Backed Securities Loan Facility (TALF), which tightened spreads for all major Asset-Backed Securities asset classes: senior tranche spreads of major ABS products are at or near multi-year lows as of September 2021 (FSOC, 2021 Annual Report)

They can also be used by NBF1 entities to create short-term, money-like liabilities and build-up leverage, facilitating credit growth, and maturity/liquidity transformation outside the banking system. Wholesale funding increases interconnectedness among financial institutions. Although increasing interconnectedness may support efficient risk sharing in the financial system, in periods of stress it may also contribute to procyclicality.

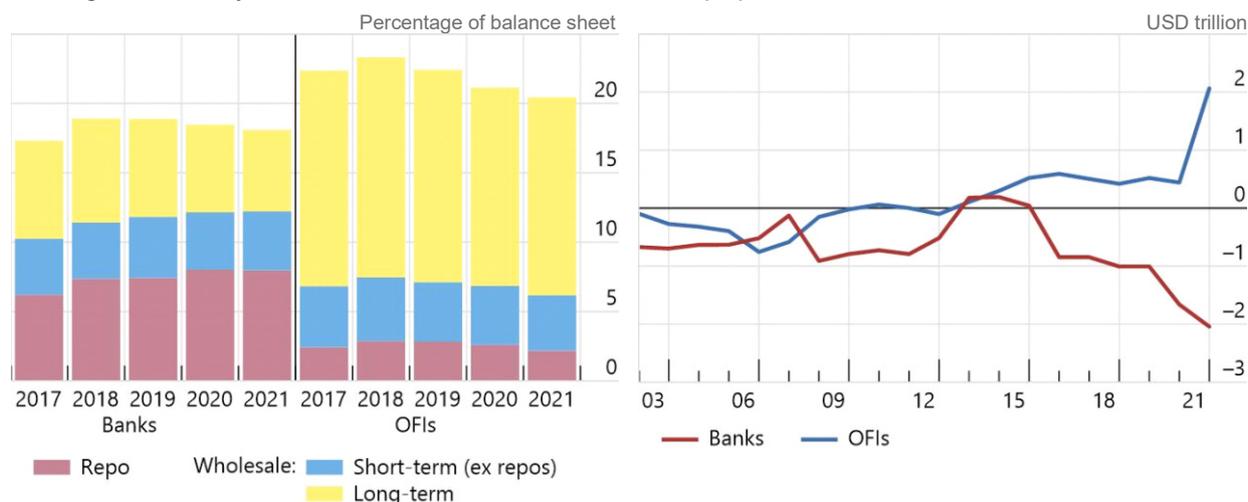
## OFIs' net level of repo assets rebounded significantly in 2021

29-Group

Graph 1-7

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

Net repo position<sup>2</sup>



<sup>1</sup> Short-term funding is defined as wholesale funding whose residual maturity is less than 12 months. Includes data for Russia up until 2020. <sup>2</sup> Repo assets less repo liabilities. 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. Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

**OFIs continued to be net providers of cash in the repo market and their net level of repo assets rebounded remarkably in 2021 (Graph 1-7, RHS).** OFI repo assets increased by 35.3%, while repo liabilities decreased by 3.0%. This trend was primarily driven by U.S. MMFs that increased their investments in the Federal Reserve's overnight reverse repo facility. The Federal Reserve introduced an overnight reverse repo facility in 2013, which serves as a monetary policy tool intended to improve control over short-term interest rates, and added MMFs as eligible counterparties.<sup>19</sup> This facility provides an opportunity to invest cash on a collateralised basis at a rate set by the Federal Reserve and does not pose the same type of risks present in a repo transaction with a private counterparty. In 2021, the rate paid by the facility was set at 5 basis points above the lower bound for the target federal funds rate, contributing to the growth of the facility and its elevated usage by U.S. MMFs that continued in 2022. Banks' use of repos also increased, but at a lesser degree compared to 2020, and they remained net recipients of cash in repo transactions.

**OFIs' reliance on wholesale funding and repo funding has decreased since 2018 (Graph 1-7, LHS).** OFIs relied slightly more on long-term wholesale funding (12.1% of total OFI assets) than on short-term wholesale funding (4.4% of total OFI assets, excluding repos). The proportion of long-term to total wholesale funding varied across jurisdictions.

<sup>19</sup> See SEC (2021), *Primer: Money Market Funds and the Repo Market*, February.

**Amongst the 18 jurisdictions that reported OFI repo activity, MMFs, TCs, and SFVs tended to be net cash providers through reverse repo transactions, while OIFs, BDs, and FinCos were net recipients of cash.** HFs served as net cash providers in reverse repo in 2021, reversing their repo position as net cash recipients in 2020. Whereas MMFs, SFVs, FinCos, expanded their net repo positions, BDs, OIFs, and TCs' net repo positions decreased in 2021.

## 1.4. Innovation

This section presents the results of a survey that the FSB conducted among participating jurisdictions, which were asked to report whether certain financial innovations – as well as additional innovative services/products – were present in their jurisdictions. Although not explicitly covered by this survey, innovations related to crypto-asset markets are being covered by other FSB work streams. While crypto-assets remain small compared to the size of the global financial system, their market capitalisation grew by 3.5 times in 2021 to \$2.6 trillion, before plummeting to below \$1 trillion by late 2022.<sup>20</sup> 2022 also saw several failures of crypto-asset entities, which have raised important questions about business models, conduct issues, and financial stability implications within the crypto-asset sector. Crypto-asset markets have been fast-evolving and could reach a point in the future where they represent a threat to global financial stability because of their scale, structural vulnerabilities, and increasing interconnectedness with the traditional financial system. Given this growing importance, the FSB has conducted work on the financial stability risks of crypto-assets,<sup>21</sup> on lessons from the May/June 2022 crypto-asset market turmoil,<sup>22</sup> and on a framework for the international regulation of crypto-asset activities and markets.<sup>23</sup> This section does not cover crypto-asset issues and focuses on reporting the results of the survey.

For this year's exercise, the survey was updated to include other novel forms of credit intermediation, products and activities in recent years (e.g. products that offer exposures to crypto-assets, BigTech engagement in novel forms of credit intermediation, and app-based challenger or neobanks). A complementary survey was also conducted as part of this year's monitoring exercise on FinTech credit intermediation, with the aim of reviewing recent developments and the progress made by jurisdictions on collecting related data since the last such survey in 2018 (See Box 1-2).<sup>24</sup>

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<sup>20</sup> Source: Coin Dance, CoinGecko and FSB calculations.

<sup>21</sup> FSB (2022), *Assessment of Risks to Financial Stability from Crypto-assets*, February.

<sup>22</sup> FSB (2022), *Statement on International Regulation and Supervision of Crypto-asset Activities*, July.

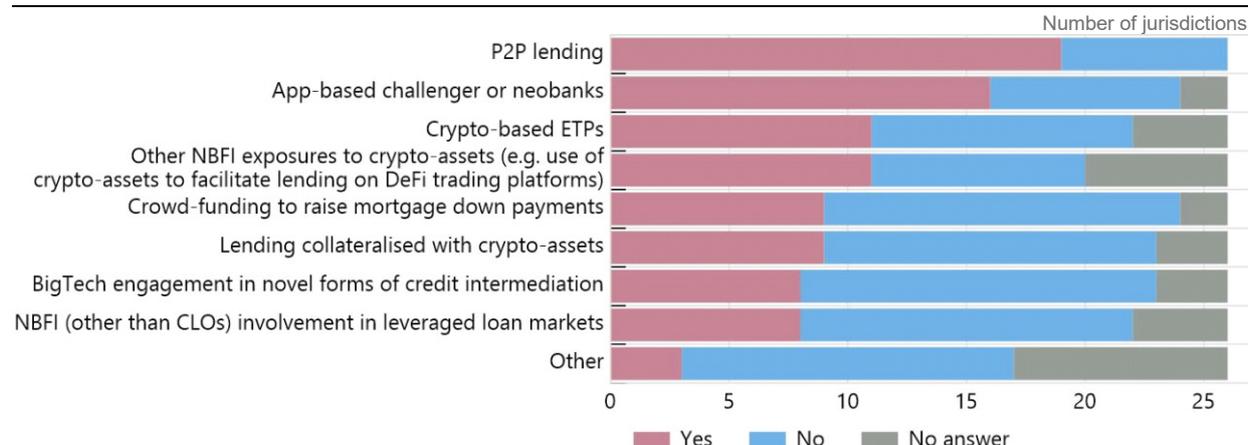
<sup>23</sup> See the FSB [press release](#), October 2022, as well as the two FSB reports, *Regulation, Supervision and Oversight of Crypto-Asset Activities and Markets: Consultative document* and *Review of the FSB High-level Recommendations of the Regulation, Supervision and Oversight of "Global Stablecoin" Arrangements: Consultative report*, both October 2022.

<sup>24</sup> See case study 1 of FSB (2019), *Global Monitoring Report on Non-Bank Financial Intermediation 2018*, February.

## Peer-to-peer (P2P) lending was the most commonly reported financial innovation

at end-2021

Graph 1-8



Responding jurisdictions were Argentina, Australia, Belgium, Brazil, Canada, Chile, China, France, Germany, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Korea, Luxembourg, Mexico, Netherlands, Saudi Arabia, Singapore, South Africa, Spain, Switzerland, United Kingdom and United States.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

The most common innovation noted in the 2022 exercise, reported by 19 jurisdictions, was peer-to-peer (P2P) lending (see Graph 1-8).<sup>25</sup> Although P2P lending remains comparatively small within NBFIs, a number of jurisdictions reported that regulations are in place aiming to mitigate financial risks. But potential cyber, operational, and privacy risks might not always be covered by such mitigating regulations yet. One jurisdiction noted that, although P2P lending is not available, it is still possible for institutional investors to gain exposures to P2P loans by buying notes issued by special purpose vehicles backed by P2P loans or by buying shares of an investment fund that finances foreign-based P2P platforms.

Another financial innovation that has been widely adopted as a result of the growing digitalisation of retail financial services is “neobanks”, sometimes referred to as “challenger banks”.<sup>26</sup> Sixteen jurisdictions reported neobanks operating in their financial systems, making it the second-most common innovation. Although these institutions in some jurisdictions may be subject to similar regulatory requirements as traditional banks and their balance sheet sizes do not represent a significant part of the banking sector, some potential risks were identified (e.g. cyber risks, potential higher risk appetite than traditional banks, aggressive business models with higher risk clients, less mature credit risk analysis, less robust know-your-customer procedures).

Eleven jurisdictions reported NBFIs entities' involvement in crypto-assets, such as equity/venture capital investments in crypto-asset related firms; high-return saving accounts used by funds and which facilitate credit in DeFi platforms; and traditional brokerage firms that facilitate access to crypto-asset markets in their product offerings through non broker-dealer affiliates/subsidiaries. Some jurisdictions also mentioned the challenge to monitor and assess the size of NBFIs entities' exposures to the crypto-assets ecosystem, given the lack of data. Reporting jurisdictions also

<sup>25</sup> For a detailed discussion of P2P lending and other decentralised platforms, see FSB (2019), *Decentralised financial technologies: Report on financial stability, regulatory and governance implications*, June.

<sup>26</sup> Neobanks are FinTech firms that offer apps, software and other technologies to streamline mobile and online banking. These FinTechs generally specialise in particular financial products, like checking and savings accounts. They also tend to be nimbler and more transparent than their traditional bank counterparts, even though many of them partner with such institutions to insure their financial products.

mentioned so-called “stablecoins”, which are crypto-assets that seek to maintain a stable value by linking their price to a reference asset or pool of assets (cf. first paragraph of this section).

The survey also requested information on the existence of lending collateralised with crypto-assets, crypto-asset-based exchange-traded products (ETPs) and other NBFIs’ exposures to such assets. Nine jurisdictions reported the presence of entities, typically FinTech firms, that extend loans with crypto-assets as collateral. Although most of these jurisdictions consider the volume of such loans to be insignificant currently, some identified potential financial stability risks associated with this type of activity. These risks include the potential for customers to become over-indebted as a result of crypto-asset over-collateralisation, the loss of crypto-assets used as collateral, and/or where the potentially high price volatility of crypto-assets could lead to breaches of loan-to-value limits for customers. Eleven jurisdictions also reported having crypto-asset-based ETPs listed on their local exchanges. Some jurisdictions noted potential exposures or access to crypto-asset-based ETPs, which were listed in other jurisdictions and which had passporting rights. Jurisdictions did not mention that crypto-asset-based ETPs were viewed as posing financial stability risks, given their limited size at the time of the survey. The main concerns mentioned related to investor and consumer protection.<sup>27</sup>

Nine jurisdictions reported the use of crowdfunding to raise mortgage down payments, two more than last year. Some of these firms were part of the P2P lending industry. In some jurisdictions it was possible to raise funds through crowdfunding/P2P to buy, rent or to renovate a property. In addition, a couple of jurisdictions mentioned the presence of firms/platforms that raise funds to develop real estate projects via crowdfunding, with investors’ returns linked to the resale/rent of the property or the repayment of the loans plus interest. Although more jurisdictions reported the use of real estate-related crowdfunding over the last few years, its size remained relatively small compared to the overall real estate financing market. Associated risks also appeared small. Some jurisdictions, however, mentioned concerns because of the additional debt burden for borrowers and provision of credit to unsuitable candidates.

Eight jurisdictions reported the involvement of BigTech firms in novel forms of credit intermediation and financial services.<sup>28</sup> Some examples of financial products/services that BigTechs offer are digital wallets; facilitation of credit through credit lines, credit cards and buy-now-pay-later options; early payment of credit card receivables at a discount to firms in their e-commerce platforms; investment services; and insurance. In addition, some BigTech firms had indirect exposure to credit intermediation through the provision of technological solutions to FinTech institutions, such as artificial intelligence services for credit scoring.

Eight jurisdictions reported NBFIs’ involvement in leveraged loan markets (other than via collateralised loan obligations), explaining that some funds held these types of loans on their balance sheets. In many jurisdictions, the concern was linked to liquidity mismatches for funds offering a daily redemption schedule, given that these loans were typically illiquid instruments.

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<sup>27</sup> Some jurisdictions noted concerns about financial products with exposures to “virtual assets” (e.g. crypto-assets) being offered to retail investors and therefore restrict or prohibit the commercialisation of financial products with exposures to crypto-assets to retail investors. In Ireland, for example, investment funds that seek to gain exposures (either direct or indirect) to crypto-assets have to submit a request to the central bank outlining how the risks associated with such exposures could be managed effectively. Such requests are highly unlikely to be approved for retail investment funds (see Central Bank of Ireland, *AIFMD QA Edition 44*, December 2021, ID1145).

<sup>28</sup> For a discussion of the evolving role of BigTech in financial services, see FSB (2022), *FinTech and Market Structure in the COVID-19 Pandemic: Implications for financial stability*, March; FSB (2020), *BigTech firms in finance in emerging market and developing economies*, October; and FSB (2019), *BigTech in finance: Market developments and potential financial stability implications*, Decembe.

In several cases, jurisdictions reported regulatory requirements for liquidity risk management as a way to mitigate associated risks.

Finally, participating jurisdictions also referred to FinTech credit intermediation in the retail real estate sector (Mortgage Tech), where digital companies act as intermediaries between banks and borrowers, in exchange for a fee that traditional banks pay for each mortgage brought by the intermediary.

### Box 1-2: FinTech credit data collection

The rapidly increasing role of online platforms in extending credit or facilitating credit creation (FinTech credit) has been highlighted by many jurisdictions as a key development in the non-bank financial space since the 2017 monitoring exercise. This year, the FSB conducted a survey among participating jurisdictions on FinTech credit data collection, thereby updating the previous survey conducted in 2018. Twenty-five jurisdictions responded to the survey, which is two more than in 2018.

The survey examines the developments of FinTech credit across jurisdictions, focusing on: (i) the current definition of FinTech credit; (ii) the treatment of FinTech credit in the National Financial Accounts (NFAs) and the FSB's annual monitoring exercise; (iii) jurisdictions' state of collection of data regarding FinTech credit; and (iv) remaining challenges to data collection and classification of entities.

FinTech credit activities reported by members include a wide range of business models, including internet-based lending, crowd-funding activities, payment and e-money firms services. The key trends that emerged from the analysis are listed below:

- **Definition of FinTech credit.** The share of jurisdictions having a formal or informal definition of FinTech credit has grown since 2018 (44% vs. 30%). Three jurisdictions indicated that they changed their definition in the last four years to better capture new business models.

Three other jurisdictions did not yet have a formal definition embedded in their legal framework, but either defined it informally (one jurisdiction), or used definitions provided by other institutions, such as the FSB (two jurisdictions). In four other jurisdictions, there is no definition of FinTech credit in general terms, but they instead referred to a specific type of Fintech credit activity, such as "lending crowdfunding".

- **Reporting of FinTech credit in NFAs.** Of the responding jurisdictions, 40% capture FinTech credit in their NFAs, compared to 38% of the reported jurisdictions in 2018. Ten respondents stated that non-bank FinTech credit activities were reported in the FSB economic function classification template. Among those, the majority classified FinTech credit into EF2. One jurisdiction included FinTech credit entities in EF1.

- **Data collection on FinTech credit.** Fourteen respondents have already started collecting some data on FinTech credit by firms domiciled within their jurisdictions; however, only two collected data on FinTech credit by firms domiciled outside their jurisdictions.

Data were collected via the supervisory channel in most cases, but there were also other channels of data collection: some statistics may be provided by market participants, central registers of credit, securities regulators, company websites, rating agencies and other private providers. In a few cases, data were collected through ad-hoc surveys.

Three jurisdictions completed previous plans to improve their data collection, while nine jurisdictions still plan to improve their data collection.

- **Remaining challenges to data collection and classification of entities.** Similar to the responses from jurisdictions in 2018, there are still challenges in collecting data because they are not included in jurisdictions' supervisory reporting and because market data are unreliable.

Progress is, however, gradually being made and a smaller proportion of jurisdictions noted the lack of sufficient regulatory power (24% vs. 35% in 2018).

The leading challenges encountered by jurisdictions while classifying assets of FinTech credit entities relate to (i) the absence of an official register of FinTech credit firms (14 jurisdictions); (ii) the inability to separately identify relevant entities/activities in current data sources (12 jurisdictions); (iii) the non-inclusion of FinTech credit entities/activities in supervisory reporting and the lack of a clear definition (11 jurisdictions); and (iv) insufficient disclosure about FinTech credit activities in firms' financial statements (11 jurisdictions).

The G20 finance ministers and central bank governors have endorsed, in October 2022, a work plan to tackle data gaps in Fintech credit (among other topics).<sup>29</sup> The FSB will further assess in 2023 possibilities to collect data on Fintech credit in its annual monitoring exercise.

## 1.5. Direct interconnectedness among financial sectors

Financial interconnectedness is a feature of an open and integrated global financial system. It may help share risk across financial sectors but may also serve as a channel for risk transmission, particularly when entities along intermediation chains employ a high degree of leverage or engage in maturity/liquidity transformation. Therefore, measures of interconnectedness among banks, OFIs, and other NBFIs can serve as important indicators of potential contagion, within and across borders.

This section focuses on direct domestic balance sheet interconnectedness between banks, ICs, PFs, and OFIs, such as direct borrowing and lending, or investment exposures between two counterparties. It also covers cross-border linkages. Interconnectedness is further discussed in each economic function section.

To measure direct interconnectedness, the FSB compiled aggregated balance sheet data to identify balance sheet asset and liability exposures between financial sectors that arose from credit provision and/or investment in a counterparty. These aggregated data were used to calculate measures of interconnectedness between sectors, including exposures and funding dependence.

### 1.5.1. *While large data gaps remain, OFIs continued to have the largest cross-border linkages across sectors*

**Data gaps make it difficult to fully assess the extent of interconnectedness and, in several jurisdictions, most direct linkages remained unspecified.** As in past exercises, the collection of data by type of exposure and the collection of disaggregated data on cross-border linkages lies outside the scope of the 2022 monitoring exercise. As a result, the nature of exposure and the set of cross-border entities with which these links exist are unknown. In addition, information on linkages among sectors is not available for all jurisdictions and is subject to comprehensiveness and consistency issues, limiting the capacity to do in-depth analyses. Jurisdictions reported several reasons explaining this gap: having to compile data from different sources, which creates concerns about consistency of data; data gaps relating to specific entity types; or the data simply not being reported. However, the information is gradually improving

<sup>29</sup> See G20 finance ministers and central bank governors, [Joint Press Release](#), October 2022; and IMF (2022), [G20 Leaders Welcome New Data Gaps Initiative to Address Climate Change, Inclusion and Financial Innovation](#), November.

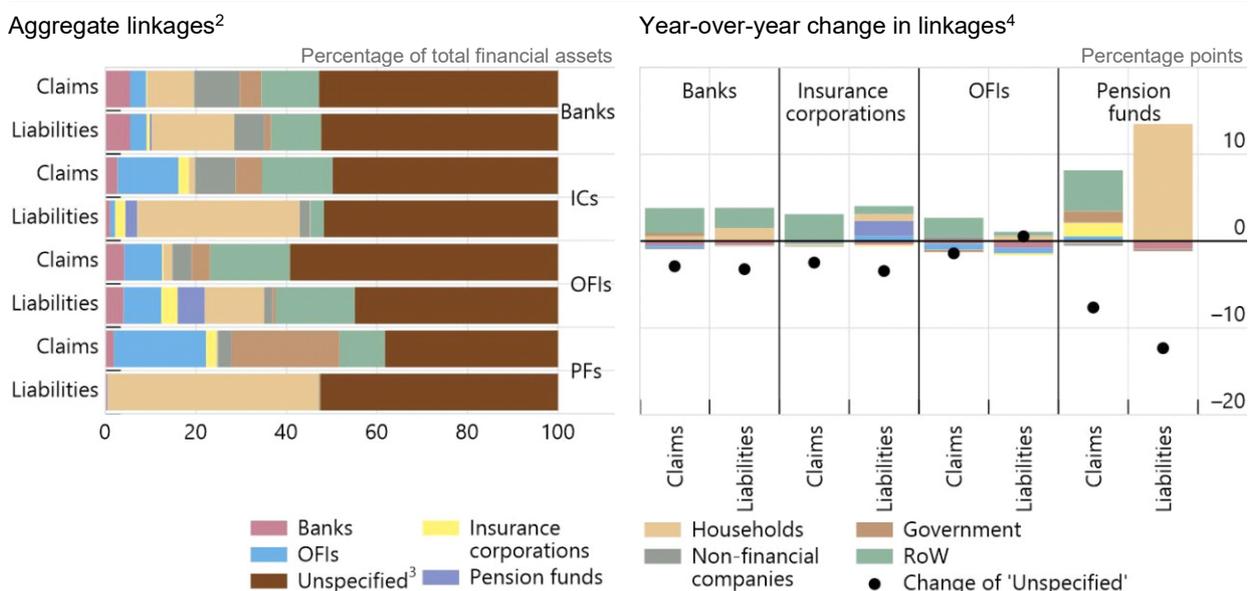
(see Graph 1-9). Participating jurisdictions are committed to continue improving data quality and consistency.

**Excluding the unspecified linkages, OFIs continued to have the largest cross-border linkages across sectors, expressed as a percentage of both total claims and liabilities** (see Graph 1-9). OFIs' largest funding source was cross-border funding (31.7%), followed by households (23.7%), other OFIs (15.2%), and PFs (10.9%). Banks had substantial connections with households, non-financial corporations and the rest of the world (RoW), i.e. cross-border linkages on both asset and liability sides. Households remained the largest providers of funding to banks, ICs, and PFs. ICs and PFs continued to have large claims on OFIs, reflecting the use of investment funds to manage (part of) their assets. PFs were most exposed to the government sector, which reflected PF's common practice to match long-term liabilities with long-term assets such as government bonds. The size and the types of entities that comprised the links varied significantly across jurisdictions.

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

29-Group

Graph 1-9



<sup>1</sup> Does not include data for Russia. <sup>2</sup> The total reported linkages of all participating jurisdictions as a percentage of total liabilities and claims of each sector. The computed measures focus on direct interconnectedness. Includes data from 27 jurisdictions. <sup>3</sup> Unspecified indicates linkages to other sectors not identified by the jurisdiction or not covered in this report. <sup>4</sup> The Y-o-Y change of unspecified linkages compares the current year's data collection on interconnectedness data to the previous year's data collection. Due to changes in the data collection template, as well as changes in the composition of the displayed entities' balance sheets, data collections are not like-for-like comparable across different Global Monitoring Reports. Therefore, this comparison serves only as an approximation of how the data coverage of interconnectedness changed compared to the previous year.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

#### 1.5.2. Banks continued to diversify their sources of funding beyond the NBFIs sector, while the OFI exposure to banks kept decreasing

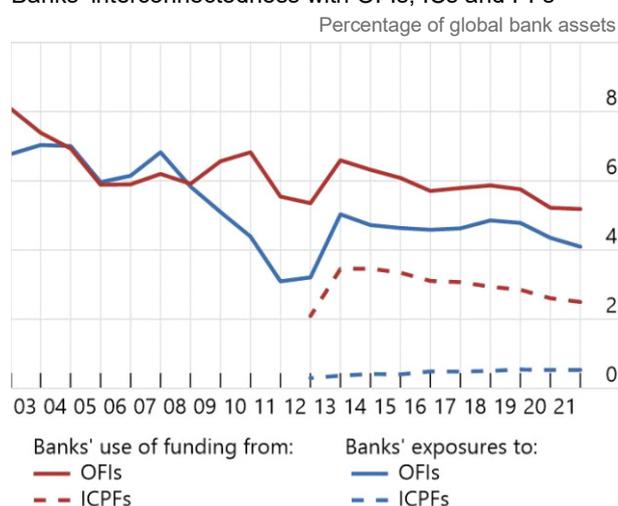
**Banks and NBFIs entities are directly connected, with funding channels operating in both directions.** For instance, banks often extend credit to (or invest in) ICs, PFs or OFIs, while these entities provide funding to banks or deposit the non-invested part of customer assets with custodian banks.

**Banks continued to be net recipients of funding from NBFIs entities, although this funding has been gradually decreasing since 2013 (Graph 1-10).** Banks' funding and exposures were mainly with OFIs, while ICs and PFs also contributed to their funding. Beyond these trends, there were large variations among jurisdictions. In South Africa, funding from NBFIs entities was larger than 30% of total banks' assets; in Luxembourg more than 20%; and in Chile, Korea, Australia, Brazil, Switzerland, and Argentina more than 10%. In Luxembourg<sup>30</sup> and Brazil,<sup>31</sup> funding was predominantly from OIFs; in Switzerland and South Africa, predominantly from the category "Other OFIs" (which included CCPs, HFs, TCs and unidentified OFIs); and in Argentina, mainly from MMFs. Jurisdictions where banks received significant funding from NBFIs entities were not necessarily those where banks had large exposure to NBFIs entities. Banks in South Africa, Belgium, the United Kingdom and Canada had exposures to NBFIs entities of more than 6% of total assets. Data showed that in several jurisdictions, banks' exposures were predominantly to "Other OFIs".

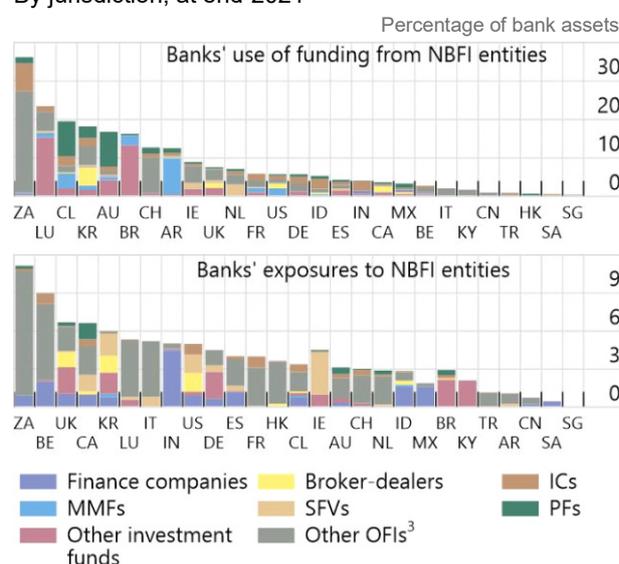
### Banks' use of funding from NBFIs entities was larger than its exposure to NBFIs entities

Graph 1-10

Banks' interconnectedness with OFIs, ICs and PFs<sup>1</sup>



By jurisdiction, at end-2021<sup>2</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> Funding from and exposures to ICs and PFs are merged ("ICPFs"). Includes data for Russia up until 2020. The sharp rise in OFI linkages in 2013 partly reflected the availability of euro area aggregate data from 2013 onwards. <sup>2</sup> For upper (lower) panel, banks' use of funding from (exposure to) the corresponding NBFIs sub-sector, net of prudential consolidation (where data permits), as a share of bank assets. Neither includes data for Russia. <sup>3</sup> "Other OFIs" includes CCPs, HFs, TCs and unidentified OFIs.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

### In 2021, NBFIs entities' interconnectedness with the banking sector continued to decrease (Graph 1-11).

This trend has been observed since 2013 both in terms of funding and exposures. In 11 jurisdictions, the use of funding from banks to OFIs was significant and at least 10% of OFI assets. In most cases, the OFIs belonged to the category "Other OFIs", with the exception of Indonesia and India – where they were FinCos – and Germany and the United Kingdom – where they were OIFs. OFIs' exposures to banks were very large in South Africa and Argentina (more than 30% of OFI assets), with South African OFIs belonging to the category "Other OFIs" and

<sup>30</sup> These linkages arose primarily as investment funds deposit part of their cash at custodian banks in Luxembourg.

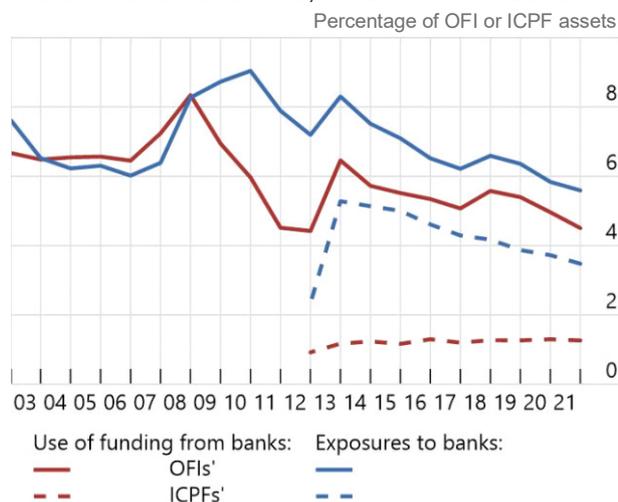
<sup>31</sup> In Brazil, banks are not heavily dependent on OIFs' funding. Investment funds channel their liquidity to banks via reverse repo operations backed by government debt and the Central Bank drains this liquidity through repos with banks.

Argentinian OFIs being predominantly MMFs. OFIs in 10 jurisdictions had exposures to banks of more than 10% of their assets.

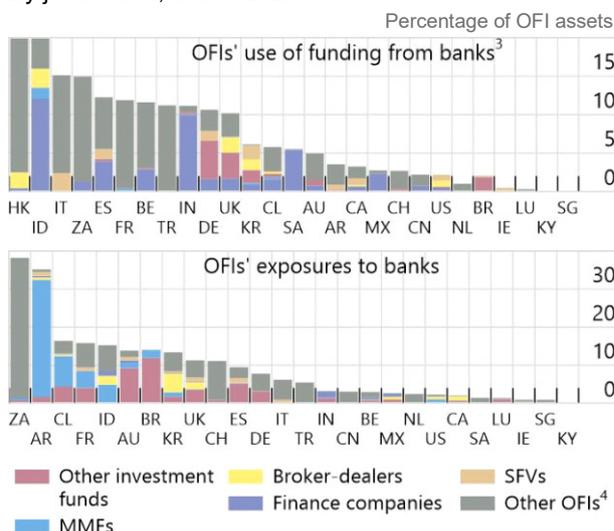
## NBFI entities' interconnectedness with the banking sector decreased relative to NBFI assets

Graph 1-11

Interconnectedness of OFIs, ICs and PFs with banks<sup>1</sup>



By jurisdiction, at end-2021<sup>2</sup>



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

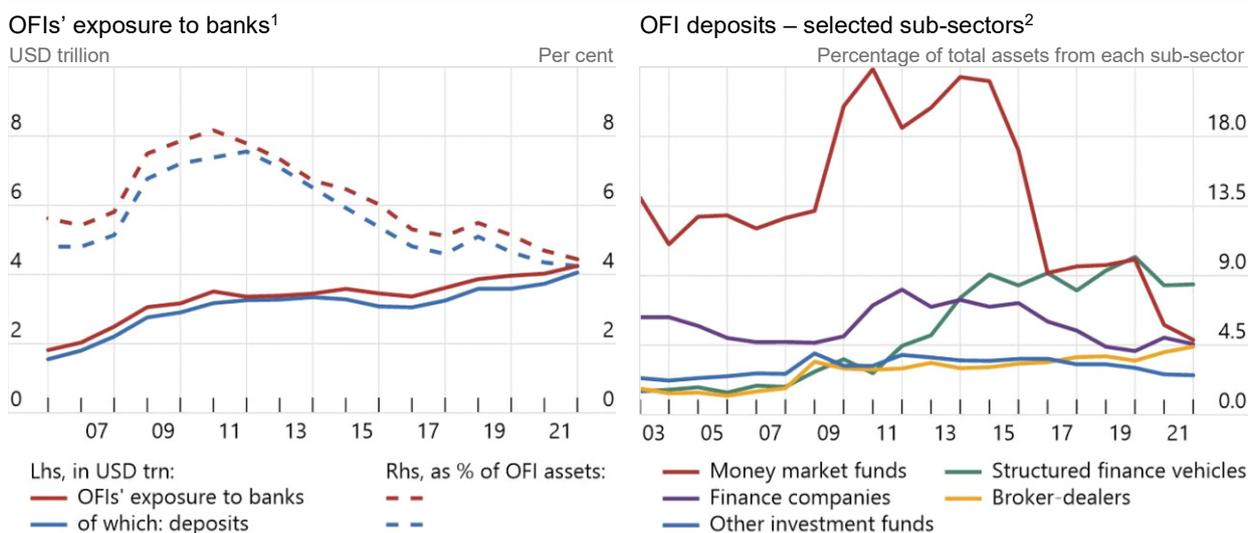
<sup>1</sup> Includes data for Russia up until 2020. The sharp rise in OFI linkages in 2013 partly reflected the availability of euro area aggregate data from 2013 onwards. <sup>2</sup> For upper (lower) panel, banks' claims on (liabilities to) the corresponding OFI sub-sector, net of prudential consolidation (where data permits), as a share of OFI assets. Neither includes data for Russia. <sup>3</sup> Bars for Hong Kong (33%) and Indonesia (21%) are not shown entirely because they are particularly high compared to the rest of the jurisdictions. <sup>4</sup> 'Other OFIs' includes CCPs, HFs, TCs and unidentified OFIs.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

**OFIs' exposure to banks also continued to decrease in 2021 (Graph 1-12).** While these liabilities were increasing in absolute terms, the exposure of OFIs to banks as a percentage of OFI assets was on a decreasing trend that started in 2010 for overall funding, and in 2011 for deposits. Looking at sub-sectors, MMF exposure to banks decreased significantly since 2014. For example, in the United States, asset inflow to the MMF sector shifted towards short-term government MMFs, which invest almost exclusively in securities issued by the U.S. federal government, its agencies, and repos backed by such securities. Relative to each sub-sector's total assets, SFVs were the most exposed to banks. BDs' exposure to banks continued on its increasing trend, which started 10 years ago. The OFIs' exposure to banks was mostly in the form of deposits, as in the past.

## OFIs' exposure to banks continued to decrease

Graph 1-12



<sup>1</sup> Includes data from 16 jurisdictions, including data for Russia up until 2020. <sup>2</sup> Includes data from 17 jurisdictions. Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

### 1.5.3. OFIs, pension funds and insurance corporations invested in, and provided funding to, one another

**Beyond direct funding and credit exposures to banks, linkages exist among NBFi entities; for example, ICs and PFs invest in OFIs.** While ICs and PFs tend to invest in OFIs (Graph 1-13), they typically do not obtain significant funding from OFIs, so analysis of that is not included in this report.

**OFIs' use of funding from banks and ICs continued to decline, following a trend that started more than 10 years ago.** These two sources of funding were less important than the funding from PFs to OFIs. Linkages between OFIs appeared to have grown significantly over the last five years, although data limitations may underestimate these linkages. Again, the situation varied greatly across jurisdictions. In Australia, linkages were highest with PFs; in Brazil and India with OFIs (and predominantly with "OIFs" for Brazil);<sup>32</sup> in South Africa and France with ICs predominantly.

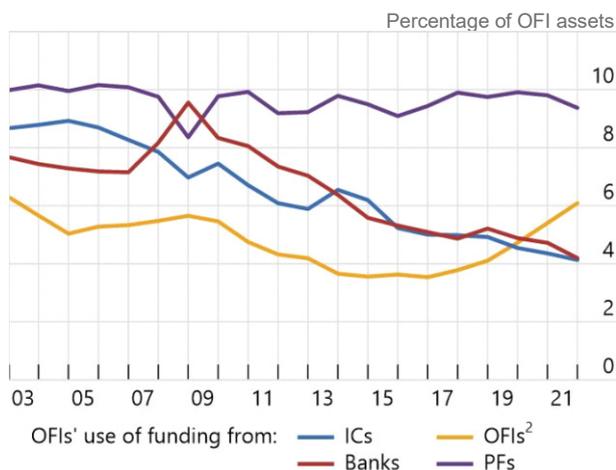
<sup>32</sup> In Brazil, OFI linkages with OIFs were mainly due to funds of funds.

## OFIs' use of funding from banks and insurance corporations decreased over the past decade, while linkages between OFIs increased over the past 5 years

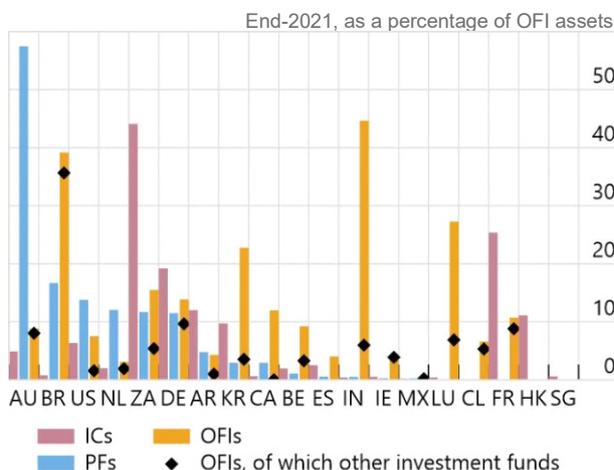
29-Group

Graph 1-13

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



ICs, PFs, and OFIs: Interconnectedness with NBFIs entities<sup>3</sup>



<sup>1</sup> OFIs use of funding from ICs = OFIs' liabilities to ICs as a share of OFI assets. OFIs use of funding from PFs = OFIs' liabilities to PFs as a share of OFI assets. Includes data for Russia up until 2020. <sup>2</sup> Time series data on OFIs' liabilities to OFIs was collected only for a subset of OFIs and, thus, may underestimate OFIs' use of funding from other OFIs. <sup>3</sup> OFIs' use of funding from OFIs was based on data reported on a consolidated basis by jurisdictions, net of entities prudentially consolidated into banking groups. Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

### 1.5.4. OIFs were responsible for a meaningful share of reported OFI cross-border linkages.

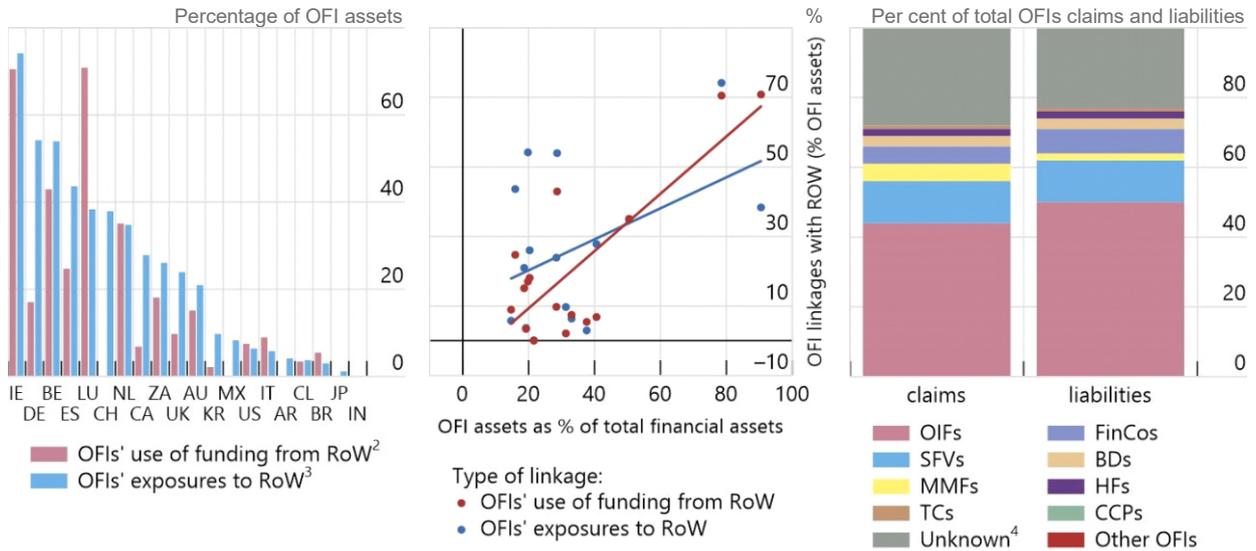
In some jurisdictions, cross-border linkages continued to represent a large share of OFI assets (Graph 1-14). Funding from and exposures to the RoW were larger than 20% of OFI assets in Ireland, Belgium, Spain, Luxembourg, and the Netherlands. Some other jurisdictions like Germany, Canada, and the United Kingdom had large exposure to and relatively small funding from the RoW. Luxembourg stood out as being the only jurisdiction with an amount of “funding from the RoW” that was higher than 70% of OFI assets and more than 30 percentage points higher than its “exposure to the RoW”.<sup>33</sup> As was observed in previous years, the larger the OFIs, the larger the cross-border linkages (both funding and exposures). More than 40% of OFI claims and liabilities were from OIFs, followed by SFVs with close to 10%. More than 20% of total OFI claims and liabilities linkages remained unknown.

<sup>33</sup> The difference was mainly due to the fact that, in Luxembourg, the RoW's claims on OFIs included investments in OFI equity, whereas the RoW's liabilities to OFIs did not.

Aggregate exposures between financial intermediaries and the RoW

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

OFIs' cross-border interconnectedness, at end-2021



<sup>1</sup> Does not include data for Russia. <sup>2</sup> OFIs' liabilities to the RoW as a share of OFI assets. <sup>3</sup> OFIs' claims on the RoW as a share of OFI assets. <sup>4</sup> The "Unknown" portion covers the specified OFI subsectors identified above but represents only linkages with the RoW that could be identified or where jurisdictions could not identify the counterparty's OFI type.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

## 2. The narrow measure of NBFI

This section first describes the FSB’s process for calculating the narrow measure according to the five economic functions or activities.<sup>34</sup> It then provides an overview of global and regional trends for the overall narrow measure across all economic functions.<sup>35</sup> Finally, the section presents trends and risk metrics for each of the five economic functions (see Annex 4 for discussion of the metrics used to describe these risks).<sup>36</sup> Each economic function contains many entity types. Different entity types, and business lines within entity types, may give rise to different types of vulnerabilities (Table 2-1); this report provides an overview of the main risks.

**Table 2-1: Classification by economic functions**

Economic function	Definition	Typical entity types <sup>37</sup>
EF1	Management of collective investment vehicles with features that make them susceptible to runs	MMFs, fixed income funds, mixed funds, credit HFs, <sup>38</sup> REITs
EF2	Loan provision that is dependent on short-term funding	FinCos, 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	BDs, custodial accounts, securities finance companies
EF4	Facilitation of credit creation	Credit insurance companies, financial guarantors, monoline insurers
EF5	Securitisation-based credit intermediation and funding of financial entities	Securitisation vehicles, SFVs, asset-backed securities

**The narrow measure of NBFI grew by 9.9% to \$67.8 trillion in 2021**, at a higher pace than the 5-year annual growth rate of 7.3% between 2016–20. It represented 28.3% of total NBFI assets and 14.1% of total global financial assets.

- **Collective investment vehicles with features that make them susceptible to runs (EF1) grew by 10.6% in 2021**, representing 76.2% of the narrow measure. EF1 assets exhibited an increase above their 5-year average growth of 8.4%. Measures of credit

<sup>34</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>35</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 rely, in part, on the 21+EA-Group sample).

<sup>36</sup> The Experts Group periodically assesses the effectiveness of these metrics as measures of the underlying vulnerabilities of each economic function.

<sup>37</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 introduce vulnerability, by examining underlying economic functions. Thus, the entity types listed should be taken as typical examples. For details, see FSB (2013).

<sup>38</sup> Credit hedge funds are hedge funds that invest primarily in credit assets (e.g. bonds, loans).

intermediation and liquidity transformation for non-government MMFs and fixed income funds remained at elevated levels. Measures of maturity transformation for fixed income funds also remained at elevated levels.

- **Loan provision that is typically dependent on short-term funding (EF2) grew by 7.7% in 2021**, representing 6.8% of the narrow measure. Measures of maturity transformation, leverage and liquidity transformation largely resembled those in 2020, albeit with notable declines in the maximum values of these distributions.
- **Intermediation of market activities dependent on short-term funding (EF3) grew by 5.6% in 2021**, representing 6.8% of the narrow measure. Risk metrics all decreased in 2021.
- **Insurance or guarantees of financial products (EF4) grew by 4.0% in 2021**, representing 0.2% of the narrow measure. Risk metrics for EF4 are not published because of the difficulty in interpreting the sparse risk data provided by jurisdictions.
- **Securitisation-based credit intermediation (EF5) grew by 9.0% in 2021**, representing 7.5% of the narrow measure. Risk metrics increased slightly in 2021.

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

**The FSB’s 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 a wide net to capture an aggregate measure of the financial assets of entities that engage in NBF1 (the NBF1 sector – discussed in Section 1). Such NBF1 entities include ICs, PFs, OFIs and financial auxiliaries.
2. The second step narrows the focus to credit intermediation activities that could give rise to vulnerabilities because they involve liquidity/maturity transformation or use of leverage, resulting in the FSB’s narrow measure of NBF1.<sup>39</sup> To accomplish this narrowing, the FSB classifies a subset of the NBF1 entities into the five economic functions shown in Table 2-1.<sup>40</sup>

**Authorities assess non-bank financial entities’ business models, activities, and associated vulnerabilities and classify relevant entities into one or more of the five economic functions.** 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 do not use leverage; or (iii) owned by a bank or are otherwise part of a banking group (in which case the entity is captured in the prudentially consolidated regulation and supervision of the parent bank). In some cases, the determination to exclude entities from the narrow measure incorporates authorities’ supervisory judgement.

<sup>39</sup> This second step is based on the August 2013 FSB *Policy Framework*. The Experts Group periodically reviews the composition of the narrow measure in light of better data and analysis.

<sup>40</sup> Entities may also be included in an unallocated category, which captures OFIs that the relevant authorities assessed as giving rise to bank-like financial stability risks, but which could not be assigned to a specific economic function. Some entity types may be classified into more than one economic function. In those instances, an entity’s assets are proportionately allocated between the economic functions into which it was classified so as to only count once towards the jurisdiction’s narrow measure.

**The inclusion of NBF entities or activities in the narrow measure is based on a conservative (inclusive) assessment of the vulnerabilities associated with credit intermediation.** The conservative assessment has two features:

- (i) Authorities classify entities on a pre-mitigant basis – that is, authorities assume a scenario in which policy measures have not been adopted or risk management tools are not exercised. Classification into an economic function does not constitute a judgement that potential policy measures to address vulnerabilities of NBF entities and activities are inadequate or ineffective, nor does it necessarily reflect a judgement that credit intermediation outside of the banking system represents arbitrage that undermines existing regulation.
- (ii) Authorities may exclude NBF entities from the narrow measure if data are available and the analysis of the data and rationales for exclusion provide sufficient grounds for exclusion by participating jurisdictions, in light of the methodology and classification guidance used in the FSB’s annual monitoring exercise.

**The conservative (inclusive), pre-mitigant, approach helps improve data consistency across jurisdictions and facilitates construction of global measures of intermediation activity.** However, the narrow measure may overestimate the degree to which NBF currently gives rise to post-mitigant financial stability risks, given that existing policy measures, risk management tools, or structural features of these activities may have significantly reduced or addressed these financial stability risks.<sup>41</sup> Box 2-1 provides an overview of the policy tools.

#### **Box 2-1: Economic functions and policy tools**

There is a well-established and diverse set of policy tools for NBF. The most relevant tools to address the risks for each of the five economic functions that form the narrow measure are highlighted below.

EF1

- Some collective investment vehicles that engage in maturity/liquidity transformation or employ leverage can become susceptible to liquidity pressures because of heightened investor redemption requests or margin call dynamics. To mitigate potential first-mover advantage incentives and run-risk dynamics, which may cause these vehicles to sell assets at a significant discount and amplify liquidity strains in times of stress,<sup>42</sup> structural features and policy tools are required or available in many jurisdictions.<sup>43</sup>
- Policy tools relevant for EF1 entities aim to address vulnerabilities associated with liquidity transformation and use of leverage.<sup>44</sup> Portfolio requirements, such as limits on illiquid investments, asset concentration and the amount of leverage, are available in most jurisdictions. In some jurisdictions, policy tools also include liquidity buffers. There are also price-based tools, such as anti-dilution levies and swing pricing, and quantity-based tools, including redemption gates, suspension of redemptions and redemptions-in-kind. Price- and quantity-based tools may be implemented at the discretion of fund managers on an ongoing basis or only during adverse market conditions, while some of these tools can also be activated by the supervisory authority.

<sup>41</sup> For example, the narrow measure currently includes certain types of investment funds, such as certain MMFs and fixed income funds, with specific structural features that may mitigate risks (such as asset allocation requirements, liquidity risk management requirements, limits on leverage, prohibitions on loan origination, and investment restrictions).

<sup>42</sup> See FSB, *Enhancing the Resilience of Non-Bank Financial Intermediation: Progress Report*, November 2022.

<sup>43</sup> See also IMF (2021), *Investment Funds and Financial Stability: Policy Considerations*, September.

<sup>44</sup> While in some jurisdictions these tools have been mostly designed with investor protection objectives in mind, they may also address these vulnerabilities as well.

## EF2 and EF3

- Certain types of entities engaged in loan provision (EF2) and intermediation of market activities (EF3) are typically dependent on short-term funding. Such reliance may amplify stress or serve as a means of shock transmission if those entities are unable to roll over these short-term liabilities.
- Policy tools relevant for EF2 and EF3 entities mainly aim to address credit and liquidity risks. The most widely available tools include capital requirements (either similar to those applied to banks or based on a separate prudential regime) and the imposition of limits on large exposures and on leverage. Tools to address liquidity risk include mandatory liquidity buffers. There can also be restrictions on the types of liabilities that entities can issue. Additionally, in some instances, requirements apply with respect to the use of client assets, which is relevant for entities classified in EF3 given that their activity is linked to the provision of intermediation services. Supervisory authorities are responsible for the calibration and use of these tools, which typically apply on an ongoing basis.

## EF4

- If credit, liquidity, or counterparty risks are mispriced, or incentives are misaligned, entities classified in EF4 may contribute to excessive risk-taking and consequently to the amplification of shocks.
- Policy tools relevant for EF4 include capital and liquidity requirements in most jurisdictions. There are also restrictions on the scale and scope of the business that can be undertaken as well as requirements for enhanced risk management and mandatory risk sharing with the insured party. Supervisory authorities are responsible for the calibration and use of these tools, which typically apply on an ongoing basis.

## EF5

- While securitisation promotes the availability of credit to the real economy, it may also contribute to the build-up of excessive credit through maturity/liquidity transformation or the use of leverage.
- Policy tools relevant for EF5 entities include restrictions on maturity and liquidity transformation, as well as on eligible collateral and on exposures to or funding from banks or other financial entities. There are also “skin-in-the-game” rules (e.g. retention requirements for securitisation issuers) to provide for the right incentives. Supervisory authorities are responsible for the calibration and use of these tools, which typically apply on an ongoing basis.

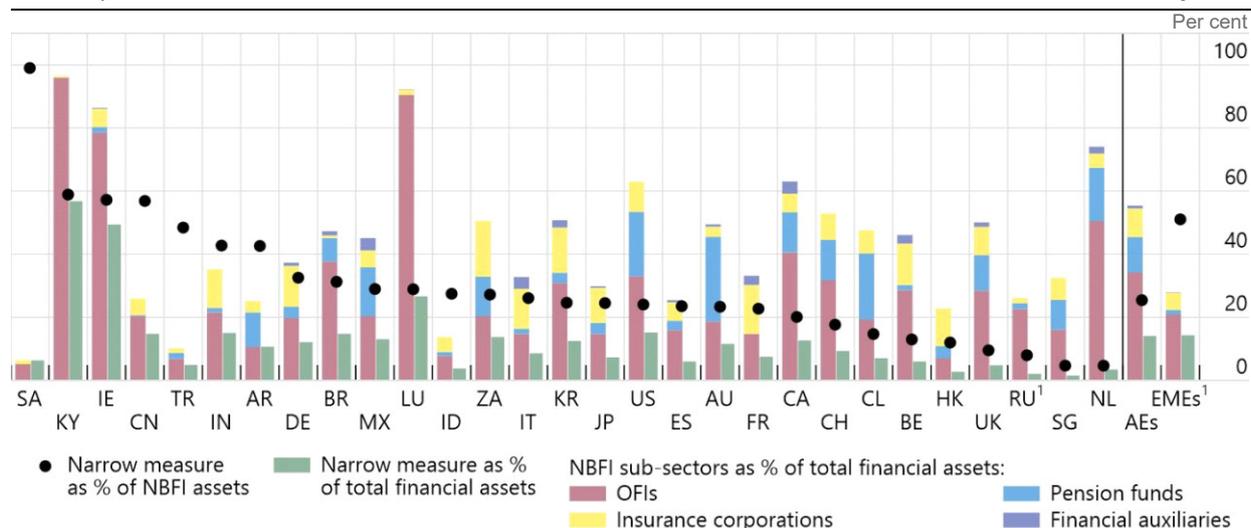
Finally, disclosure requirements are another set of policy tools relevant for all economic functions, and they vary extensively given the broad range of activities and entities that they cover. Most disclosure requirements are applied on an ongoing basis by different authorities across jurisdictions.

The narrow measure was \$67.8 trillion at end-2021, representing 28.3% of NBFIs sector assets and 14.1% of total financial assets. Graph 2-1 compares the components of the NBFIs sector to the narrow measure by jurisdiction, each displayed as a percentage of total national financial assets. In general, the narrow measure amounted to a larger share of NBFIs sector assets in EMEs than in AEs; however, this varied significantly across jurisdictions.

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

29-Group, end-2021

Graph 2-1



<sup>1</sup> Data for Russia as of 2020, not included in the EME aggregate.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

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

	EF1				EF2	EF3	EF5	
	MMFs	FIFs <sup>1</sup>	Mixed funds <sup>2</sup>	HFs <sup>3</sup>	FinCos	BDs	SFVs	TCs <sup>4</sup>
<b>Total financial assets</b>								
Total financial assets (in USD trn)	9.1	13.8	10.3	7.0	6.0	12.5	6.3	4.1
Growth in 2021 (%)	↑ 8.6	↑ 6.8	↑ 16.6	↑ 9.9	↑ 5.6	↑ 2.7	↑ 12.5	↑ 3.5
of which: Credit assets (in USD trn)	7.3			4.1	4.5	6.1	4.0	1.9
Growth in 2021 (%)	↑ 7.6			↑ 16.9	↑ 2.8	↑ 2.1	↑ 7.8	↓ -7.9
<b>Narrow measure</b>								
Total assets classified into the respective economic functions (in USD trn)	9.0	13.8	10.3	7.1	3.7	4.5	4.8	0.3
Share of the narrow measure (%)	13.3	20.3	15.1	10.5	5.5	6.6	7.0	0.5
<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 2021 compared to 2020. For risk metrics, the arrows pointing up (down) indicate an increase (decline) in the median value in 2021 compared to 2020, 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 corresponds to the entity type with the largest (lowest) engagement in the relevant metric/activity, in the median. Does not include data for Russia.

<sup>1</sup> Some fixed income funds (FIFs) are included in the mixed funds category in the narrow measure. A small amount of fixed income funds are outside the narrow measure (around \$121 billion). <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 HFs in EF1 were not collected. Some funds perform activities that are close to those of HFs, from an economic perspective, and have therefore been classified as HFs under EF1. <sup>4</sup> Risk metrics data for TCs in EF5 were not collected.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations

## 2.2. Narrow measure trends

### 2.2.1. Economic functions grew faster in 2021 than in 2020

The total financial assets of entities in the narrow measure in the 29-group grew by 9.9% in 2021 to reach \$67.8 trillion, compared to an 8.9% increase in total NBF1 sector assets (Graph 2-2).<sup>45</sup> This growth rate was slightly above the 5-year average annual growth rate (7.3%). EMEs contributed 28.9% of the total growth in narrow measure assets in 2021 and their share of the narrow measure assets reached 20.3%. As a share of total global financial assets, the narrow measure remained stable at 14.1%.

Since the 2008 financial crisis, growth of the narrow measure has been driven primarily by investment funds. As a result, EF1 assets have been increasing as a share of total narrow measure assets since 2008. The recovery from the COVID-19 pandemic and accommodative monetary policy stances further helped increase the relative share of EF1, because of net inflows and higher valuations of EF1 assets (see Box 2-2).

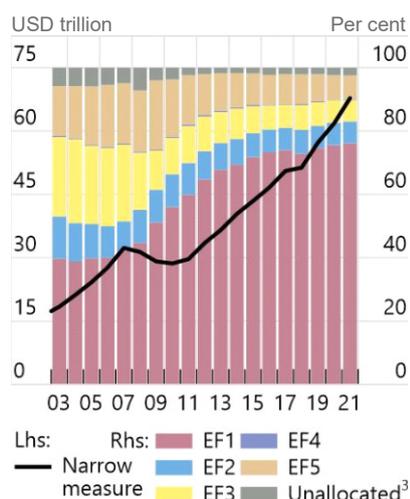
#### EF1 further increased its share of the narrow measure<sup>1</sup>

29-Group

Graph 2-2

Share of the narrow measure, per economic function<sup>2</sup>

The narrow measure by economic function<sup>4</sup>



	Narrow measure	EF1	EF2	EF3	EF4	EF5	Unallocated <sup>3</sup>
<b>Size at end-2021</b> (USD trillion)	67.8	51.6	4.6	4.6	0.2	5.1	1.7
<b>Share of narrow measure</b> (%)	100.0	76.2	6.8	6.8	0.2	7.5	2.4
<b>Growth in 2021</b> (year-over-year, %)	9.9	10.6	7.7	5.6	4.0	9.0	10.8
<b>Growth 2016–20</b> (annualised growth, %)	7.3	8.4	6.0	3.3	-0.6	1.6	13.6
<b>Share of total financial assets</b> (%)	14.1	10.7	1.0	1.0	0.0	1.1	0.4

<sup>1</sup> Net of entities prudentially consolidated into banking groups. <sup>2</sup> Includes data for Russia up until 2020. <sup>3</sup> Unallocated = assets of entities that were assessed to be involved in NBF1, but which could not be assigned to a specific economic function. <sup>4</sup> Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

<sup>45</sup> Analysis in Section 2.2 uses the 29-Group sample because it includes more granular information for non-bank financial sectors. See Introduction.

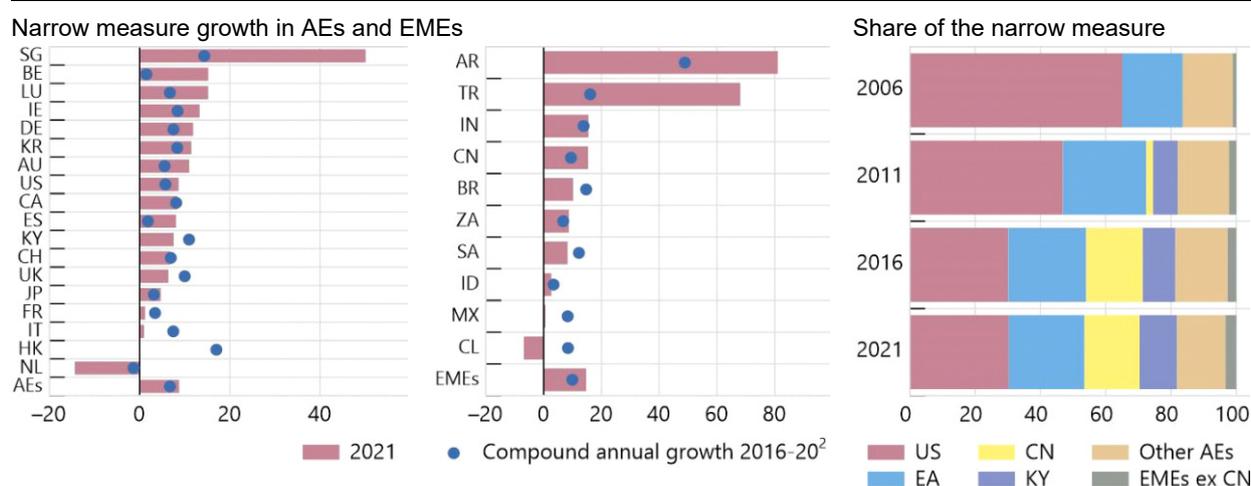
## 2.2.2. Most jurisdictions experienced growth in the narrow measure

Only a few AEs and EMEs did not experience an increase in their narrow measure (Graph 2-3, LHS and middle panel). The Netherlands and Chile saw their narrow measure decrease. For the Netherlands this was mainly driven by a decline in EF1 assets (see EF1). In Chile, the decline is explained by a shift in the composition of investments – favouring equity funds over fixed income funds – and higher interest rates during 2021. Several AEs saw an increase in their narrow measure by over 10%: Australia, Belgium, Ireland, Germany, Korea, Luxembourg and Singapore. Among EMEs, Brazil, China and India also had an increase of more than 10%, while inflation rates in Argentina and Türkiye explain the high growth in those jurisdictions. EF1 assets were the main drivers of the growth in the narrow measure.

### Narrow measure size and growth by jurisdiction<sup>1</sup>

In per cent, 29-Group

Graph 2-3



<sup>1</sup> Does not include data for Russia. <sup>2</sup> Growth rate for Singapore was due to SFVs (growth driven by covered bond issuances by banks amidst favourable market conditions and recovery from the pandemic in 2021) and BDs (higher number of entities and growth of online brokerage platforms which saw increased investor participation and trading volumes). However, the narrow measure in Singapore remained small, representing 1.5% of total national financial assets. Growth rates in Argentina and Türkiye (in 2021) reflected rates of inflation. Aggregates are weighted averages based on rolling GDP weights.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

**The United States continued to account for the largest share of narrow measure assets (\$20.5 trillion in 2021) representing around 30.3% of the total narrow measure (Graph 2-3, RHS).** The eight participating euro area jurisdictions comprised the second largest share (with a combined \$15.7 trillion in assets, 23.2%), followed by China (\$11.4 trillion, 16.8%), the Cayman Islands (\$7.8 trillion, 11.4%), and Japan (\$3.0 trillion, 4.5%). While the United States' share of the narrow measure has declined from 2008 to 2016, it has generally remained relatively stable since then. After several years of decline, China's share of the narrow measure increased again in 2021. In nine jurisdictions the narrow measure grew at a faster pace than GDP in 2021. In 16 jurisdictions, the narrow measure annual growth in 2021 exceeded its 5-year average annual growth from 2016 to 2020.

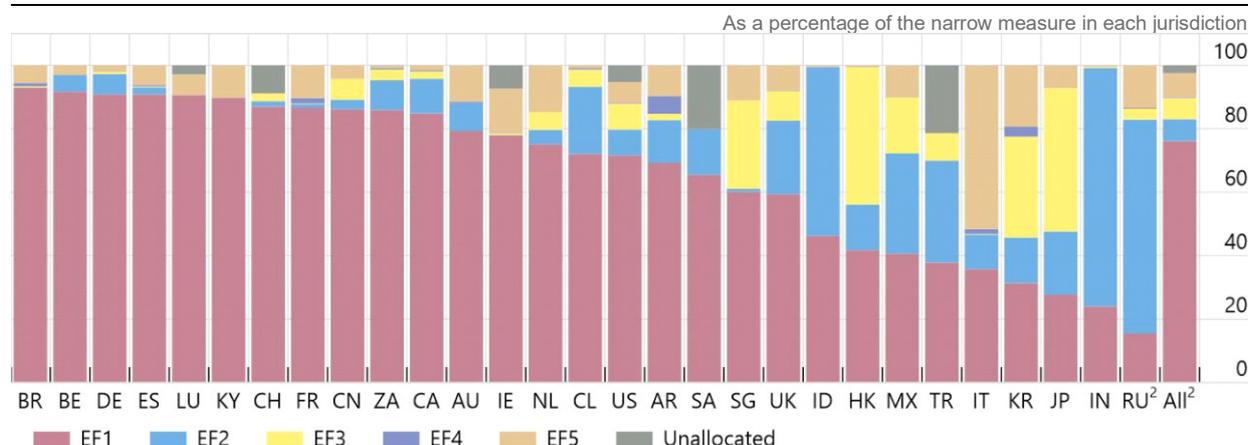
**Although EF1 assets constituted the largest portion of the narrow measure on a global level, shares of each economic function within the narrow measure varied across jurisdictions.** In 20 jurisdictions, EF1 assets represented more than half of the narrow measure. EF2 continued to be the largest entity type within the narrow measure in India and Indonesia,

but not anymore in Türkiye. EF3 constituted the largest share of the narrow measure in Hong Kong, Japan and Korea (Graph 2-4).

## EF1 remained the largest economic function in 20 jurisdictions at end-2021<sup>1</sup>

Economic function classification by jurisdiction at end-2021

Graph 2-4



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

<sup>1</sup> Net of entities prudentially consolidated into banking groups. <sup>2</sup> Data for Russia as of 2020, not included in 'All'.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

### 2.2.3. Non-bank financial intermediation in EMEs

**While the share of global NBFi sector assets held by EMEs has increased over time, it remained small relative to global NBFi financial assets.** The share of global NBFi assets held by EMEs amounted to 11.3%, up from 10.9% in 2020, and it included an 8.4% share held by China.

**Nevertheless, the relative importance of NBFi continued to increase at a faster pace in EMEs than in AEs.** As a percentage of EME financial assets, the share of financial assets held by the NBFi sector increased at a faster pace in EMEs than AEs between 2013 and 2021. While this was mostly driven by NBFi asset growth in China, growth in the relative importance of the NBFi sector in other EMEs remained higher than in AEs (Graph 2-5, LHS). The same trend was observed in the narrow measure of NBFi (Graph 2-5, LHS). In 2021, growth of the NBFi sector and the narrow measure in EMEs outpaced growth in AEs.

**This increase in the relative importance of the NBFi sector was observed in half of EMEs,** with large increases between 2016 and 2021 in the assets held by the NBFi sector seen in China, India, Saudi Arabia and Brazil.<sup>46</sup> In contrast, Argentina, South Africa, Türkiye, Indonesia and Chile showed a decrease in the relative importance of NBFi in the same period. In South Africa, one of the main factors contributing to this trend was the closure of one of South Africa's biggest MMFs during 2021.<sup>47</sup> In the case of Chile, the reduction in the relative size of the NBFi

<sup>46</sup> Inclusion of funds of funds since 2020 accounts for 7.1 percentage points of the growth in Brazil's NBFi sector share of total financial assets between 2016 and 2021. Excluding this effect, the share increased by 6.4 percentage points, from 33.9% to 40.3%.

<sup>47</sup> The bank managing the MMF stated that its decision to close the fund was due to the outcome of a client survey that found that retail clients believed that investments in the fund were privy to the same guarantees as cash held in bank accounts. According to the bank, the closure was not based on any regulatory ruling, request or instruction.

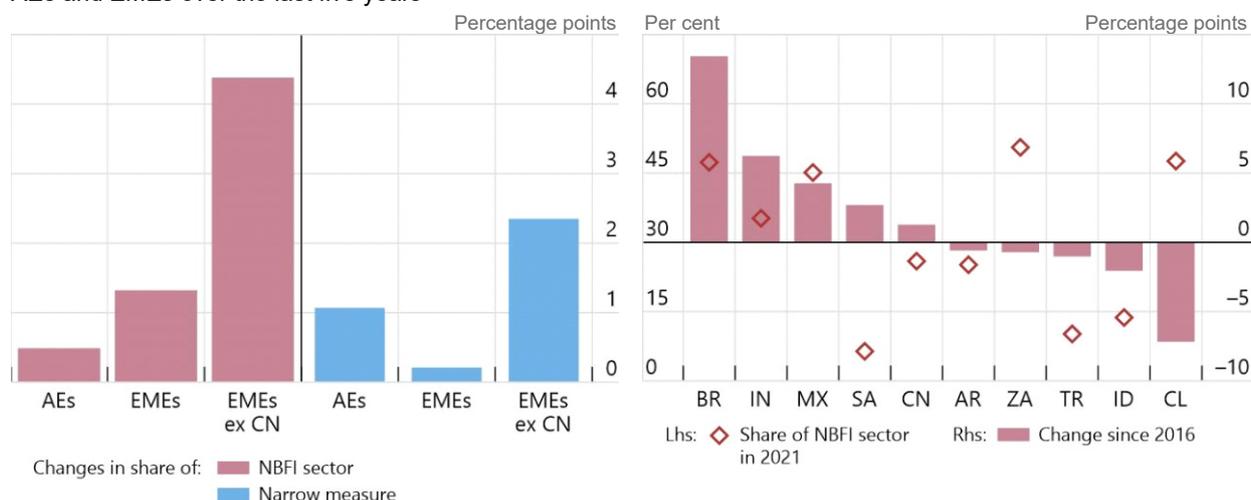
sector was mainly due to an expansion in bank and central bank balance sheets since 2017 and the policy response to the COVID-19 pandemic.

### The relative importance of NBFIs entities has increased in EMEs<sup>1</sup>

Graph 2-5

Changes in the share<sup>2</sup> of NBFIs sector and narrow measure as a percentage of total financial assets for AEs and EMEs over the last five years

Changes in the share<sup>3</sup> of NBFIs assets in each EME over the last five years



<sup>1</sup> Does not include data for Russia. <sup>2</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>3</sup> Shares of the NBFIs sector for each jurisdiction are calculated as financial assets of the NBFIs sector of a jurisdiction divided by total financial assets of the jurisdiction.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

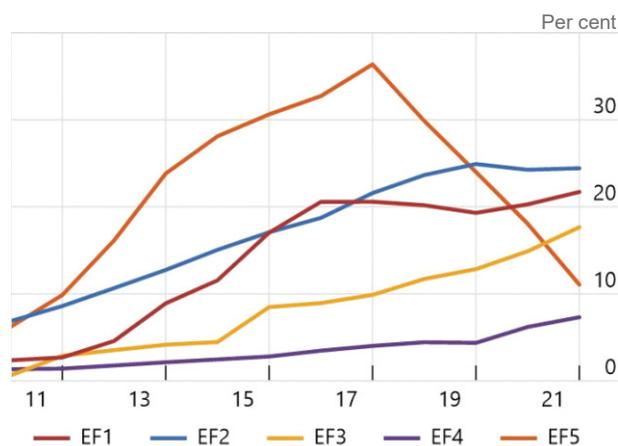
**The EME share of economic function assets increased across all economic functions, with the exception of EF5 in China (Graph 2-6, LHS).** This was mainly attributable to the decrease in assets held by TCs in China since 2017 (see Section 2.7.1). On the contrary, total SFV assets in EMEs increased by 16.0% in 2021. Among EME jurisdictions, China was responsible for the largest share of assets classified in EF1, EF3, and EF5, while India dominated EF2, and Brazil<sup>48</sup> dominated EF4 (Graph 2-6 RHS). Most of these trends have remained generally stable since 2011.

<sup>48</sup> In Brazil, ICs provide credit enhancements to loans. Credit insurance (\$8 billion in 2021) applies to a small fraction of DTC's loans (\$691 billion). Although Brazil's EF4 stands out among EMEs, it is only a very small share of global EF4 assets.

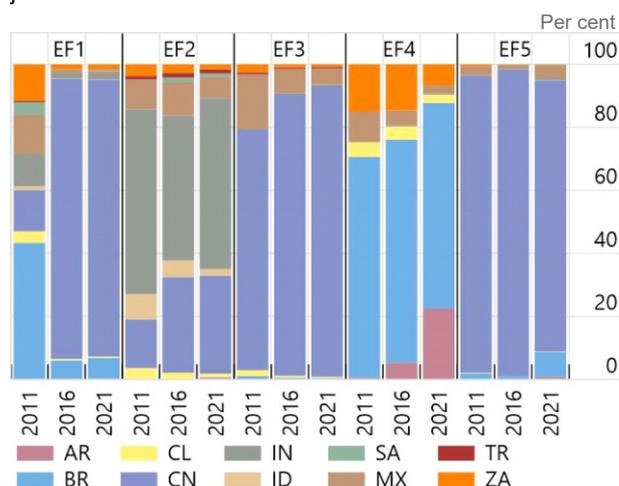
## The share of the narrow measure assets held by EMEs has increased since 2013

Graph 2-6

EMEs' share of global economic function assets<sup>1</sup>



Breakdown per economic function in EMEs by jurisdiction



<sup>1</sup> Includes data for Russia up until 2020.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

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

EF1 comprises collective investment vehicles with features that make them susceptible to runs (e.g. fixed income funds,<sup>49</sup> mixed funds,<sup>50</sup> MMFs, credit HFs, and REITs). Funds are a means for investors to efficiently diversify risk exposures by pooling their resources with those of other investors to purchase portfolios of assets. Collective investment vehicles can dampen shocks to the financial system by allocating losses from an entity's distress or insolvency or from adverse financial market conditions among a group of investors. However, some collective investment vehicles that engage in maturity/liquidity transformation or employ leverage can become susceptible to liquidity pressures because of heightened investor redemption requests or margin call dynamics. To mitigate potential first-mover advantage incentives and run-risk dynamics, which may cause these vehicles to sell assets at a significant discount and amplify liquidity strains in times of stress,<sup>51</sup> structural features and policy tools are required or already available in many jurisdictions, often based on or consistent with policy recommendations made by the FSB, IOSCO and other standard-setting bodies. An overview of policy tools is available in this year's report (see Box 2-1).

<sup>49</sup> Including fixed income exchange-traded funds (ETFs).

<sup>50</sup> Including mixed ETFs.

<sup>51</sup> See FSB, Enhancing the Resilience of Non-Bank Financial Intermediation: Progress Report, November 2022.

### 2.3.1. *EF1 assets increased significantly in 2021 because of flows into fixed income funds and valuation effects for mixed funds*

With growth of 10.6% to \$51.6 trillion, EF1 grew faster in 2021 than the overall narrow measure and at a slightly higher pace than in 2020 (Graph 2-7, LHS). EF1's growth in 2021 was also above its 5-year average growth of 8.4%. Valuation effects were the main driver of growth of mixed funds in 2021, whereas fixed income funds' and short-term government MMFs' growth was largely due to inflows (See Box 2-2). EF1 accounted for more than three quarters (76.2%) of the narrow measure in 2021, which was largely unchanged compared to 2020.

#### **Box 2-2: Flow vs valuation effects in investment funds**

**Investment funds have been a primary driver of the increase in assets of the NBF1 sector over the past decade.** The FSB's annual monitoring exercise collects data for MMFs, HFs, and other investment funds, which comprise equity funds, fixed income funds, mixed funds and other funds. Given the importance of investment funds in the NBF1 sector, the FSB has over recent years improved the breadth and granularity of investment funds' data in two key ways.

**First, starting from the 2020 global monitoring exercise, jurisdictions contributed quarterly data to attribute changes in the AUM of MMFs, equity funds, fixed income funds and mixed funds to flow and valuation effects.<sup>52</sup> For this year's exercise, the data collected was up to and including Q1 2022.** The contribution of valuation effects to growth of funds' assets is estimated as the residual of subtracting the cumulative flows from total assets. Seventeen jurisdictions reported data on the split between valuation and flows but not for all fund types. Nevertheless, data from these jurisdictions for these fund types represented 69% of total reported assets of equity funds, 80% of fixed income funds, 60% of mixed funds and 79% of MMFs (Graph B3, LHS and middle panel).<sup>53</sup>

**Second, starting from the 2021 exercise, jurisdictions were asked to provide separate, granular data on MMFs** that invest primarily in short-term government securities (short-term government MMFs) and MMFs that invest primarily in non-government securities or in longer maturity MMFs (non-government or longer maturity MMFs).<sup>54</sup>

**The AUM of most funds grew faster in 2021 than in 2020, supported by accommodative monetary policy and a better-than-expected recovery from the pandemic.** Equity funds led this expansion and continued the trend observed since Q3 2020, primarily because of higher valuations. Valuation effects also contributed to a large portion of asset growth in mixed funds, whereas the growth of fixed income funds was solely due to inflows. Like equity funds, fixed income funds and mixed funds grew in 2021 in line with the trend observed in the last two quarters of 2020. The trends in MMFs' AUM were different than for other types of funds. Inflows into short-term government MMFs supported moderate but slower growth in 2021 than in 2020, reflecting the improved macro environment, while outflows during the first three quarters of 2021 reduced the AUM of non-government and longer-term MMFs (Graph B3, RHS).

<sup>52</sup> Not all of these funds are classified under EF1.

<sup>53</sup> Out of the 20 jurisdictions that reported quarterly AUM as part of the annual monitoring exercise, 17 were able to supply the quarterly information about investor flows to separately identify flow and valuation effects.

<sup>54</sup> Disaggregated data was available for 12 jurisdictions that represent around 80% of global MMF assets included in the 2021 monitoring exercise. Short-term government MMFs invest at least 99.5% of fund assets in short-term government securities or repos collateralised by those securities. Non-government/longer maturity MMFs invest predominantly in securities not issued by governments or in government and/or non-government securities that have maturities longer than 397 days and up to two years.

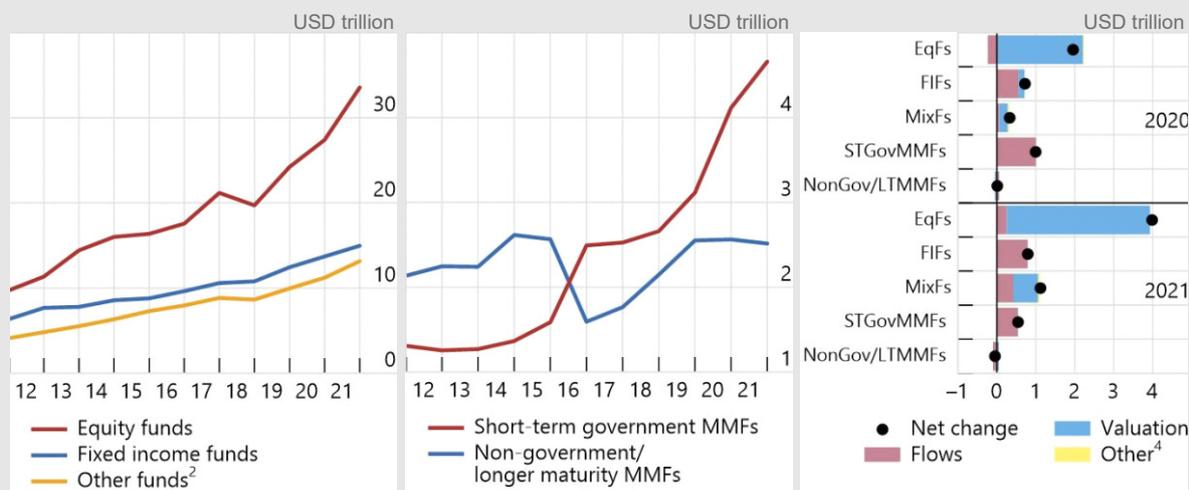
## With the exception of non-government or longer maturity MMFs, funds' AUM continued to grow in 2021

Graph B3

Other investment fund asset composition<sup>1</sup>

MMF assets by type<sup>1</sup>

Change in funds' total assets split between flows and valuation effects<sup>3</sup>



EqFs = equity funds; FIFs = fixed income funds; MixFs= mixed funds; MMFs = Total MMFs, STGovMMFs = Short-term government MMFs, NonGov/LTMMFs = non-government/ longer-term maturity MMFs. Annual data (end of period) provided by 28 reporting jurisdictions. This Graph does not include data for Russia.

<sup>1</sup> In 2021 the breakdown of changes of total assets into flow and valuation effects of equity funds, fixed income funds and other funds, was available for 69%, 80% and 60% of their total reported assets, respectively. For short-term government MMFs and non-government/ longer-term maturity MMFs the breakdown was available for 100% and 98% of their total reported assets, respectively. <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 changes attributable to factors other than fund flows and valuation (e.g. changes in leverage and sample adjustments).

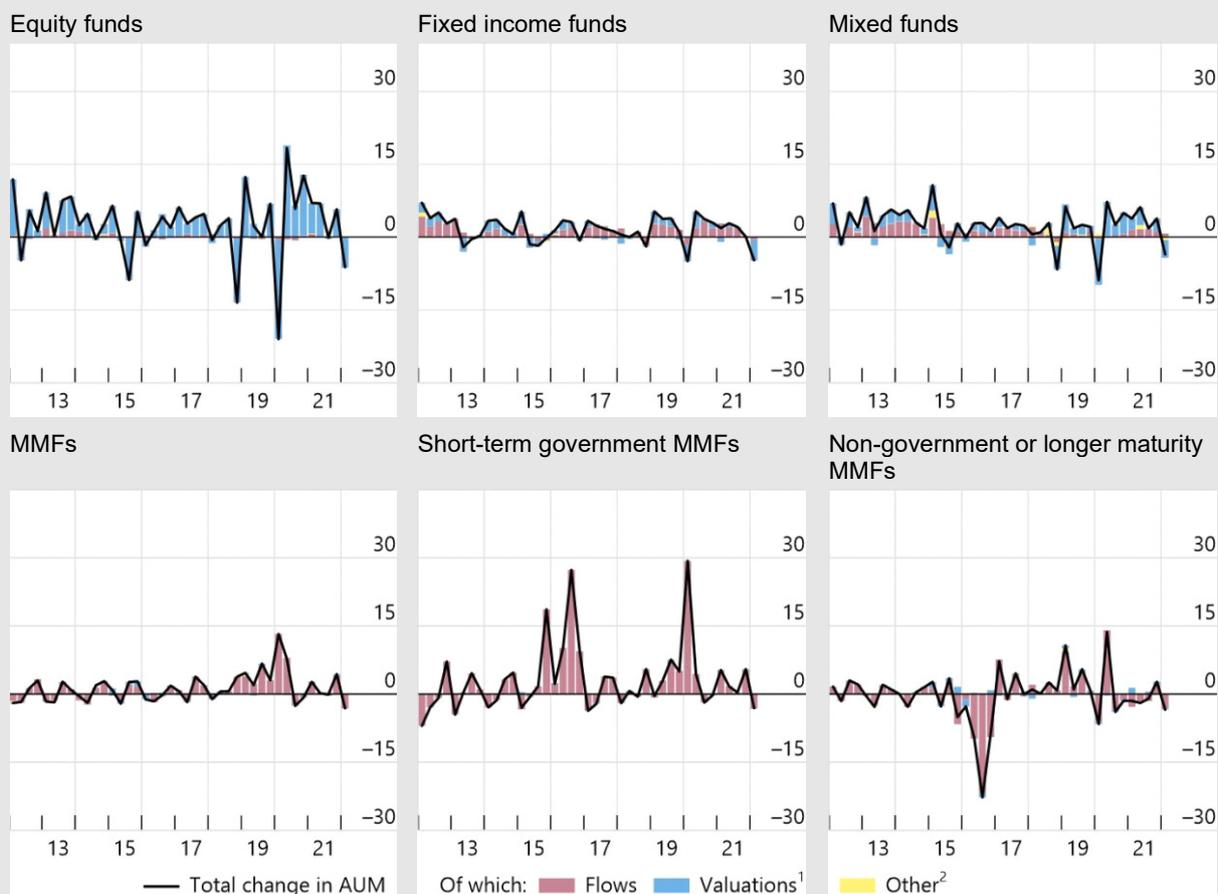
Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

**Flow and valuation effects had a different impact on funds' AUM in 2021 and in early 2022 (Graph B4).** Fixed income funds, mixed funds as well as equity funds experienced large decreases in AUM in Q1 2022 (see Box 1-1). MMFs (including both short-term government and non-government/longer maturity MMFs) exhibited smaller decreases in AUM in Q1 2022, mainly explained by flow effects as these funds typically hold fixed income assets of a shorter maturity.

## Changes in AUM: Valuation vs flows by entity type

% of AUM

Graph B4



This Graph does not include data for Russia. <sup>1</sup> Quarterly data up to Q1 2022. <sup>2</sup> "Other" represents change attributable to factors other than fund flows and valuation (eg changes in leverage and sample adjustments).

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

**Growth in EF1 assets was broad-based across entity types and mainly driven by mixed funds and fixed income funds (Graph 2-7, middle panel).** Compared to 2020, MMFs in 2021 contributed significantly less to overall EF1 growth. Other EF1 entity types experienced higher growth. Fixed income funds remained the largest EF1 entity type with 26.7% of total EF1 assets, and their classified assets grew by 6.8% in 2021. Mixed funds grew by 16.6% in 2021 to a share of 19.9% of total EF1 assets, and, by that, took over MMFs as the second largest entity type in EF1. MMFs were the third largest entity type in EF1, with a share of 17.4% in EF1 assets. Hedge fund assets grew by 9.6% in 2021, with their relative share of total EF1 assets remaining stable.<sup>55</sup>

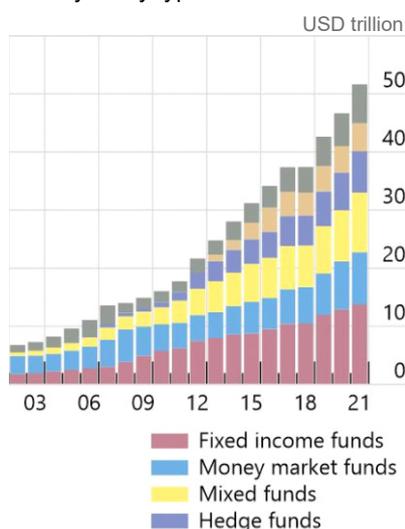
<sup>55</sup> Hedge funds are usually marketed by way of "private placement" to sophisticated, institutional or professional investors. They are often not subject to certain regulations designed to protect retail investors and typically can employ more flexible investment strategies than mutual funds or other registered funds.

## EF1 assets continued to grow significantly in 2021

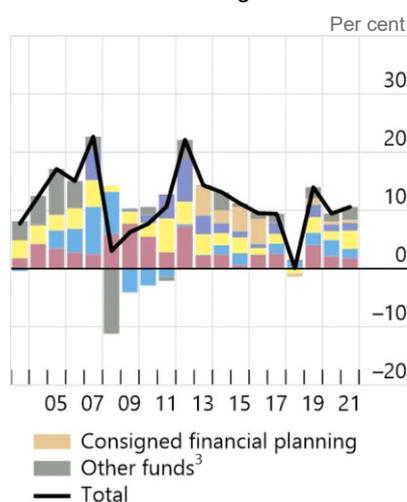
29-Group

Graph 2-7

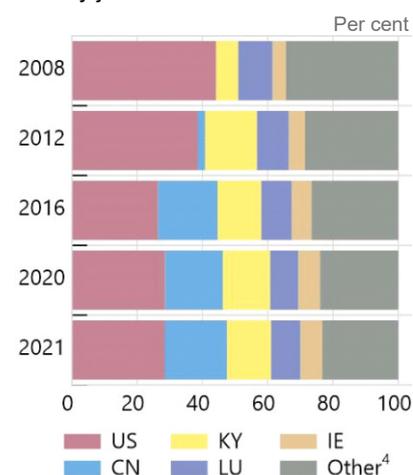
EF1 by entity type<sup>1</sup>



Contributions to EF1 growth<sup>2</sup>



EF1 by jurisdiction<sup>2</sup>



<sup>1</sup> Includes data for Russia up until 2020. <sup>2</sup> Does not include data for Russia. <sup>3</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>4</sup> Other jurisdictions in 29-Group not displayed separately.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

**Growth in EF1 assets was supported by accommodative monetary policy stances and a better-than-expected recovery from the pandemic (Graph 2-7 and B7).** In 2021, central banks maintained their policy rates at low levels, and the growth outlook recovered faster from the pandemic than expected, which led to valuation gains and flows into funds.

**While the United States still comprised the largest share of EF1, China's EF1 growth outpaced other jurisdictions' growth and increased its share in total EF1 by 1.4 percentage points (Graph 2-7, RHS).** The EF1 shares of the Cayman Islands and France decreased (respectively by 1.0% and 0.2%) but only because of the large increase in absolute amount in China's EF1 assets. The EF1 share of the Netherlands also decreased (by 0.2%), because EF1 assets in the Netherlands decreased by 17.7% (see Graph 2-8). Three of the four largest jurisdictions within EF1 – the United States, China, and Luxembourg – were also the largest contributors to overall EF1 growth in 2021, contributing 26.8%, 32.5% and 12.7%, respectively. As in previous years, the Cayman Islands and Luxembourg remained the jurisdictions with the largest EF1 sectors compared to their GDP, with EF1 sizes of around 1,491 and 56 times their GDP, respectively.

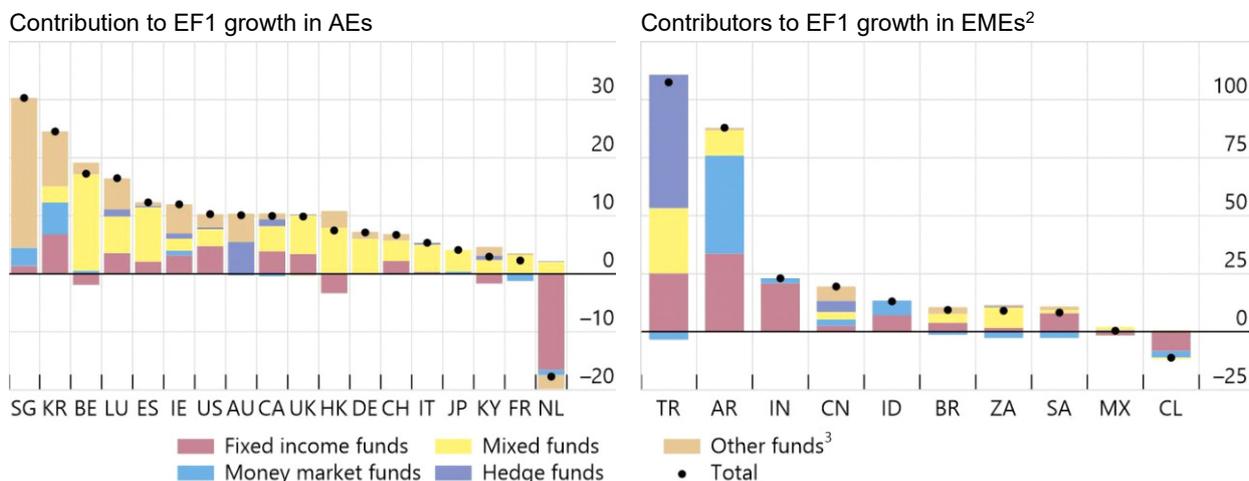
**EF1 assets increased in 26 jurisdictions in 2021 (Graph 2-8).** Mixed fund assets were the main contributors to growth in many AEs, while fixed income funds' growth contributed substantially to EF1 asset growth in EMEs. In Argentina and, to a smaller extent, in Türkiye, the growth in EF1 in nominal terms reflected the inflation rate experienced in these jurisdictions in 2021, as was the case last year. The Netherlands saw substantial shifts in the composition of EF1 assets, as fixed income funds' assets continued to decline, a trend that began in 2015. This trend was driven by PFs withdrawing assets from investment funds in order to reinvest them in-house. The withdrawal from these funds therefore did not result in a sale of debt securities. In Chile, EF1 assets decreased, because of the local market developments mentioned above (see

Section 1). The decline of fixed income funds in Belgium was driven by reclassification of those funds to the category of mixed funds.

### Contributions to EF1 growth varied across jurisdictions<sup>1</sup>

In per cent

Graph 2-8



<sup>1</sup> Does not include data for Russia. <sup>2</sup> For Argentina and Türkiye, the growth in EF1 in nominal terms reflected the inflation rate experienced in 2021. In Argentina the growth in real terms also reflected a higher demand for liquid investment options to properly manage working capital in a high inflation context. <sup>3</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, and funds of funds. Equity funds include open-ended equity funds holding more than 20% of credit assets.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

**MMF asset growth (8.6%) continued at around the same pace as the overall narrow measure, largely driven by the United States and China.** These two jurisdictions contributed 61.2% and 31.0% to overall MMF asset growth, respectively. After short-term government MMFs grew considerably in 2020, boosted by the flight to safety during the market turmoil observed in Q1 2020, overall MMF asset growth in 2021 was significantly lower (8.6% compared to 17.6% in 2020), and only slightly below MMF's 5-year average growth of 9.0%. The majority of MMF assets classified in EF1 were held in the United States, which accounted for 58.0% (or \$5.2 trillion) of global MMF assets, China (16.6% or \$1.5 trillion) and Ireland (8.2% or \$738.4 billion) (Graph 2-9, LHS). Funds offering constant (stable) net asset value (NAV) accounted for 81.6% of global MMF assets and represented the largest type of MMFs in nine jurisdictions (Graph 2-9, RHS).

## MMF assets were concentrated globally in a few jurisdictions

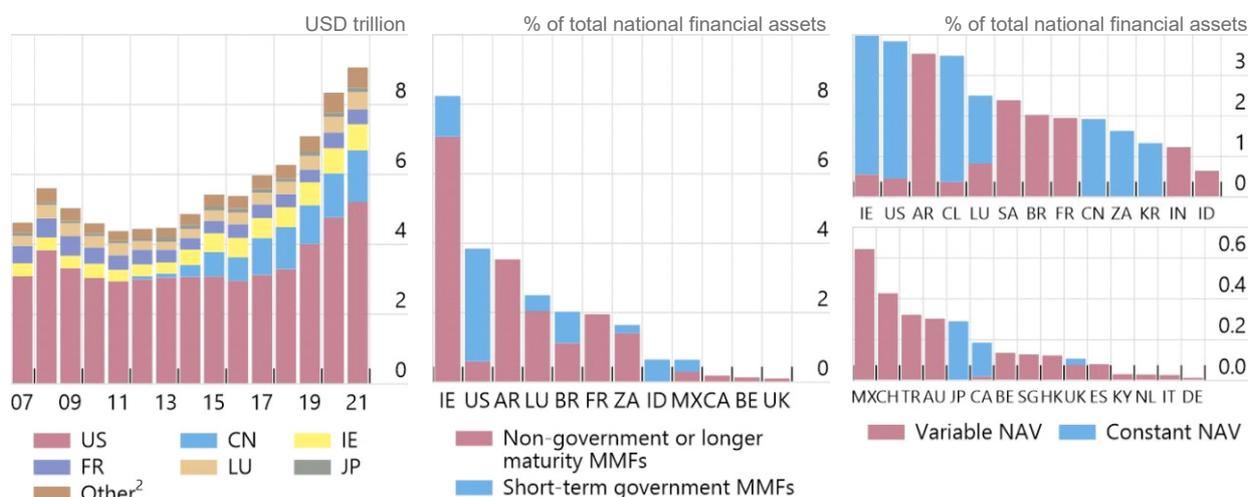
29-Group

Graph 2-9

By jurisdiction<sup>1</sup>

By type and jurisdiction, at end-2021<sup>3</sup>

By type and jurisdiction, at end-2021<sup>4</sup>



<sup>1</sup> Includes data for Russia up until 2020. <sup>2</sup> Other jurisdictions in 29-Group not displayed separately. <sup>3</sup> Jurisdictions with total MMF assets of less than 0.1 per cent as a share of total national financial assets are not displayed. Does not include data for Russia. <sup>4</sup> The bar for Ireland's constant NAV (8.2%) is not shown entirely because it is particularly high compared to the rest of the jurisdictions. Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

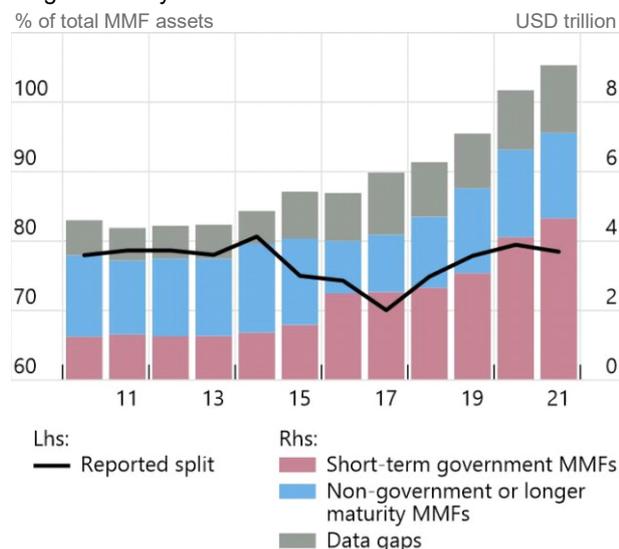
**With a growth of 13.2%, short-term government MMFs reached a size of almost \$4.7 trillion while non-government/longer term MMFs experienced a decrease (Graph 2-10, LHS).** Nearly all of this growth came from the United States (97.1%), which held 94.4% of short-term government MMFs' assets. Four jurisdictions reported double-digit growth in short-term government MMFs, while two jurisdictions reported a contraction. Non-government/longer maturity MMFs' assets decreased by 2.5% in 2021 to AUM of \$2.5 trillion. This contraction was broad-based, with eight out of thirteen jurisdictions reporting a decrease in 2021. In the United States, this trend was due to a reduced incentive to invest outside of relatively safer government funds, whose yields were generally only 5 to 10 basis points lower than that of prime funds. This development was reflected in all U.S. dollar-denominated MMFs in other jurisdictions, such as Ireland. In France, the decrease was due to net outflows from investors within and outside of the euro area (respectively -€12.0 billion and -€3.1 billion), and French MMFs' AUM came back to medium-term average after an increase in 2020. With growth of 11.1% constant NAV MMFs further increased their dominant share in global MMFs in 2021, while variable NAV MMFs, however, shrank by 1.1% (Graph 2-10, RHS).

## A higher proportion of global MMFs were held in short-term government MMFs<sup>1</sup>

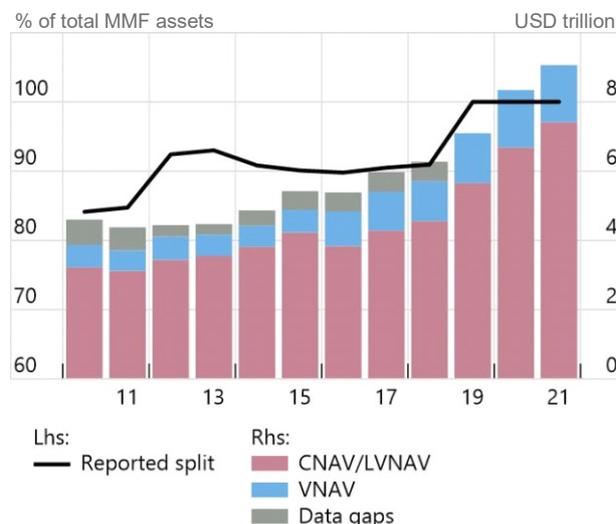
29-Group

Graph 2-10

Short-term government MMFs vs. non-government or longer maturity MMFs



Accounting split between MMFs



<sup>1</sup> Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

### 2.3.2. Some risk metrics for EF1 remained at elevated levels for non-government/longer maturity MMFs and fixed income funds

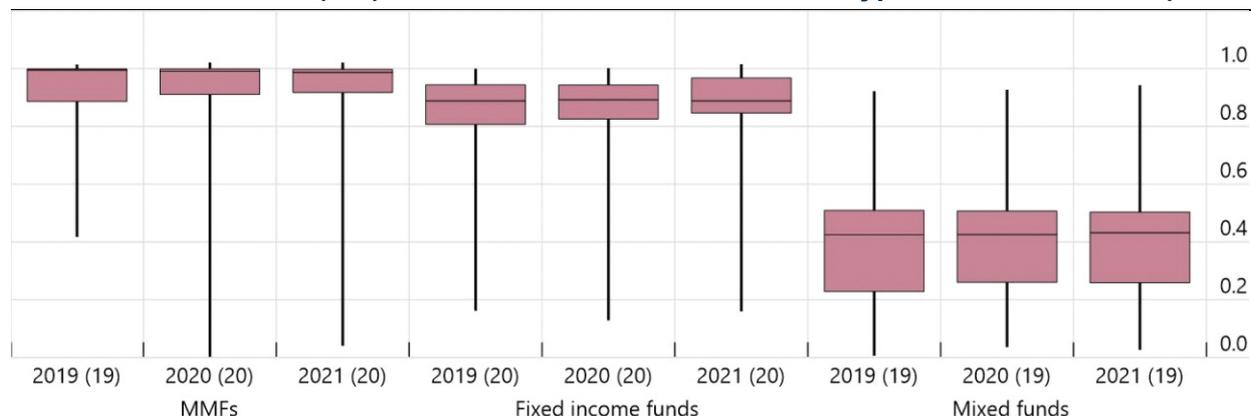
**Risk metrics measuring credit intermediation, maturity transformation, liquidity transformation, and leverage vary across EF1 entity types, depending on their business models.** For instance, MMFs and fixed income funds show higher levels of credit intermediation than mixed funds because the latter also invest in equity instruments, which do not constitute credit assets. In general, fixed income funds also display higher levels of maturity and liquidity transformation than mixed funds and non-government/longer maturity MMFs, because mixed funds typically allocate a smaller proportion of assets to credit assets, and non-government/longer maturity MMFs have limits on the maturity and creditworthiness 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.

**Risk metric median values, computed using annual aggregate data per jurisdiction, remained stable in 2021.** Measures of credit intermediation, maturity transformation, and liquidity transformation for EF1 were at levels very similar to those observed as at end-2020. In some cases, the tails of distributions changed owing to the situation of a few jurisdictions. These risk metrics might change in 2022 given the differences in macro-financial conditions (see Box 1-1).

**Credit intermediation remained high at largely unchanged levels for MMFs and fixed income funds in 2021 (Graph 2-11).** The median values of credit intermediation (CI) as measured by credit assets over total financial assets (CI1) also appeared stable for mixed funds.

The bulk of the credit assets held by EF1 entities were debt securities as reflected by the ratios of loans to total financial assets (CI2 – see Annex 4) that were close to zero.<sup>56</sup>

**Credit intermediation (CI1)<sup>1</sup> remained stable across all fund types<sup>2</sup>** Graph 2-11



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 2021 represented 77%, 86%, and 94% of MMFs', fixed income funds' and mixed funds' total assets, respectively. <sup>2</sup> Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

**Maturity transformation by MMFs and mixed funds was largely unchanged in 2021, while increasing slightly for fixed income funds.** All EF1 entity types were involved in some degree of maturity transformation. The median MT1 value of 0.83 for fixed income funds<sup>57</sup> indicated that these entities mainly held long-term assets funded by short-term liabilities and shares issued. Such funds may become vulnerable to periods of diminishing short-term funding liquidity and redemption pressure if they do not effectively manage liquidity risk.

The continued very low median MT1 value for MMFs (0.14) suggested that MMFs did not perform much maturity transformation (see below for a discussion on different types of MMFs). This reflects the short-term nature of their holdings and the fact that many MMFs are limited in the extent to which they can invest in securities with a residual maturity of more than 397 days (Graph 2-12).<sup>58</sup> There was, however, one jurisdiction in which maturity transformation appeared higher (at 0.54) than for others, although MT1 for this jurisdiction has decreased compared to 2020.

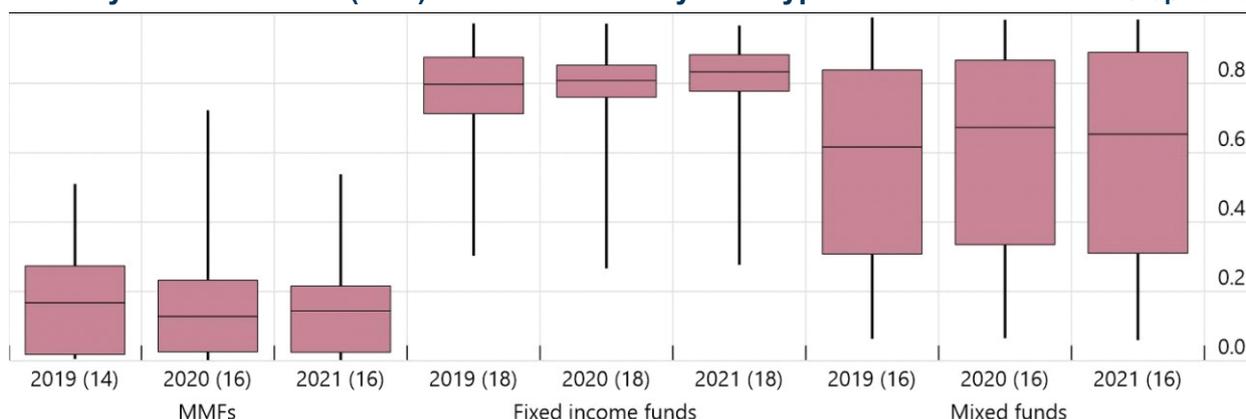
<sup>56</sup> CI1 values appeared much lower for MMFs and fixed income funds in one jurisdiction as Treasury securities and reverse repos collateralised with such securities, which represented an important share of these funds' assets, were not included.

<sup>57</sup> The ratio of long-term assets minus long-term liabilities and redeemable equity to total financial assets.

<sup>58</sup> Among European MMFs, however, standard VNAV MMFs are limited to holding assets with maturities up to 2 years.

## Maturity transformation (MT1)<sup>1</sup> trends differed by fund type<sup>2</sup>

Graph 2-12



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 – non-redeemable equity – long-term liabilities) / AUM (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 2021 represented 22%, 98% and more than 100% of total MMFs', fixed income funds' and mixed funds' assets, respectively. The coverage of this risk metric was higher than 100% in some cases due to some jurisdictions using a sample that included entities prudentially consolidated into banking groups to calculate risk metrics, while such entities were excluded from those classified into the narrow measure. <sup>2</sup> Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

**Liquidity transformation stayed largely unchanged from previous year's levels: fixed income funds, mixed funds and MMFs continued to have high liquidity transformation metrics in 2021 (Graph 2-13).** The median value of the ratio of less-liquid assets funded by short-term liabilities, using a narrow definition of liquid assets (LT1)<sup>59</sup> was near the upper limit of 2.0 for MMFs (1.72), and was largely stable compared to recent years. Fixed income funds (1.94) and mixed funds (1.93) were even higher but largely unchanged from the previous year. In all jurisdictions that reported the relevant data, LT1 was larger than 1 in 2021, indicating that short-term liabilities and redeemable equity exceeded fund holdings of liquid assets (Graph 2-13).<sup>60,61</sup>

In general, the relatively high LT1 measures for EF1 entities can be attributed to the open-ended 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.<sup>62</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 2-14).** Median values of this ratio were close to 1.0 for MMFs, fixed income funds and mixed funds, with little to no change from the prior year.<sup>63</sup> This measure of leverage provides only a partial view of the

<sup>59</sup> LT1 relies on a narrow definition of liquid assets that includes only cash and cash equivalents. 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>60</sup> This ratio will be biased upwards for jurisdictions that reported total NAV in the total assets field, instead of total AUM without netting off any liabilities.

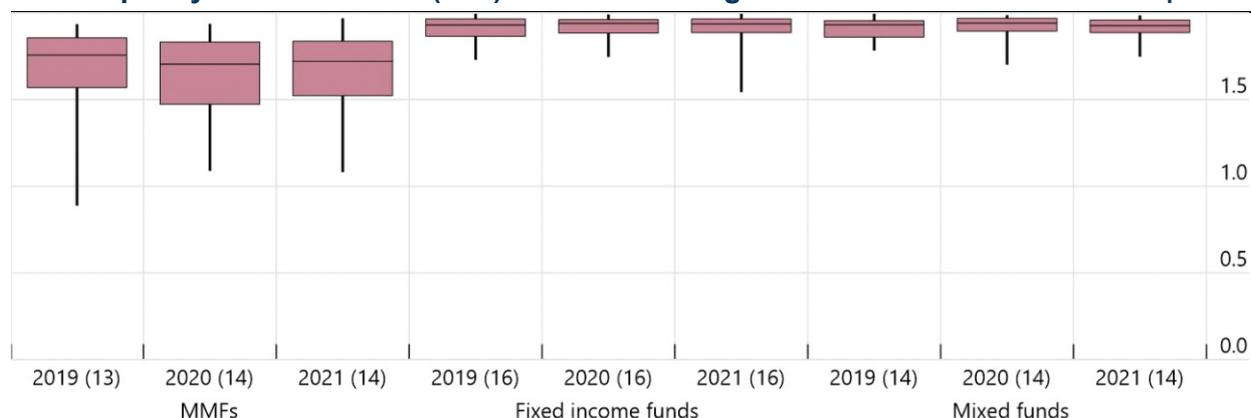
<sup>61</sup> Median values for the ratio of less-liquid assets funded by short-term liabilities, using a broad definition of liquid assets (LT2) were higher than 1, suggesting some degree of liquidity transformation for MMFs (1.28), fixed income funds (1.62) and mixed funds (1.71).

<sup>62</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 were leveraged, or because the jurisdictions' regulations allowed closed-ended funds to operate more like open-ended funds.

<sup>63</sup> Most jurisdictions limit the amount of balance sheet leverage that investment funds other than hedge funds can employ.

leverage obtained by the relevant EF1 entities, given that it does not consider synthetic leverage arising from derivatives transactions.<sup>64</sup>

**EF1: Liquidity transformation (LT1)<sup>1</sup> was little changed in 2021<sup>2</sup>** Graph 2-13

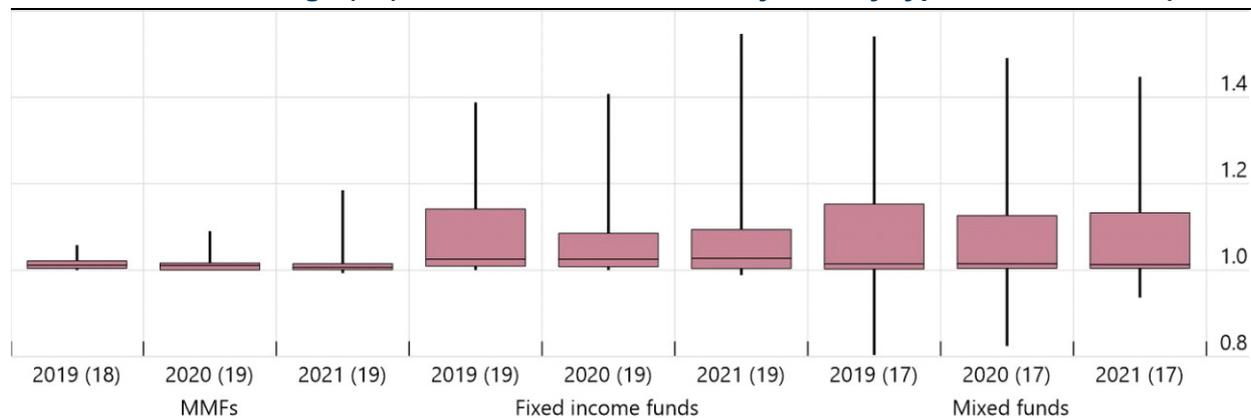


The median value is represented by a horizontal line, with 50% of the values falling in the 25th to 75th percentile range shown by the box. The upper and lower end points of the thin vertical lines show the range of the entire sample. Changes in the distribution across years might be related to changes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

<sup>1</sup> (AUM – liquid assets (narrow) + short-term liabilities + redeemable equity) / AUM (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 2021 represented 80%, 88% and 90% of total assets of MMFs, fixed income funds and mixed funds, respectively. <sup>2</sup> Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

**Balance sheet leverage (L1)<sup>1</sup> remained low across major entity types.<sup>2</sup>** Graph 2-14



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> AUM / net asset value (L1). The sample size indicates the number of jurisdictions submitting the relevant data. Each jurisdiction's data submission reflected data from many individual entities within that jurisdiction. The sample of reporting jurisdictions in 2021 represented 82%, 93% and 98% of MMFs', fixed income funds' and mixed funds' total assets, respectively. One jurisdiction reported mixed funds' leverage metric below 1.0, which was due to AUM being below NAV. <sup>2</sup> Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

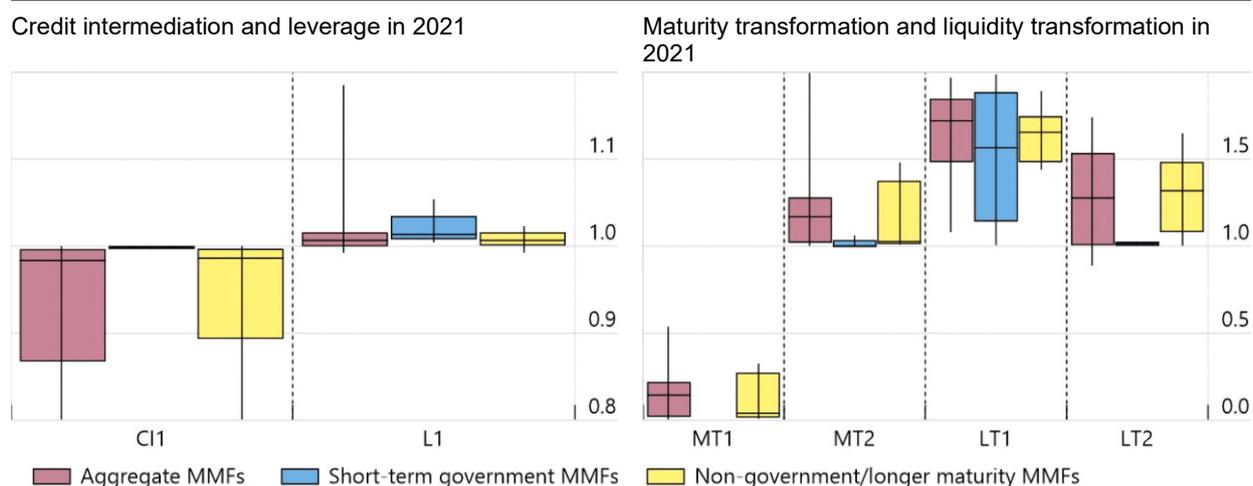
<sup>64</sup> For example, see IOSCO (2022), *Investment Funds Statistics Report*, January for synthetic leverage estimates for hedge funds, open-ended funds and closed-ended funds.

**Disaggregation of risk metrics suggested that short-term government MMFs performed less liquidity transformation than non-government/longer maturity MMFs (Graph 2-15).<sup>65</sup>**

The disaggregated data on these categories of MMFs provides valuable information for purposes of monitoring trends and potential risks. However, as shown in Graph 2-10, LHS, data gaps remain which means that risk metrics can only be interpreted with caution. For this year’s exercise, the FSB was able to collect on a best-efforts basis a representative sample in terms of AUM for C1 through LT2. However, large data gaps remain for MT1 and MT2.

**Risk metrics for MMFs split by type<sup>1</sup>**

**Graph 2-15**



<sup>1</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. Changes in the distribution across years might be related to changes in the sample of jurisdictions that provided data. The sample of reporting jurisdictions in 2021 provided for a coverage higher than 100%, because some jurisdictions used a sample that includes entities prudentially consolidated into banking groups to calculate risk metrics, while such entities were excluded from those classified into the narrow measure. Eight jurisdictions reported metrics for non-government/longer maturity MMFs, and 4 for short-term government MMFs. Does not include data for Russia.

Source: Jurisdictions’ 2022 submissions (national sector balance sheet and other data); FSB calculations.

### 2.3.3. Concentration

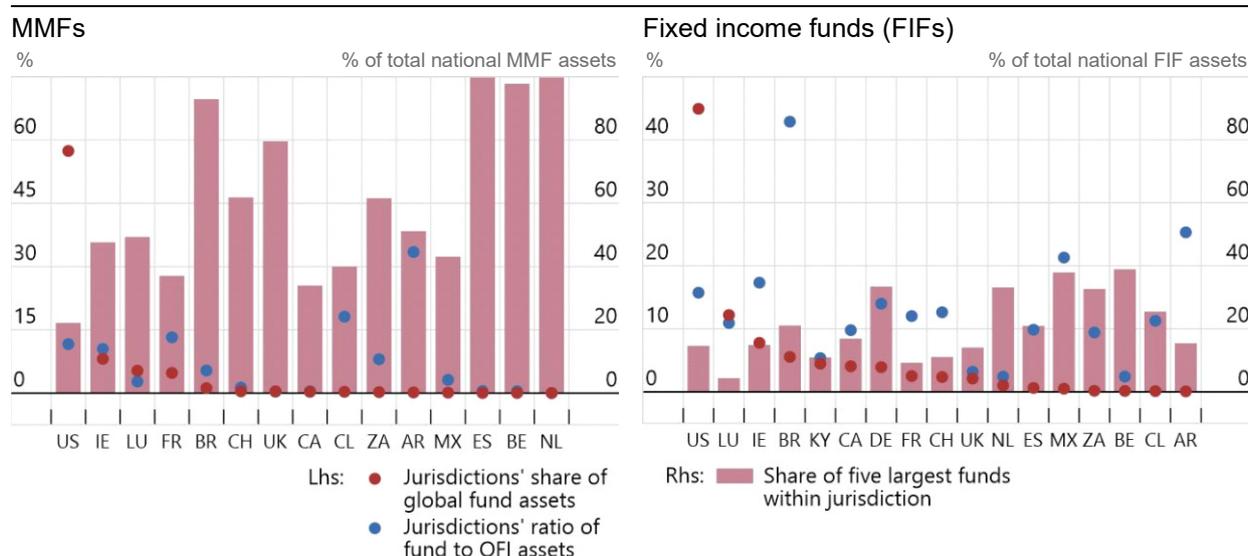
**Similar to the results from previous years, concentration levels in MMFs were generally higher than those in fixed income funds in 2021, ranging from 22.2% to 100% (Graph 2-16).** The five-largest MMFs accounted for over 40% of total MMF assets in 11 out of the 15 jurisdictions reporting the relevant data. In jurisdictions with at least six MMFs, the market share of the top five MMFs ranged from 22.2% in the United States to 100% in the Netherlands. Jurisdictions with greater concentration in domestic MMF sectors tended to have smaller domestic MMF sectors. Fixed income funds, on the other hand, were less concentrated in most jurisdictions with Luxembourg having the least concentrated sector with a market share of only 4.4% for the top five fixed income funds. Concentration of mixed funds across jurisdictions was similar to that of fixed income funds, ranging from 7.2% to 68.6%.

<sup>65</sup> Because of lower data coverage for short-term government MMFs, it is difficult to directly compare maturity transformation across MMF types.

## Concentration among MMFs appeared higher than concentration among fixed income funds<sup>1</sup>

29-Group

Graph 2-16



<sup>1</sup> Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

### 2.3.4. Interconnectedness among EF1 entities

**EF1 entities collect savings and provide funding to the economy, thereby creating linkages.** They are a way for the “ultimate savers” to diversify risk exposures, which can dampen shocks to the financial system by allocating losses from adverse financial market conditions more broadly among a group of investors. Ultimate savers include households, non-financial corporates, governments, banks, but also financial entities and institutional investors.<sup>66</sup> In addition, EF1 entities can create linkages among themselves and with other economic functions. For example, HFs can have prime brokerage relationships with multiple BDs; fixed-income funds might invest into securitised credit assets. Another type of indirect linkage is through portfolio similarities: different funds investing in the same assets (or sector) are indirectly correlated via their exposures. For example, a credit event might affect different EF1 entities with similar exposures at the same time. EF1 entities may also transmit shocks to other markets (and in other jurisdictions) initially not affected by a specific turbulence, especially in cases where EF1 entities exhibit high liquidity transformation and leverage. For example, a shock on the high-yield bond market might trigger redemptions from investors in fixed-income funds, which in turn might then cause these funds to liquidate not only their holdings in high-yield bonds but also in other (liquid) assets to meet redemptions.<sup>67</sup>

**EF1 entities showed diverse linkages with other financial market entities, with MMFs having the largest percentage of assets of identified linkages.** The largest share of identified claims of MMFs were claims on governments, which was explained by the large share of short-term government MMFs in the data (see Graph 2-10, LHS). The identified investor base of MMFs

<sup>66</sup> See Graph 1 in FSB (2021), *Enhancing the Resilience of Non-Bank Financial Intermediation, progress report*, November for a stylised schematic of the NBF1 ecosystem and its interconnections.

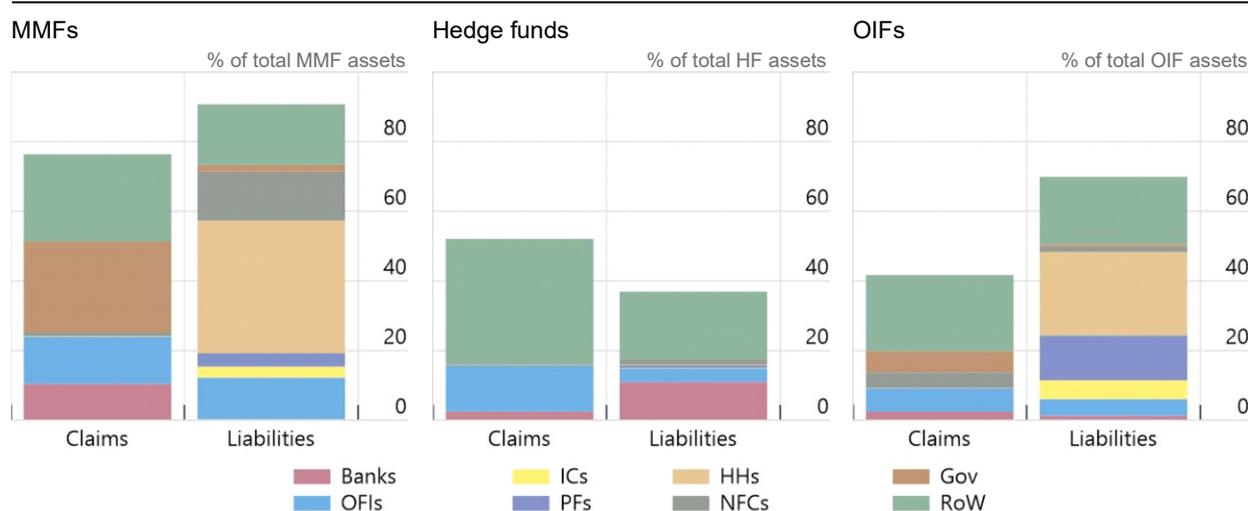
<sup>67</sup> To address potential run risk that may lead to propagation of shocks across financial markets, many jurisdictions have mandated structural features to address vulnerabilities for some or all EF1 entities. The most significant policy tools for each of the five economic functions that form the narrow measure are highlighted in box 2-1.

was led by households, though this varied by jurisdiction. Graph 2-17 presents the interconnectedness of MMF, HFs and OIFs that were inside and outside the EF1. The vast majority of MMFs and HFs were classified into EF1. In the case of OIFs, almost half of the segment was classified into EF1. OIFs had the second largest degree of identified linkages, providing relatively large funding to the RoW, while showing large exposure to households on the liabilities side, reflecting their role as popular investment vehicles for retail investors. (Graph 2-17, RHS). Identified linkages of HFs were rather low relative to their assets, with the RoW being the largest investor into HFs followed by banks.

## Investment fund identified linkages with other financial market participants<sup>1</sup>

29-Group

Graph 2-17



<sup>1</sup> Linkages displayed as the amount of total claims on/liabilities to investment funds as a share of their assets. Only the data of jurisdictions that reported linkages to investment funds are reflected. Twenty jurisdictions reported data on MMF linkages, 9 jurisdictions reported data on HF linkages, and 21 jurisdictions reported data on OIF linkages. Data for OIFs included data for non-EF1 entities. Some linkages remained unknown, hence claims and liabilities do not add up to 100%. Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

**These linkages can be visualised via Sankey charts, which show that households used collective investment vehicles to diversify risk exposures (Graph 2-18).** The ultimate savers appear on the left-hand-side, of which households and PF sectors (besides RoW) were the largest savers as seen in Graph 2-18. In the middle are the intermediaries – such as HFs, MMFs and OIFs – some of which were included in EF1.<sup>68</sup> The ultimate borrowers appear on the right-hand side. The relatively large share of the RoW as ultimate borrowers may indicate the diversification benefits provided by the intermediaries in the middle of the graph. The figure should be interpreted carefully given the large share of unspecified linkages. Participating jurisdictions are committed to continue improving data coverage and quality, to further specify the linkages.

**The Sankey chart shows the central role of EF1 within the financial system, which also means a potential for transmitting shocks.** EF1 entities connect different sectors of the economy, given how ultimate savers do not necessarily belong to the same sectors as ultimate borrowers. EF1 entities are also central to the narrow measure given their size and interconnectedness with other economic functions.

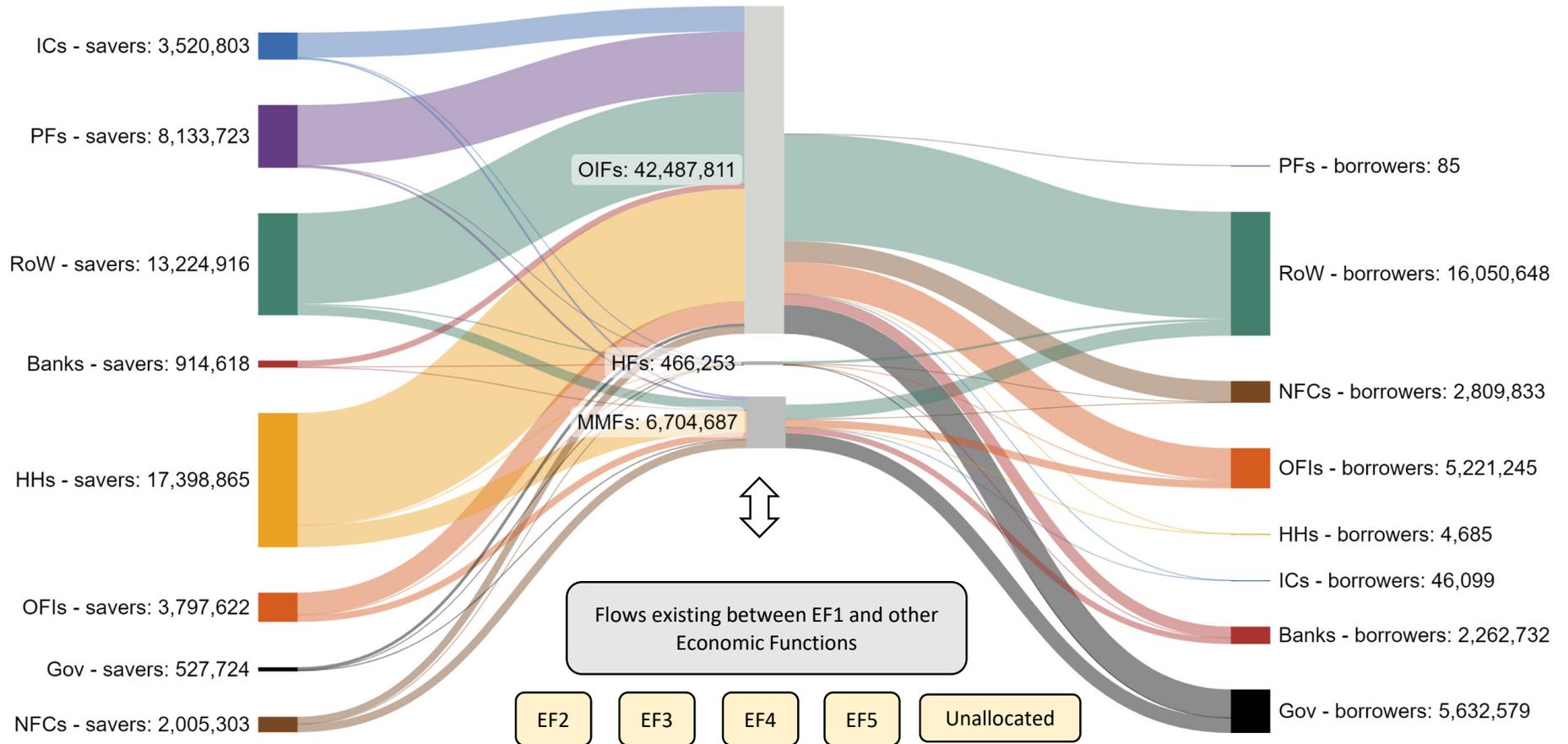
<sup>68</sup> Data on linkages do not permit the separation of entities within and entities outside of EF1.

# Investment funds' identified linkages with ultimate savers and borrowers

29-Group

Graph 2-18

USD million



Only the data of jurisdictions that reported linkages to investment funds are reflected. Does not include data for Russia. Data for OIFs include data for REITs, fixed income funds and mixed funds, as well as for investment funds that were not classified in EF1. See also Graph 1 in FSB (2021), [Enhancing the Resilience of Non-Bank Financial Intermediation, progress report](#), November, for a stylised schematic of the NBF1 ecosystem and its interconnections. The size of OIFs', HFs' and MMFs' balance sheet was estimated by taking the maximum of savings from all ultimate savers and borrowings from all ultimate borrowers. Hence, the sum of OIFs', HFs' and MMFs' balance sheets is not necessarily equal to the sum of savings (i.e. figures on the LHS) or to the sum of borrowings (i.e. figures on the RHS).

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

## 2.4. 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. FinCos, 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 activities in specific sectors due, in part, to expertise. As a result of such specialisation, FinCos may become highly exposed to cyclical sectors. FinCos that rely on short-term or wholesale funding may amplify cycles in these sectors or serve as a means of shock transmission to the sectors they serve if they are unable to roll over these short-term liabilities. Further, FinCos that offer deposit-like products to the retail sector may raise further risks for households and creditors especially, as such products may not be covered by jurisdictions' deposit insurance schemes and may be susceptible to runs. Where data permits and taking a conservative approach, FinCos that are prudentially consolidated into banking groups are excluded from EF2.

### 2.4.1. EF2 assets continued to grow in 2021

**Global EF2 assets grew by 7.7% to \$4.6 trillion in 2021, slightly decreasing its share of the narrow measure because of EF2 assets that grew more slowly than the narrow measure (Graph 2-19, LHS).** The composition of EF2 entities remained stable, with FinCos accounting for 80.4% of global EF2 assets, followed by leasing companies (9.8%) and real estate FinCos (6.3%).

**The United States, India, China and Germany contributed the most to global EF2 asset growth.** In aggregate, EF2 assets in these four jurisdictions increased by \$287.9 billion, which constituted 87.1% of the net increase in global EF2 assets. Overall, 16 jurisdictions, representing around 83% of global EF2 assets, reported asset growth. The United States, India and Japan accounted for the largest share of EF2 assets with 36.0%, 13.2% and 13.1%, respectively. In 2021, EF2 assets in India grew strongly by 13.4%, taking over Japan as the second largest EF2 jurisdiction. In contrast, several jurisdictions experienced large decreases in EF2 assets, in particular in the Netherlands (where the decrease of 21.8% was driven by the restructuring and phasing out of a finance company) and Hong Kong (decrease of 14.8%).<sup>69</sup>

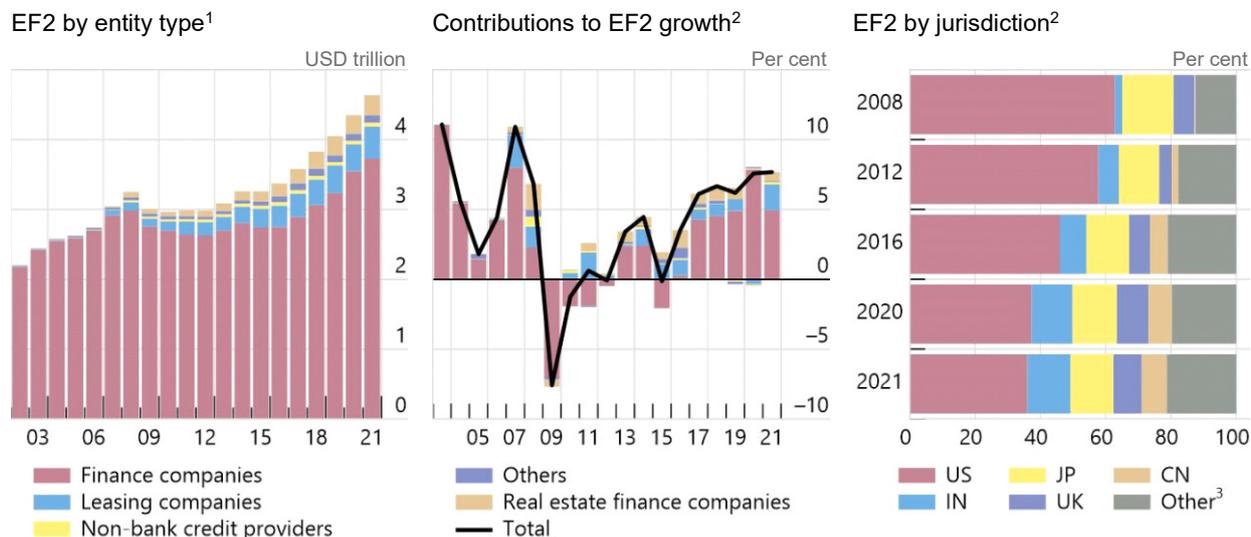
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<sup>69</sup> This reflected that FinCos and borrowers in Hong Kong may have become more prudent in entering loan transactions, in which loans constitute a major component of FinCos' balance sheets. This may have been due to the economic situation amidst the epidemic; the ongoing public education on prudent borrowing; and the requirement for FinCos to undertake an affordability assessment of borrowers before entering into a loan transaction under a new licensing condition imposed on licences renewed / granted since March 2021.

## Finance companies continued to be the main contributor to EF2 asset growth

29-Group

Graph 2-19



<sup>1</sup> Includes data for Russia up until 2020. <sup>2</sup> Does not include data for Russia. <sup>3</sup> Other jurisdictions in 29-Group not displayed separately. Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

### 2.4.2. Risk metrics for finance companies remained largely stable

**Risk metrics for EF2 appeared stable in 2021 compared to the previous two years, especially when focusing on the median ratios (Graph 2-20).<sup>70</sup>** EF2 entities are active in credit intermediation and are the non-bank intermediaries most like banks in terms of their business models and scope of activities.

**The distributions for maturity transformation (MT2), leverage (L4), and liquidity transformation (LT1) in 2021 largely resembled those in 2020, albeit with notable declines in the maximum values of these metrics.** Median maturity transformation (MT2)<sup>71</sup> remained largely stable in 2021. Out of 17 reporting jurisdictions, eight exhibited decreases in MT2, including the two jurisdictions with the highest levels of MT2 in 2020. This narrowed down the range for the metric. The level of liquidity transformation (LT1)<sup>72</sup> was close to one in most reporting jurisdictions, with a slight decrease in the jurisdiction that exhibited the highest ratio in the previous two years.

<sup>70</sup> In several jurisdictions data used to calculate risk include entities prudentially consolidated into banking groups as data limitations mean EF2 entities could not be separately identified.

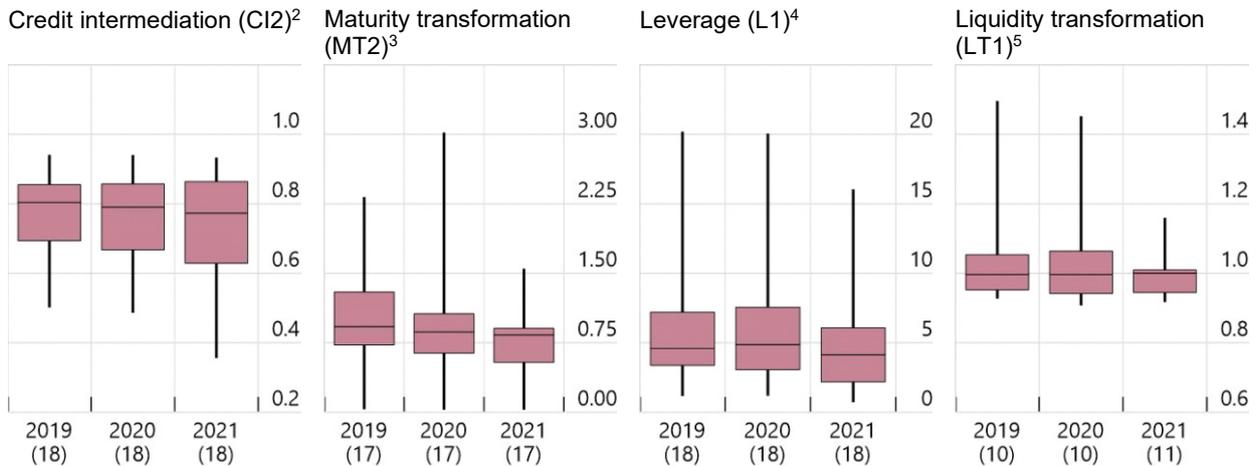
<sup>71</sup> Measured as the ratio of short-term liabilities to short-term assets.

<sup>72</sup> Measured as the ratio of less-liquid assets funded by short-term liabilities.

## Risk metrics for finance companies were stable over the last three years<sup>1</sup>

Ratios for the last three years

Graph 2-20



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 sample size indicates the number of jurisdictions submitting the relevant data. Each jurisdiction's data submission reflected data from many individual entities within that jurisdiction. Panels 1, 2 and 3 include data for Russia up until 2020. <sup>2</sup> loans / total financial assets (CI2). The sample of reporting jurisdictions in 2021 represented 94% of FinCos total assets. <sup>3</sup> Short-term liabilities / short-term assets (MT2). The sample of reporting jurisdictions in 2021 represented 94% of FinCos total assets. <sup>4</sup> Total liabilities / equity (L4). The sample of reporting jurisdictions in 2021 represented 94% of FinCos total assets. <sup>5</sup> (Total financial assets – liquid assets (narrow) + short-term liabilities) / total financial assets (LT1). The sample of reporting jurisdictions in 2021 represented 26% of FinCos total assets.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

**The use of short-term wholesale funding by FinCos remained largely the same in 2021, with large increases seen only in Brazil (Graph 2-21).<sup>73</sup> EF2 entities in Hong Kong<sup>74</sup> and Chile continued to be heavily dependent on short-term wholesale funding, which represented more than 50% of total FinCos' assets. In three other jurisdictions, short-term wholesale funding represented more than 25% of total FinCos' assets.**

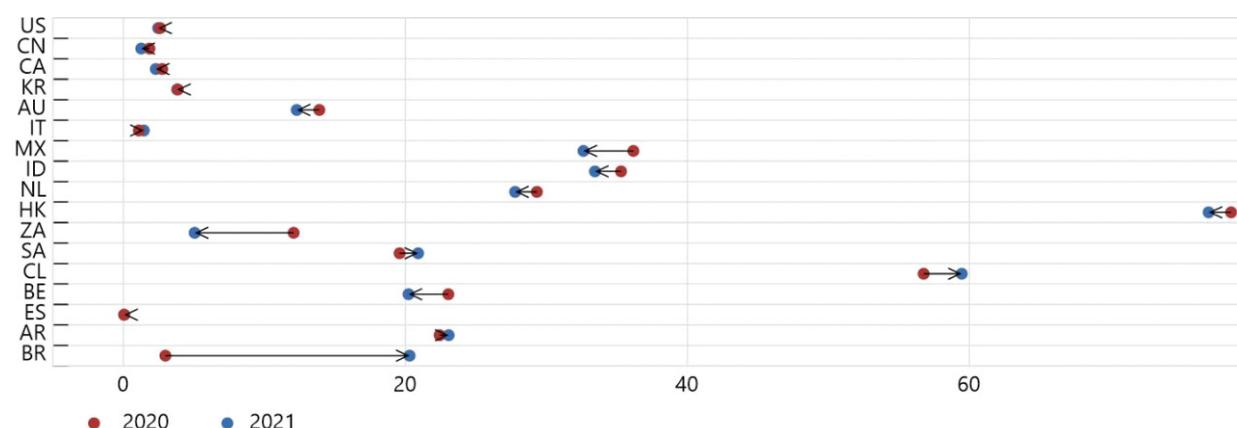
<sup>73</sup> In Brazil, where the FinCo sector accounted for 0.34% of Brazil's NBF1 total assets, all FinCos' short-term wholesale funding is owed by FinCos prudentially consolidated into banking groups; the increase reflected improvements in data collection procedures.

<sup>74</sup> For Hong Kong, the ratio of short-term assets to short-term liabilities of FinCos continued to be close to 1 in 2021, which means little maturity transformation by FinCos in Hong Kong.

## The use of short-term wholesale funding by finance companies changed little in most reporting jurisdictions in 2021<sup>1</sup>

As a percentage of total finance companies' assets

Graph 2-21



<sup>1</sup> Only includes jurisdictions that provided short-term wholesale funding data for both years. Does not include data for Russia.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

### 2.4.3. Interconnectedness among EF2 entities

**Direct interconnectedness with the financial system for EF2 entities comes mainly from their funding, while there are typically linkages with the real economy on their asset side.** FinCos rely on funding provided typically by banks or OFIs to issue loans. They typically rely on short-term loans or get funding through the repo markets. On the asset side, EF2 entities would typically be interconnected with the household and non-financial corporate sectors. There could, however, be more complex linkages when EF2 entities provide loans to OFIs.

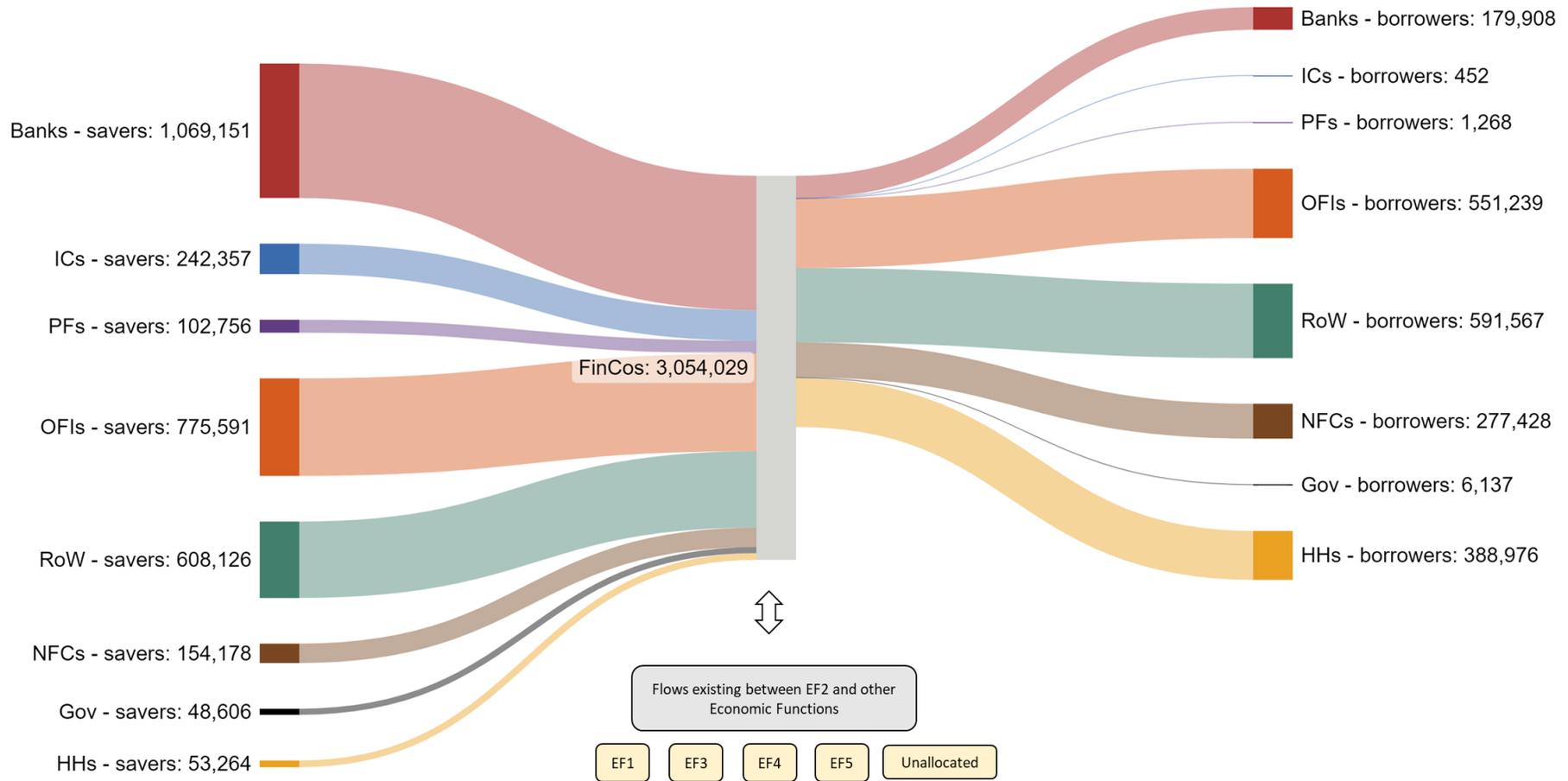
**FinCos' linkages with other sectors bring relevant information about EF2 entities (Graph 2-22).** 61.7% of FinCos' assets were allocated to EF2. FinCos mainly provided funding to the RoW, OFIs, and households and relatively little funding to banks. In contrast, 35% of identified liabilities of FinCos were held by banks, which might be explained by those entities that were part of banking groups. However, FinCos' linkages with other entities need to be interpreted with caution, as only about 33% and 51% of FinCos' claims and liabilities relative to their assets were identified, respectively.

# Finance companies' identified linkages with ultimate savers and borrowers

29-Group

Graph 2-22

USD million



Does not include data for Russia. The size of FinCos' balance sheet was estimated by taking the maximum of savings and borrowings.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations

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

EF3 consists of intermediation activities that depend on short-term funding, including secured funding of client assets, and securities borrowing and lending. EF3 activities are predominantly performed by BDs,<sup>75</sup> which 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 brokerage or investment advice to clients, publishing investment research, and helping raise capital for corporations. The connections that BDs make as market intermediaries are central to the proper functioning of an economy. The monitoring exercise takes a conservative approach such that, data permitting, BDs that are owned by, and hence prudentially consolidated into, banking groups are excluded from EF3 and the narrow measure. Given that BDs are the predominant EF3 entity type,<sup>76</sup> the risk metrics analysed in this section focus exclusively on BDs.

### 2.5.1. EF3 assets grew moderately in 2021

**EF3 total assets grew by 5.6% to \$4.6 trillion in 2021 (Graph 2-23, LHS).** EF3 assets appeared relatively stable over the past 3 years. EF3's share in total narrow measure assets stood at 6.8%, making it the third largest economic function by asset size. EF3 assets prudentially consolidated into banking groups were almost twice as large as EF3 assets not prudentially consolidated into banking groups.

**Growth in total BD assets during 2021 varied across jurisdictions with assets in EMEs growing at a significantly faster rate (24.7%) than assets in AEs (1.4%).** This trend was reflected in the growth of total EF3 assets, as BD assets account for 97.5% of EF3. Among EMEs, most BD asset growth was attributed to China, which represented 96.5% of the total increase in EME BD assets classified in EF3. The United States, Japan, China and Korea accounted for more than 90% of EF3 assets (Graph 2-23, RHS). China's share of global EF3 assets increased from 0% in 2008 to 16.3% in 2021. Japan's share of global EF3 assets also increased from 12.9% in 2008 and has stabilised since 2016, remaining at around 30%, whereas the United States global share of EF3 continued to decrease from 71.1% in 2008 to 36.4% in 2021. In Hong Kong, Japan, and Korea, EF3 constituted the largest share of their jurisdictional narrow measure with 43.4%, 45.1%, and 31.8% of narrow measure assets, respectively.

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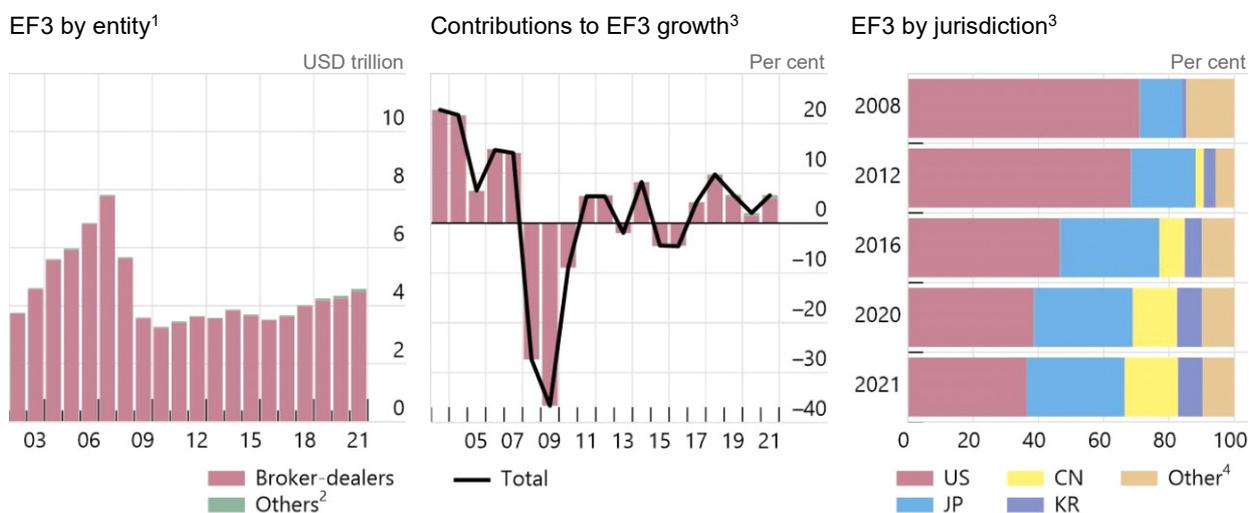
<sup>75</sup> BDs account for 97.5% of EF3 assets, and 35.8% of BD assets were allocated into EF3.

<sup>76</sup> Securities FinCos also fall within EF3. Unlike prior Global Monitoring Reports, U.S. securities lending assets and custodial accounts for reinvested collateral of securities lending operations are no longer separated anymore from those of BDs. They are included in EF3 BD assets, which better reflects their inclusion in the balance-sheet of EF3 BDs.

## EF3 was essentially composed of broker-dealer assets, which were almost stable over the past 3 years

29-Group

Graph 2-23



<sup>1</sup> Includes data for Russia up until 2020. <sup>2</sup> "Others" include securities FinCos and dealers. <sup>3</sup> Does not include data for Russia. <sup>4</sup> Other jurisdictions in 29-Group not displayed separately.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

### 2.5.2. Risk metrics for EF3 all decreased in 2021

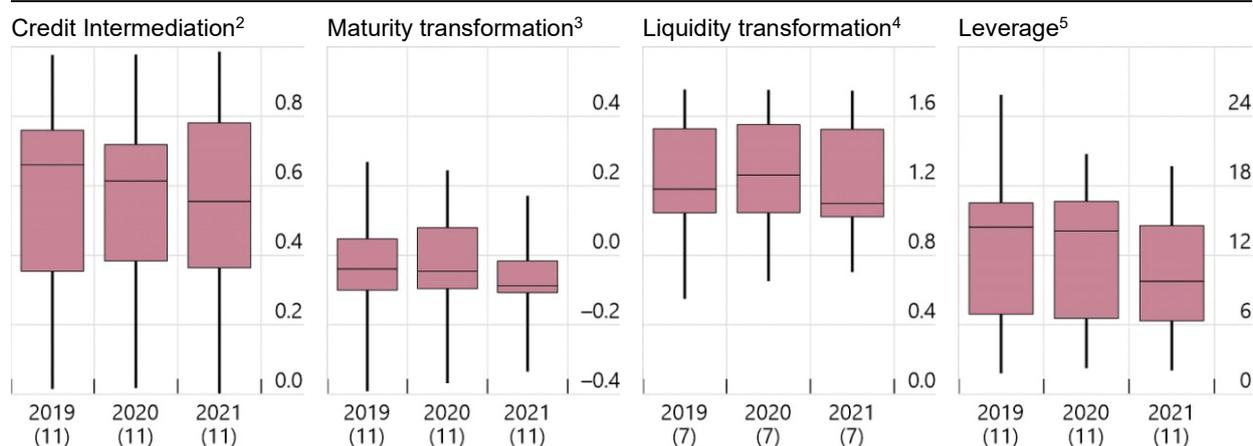
BDs are a critical part of financial intermediation chains, in particular by facilitating other entities' trading in securities and providing liquidity to securities markets. Any vulnerabilities materialising in this sector, therefore, have the potential to spread quickly through the financial system, in particular during periods already featuring scarce market liquidity. As a result, BDs may be vulnerable as they use leverage or engage in a significant degree of maturity and liquidity transformation. In some circumstances, such vulnerabilities could amplify shocks or cause them to spill over to impact the wider economy.<sup>77</sup> Depending on these entities' funding models, their intermediation activities may involve 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). Leveraged investors may amplify and propagate shocks if they unwind positions quickly to raise cash. Thus, such entities are exposed more generally to the risk of dysfunction in short-term funding markets.

<sup>77</sup> In some jurisdictions, these vulnerabilities of BDs 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 sheets of the BDs are composed almost exclusively of cash and liquid securities.

## All risk metrics and leverage in particular decreased in 2021

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

Graph 2-24



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. Panels 1, 2 and 4 include data for Russia up until 2020. Each jurisdiction's data submission reflects data from many individual entities within that jurisdiction. The coverage for these risk metrics was higher than 100% because some jurisdictions classified higher total assets in the risk metrics data than in the classification data which was net of entities prudentially consolidated entities into banking groups. <sup>2</sup> Credit assets / total financial assets (CI1). The sample of reporting jurisdictions in 2021 represented more than 100% of total EF3 BD assets. <sup>3</sup> (Long-term assets – equity – long-term liabilities) / total financial assets (MT1). The sample of reporting jurisdictions in 2021 represented more than 100% of total EF3 BD assets. <sup>4</sup> (Total financial assets – liquid assets (narrow) + short-term liabilities) / total financial assets (LT1). The sample of reporting jurisdictions in 2021 represented more than 100% of total EF3 BD assets. <sup>5</sup> Total financial assets / equity (L1). The sample of reporting jurisdictions in 2021 represented more than 100% of total EF3 BD assets.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

**BD credit assets grew only by about 2% in 2021, while loan assets grew by about 15%, slightly larger than the 5-year average growth rate of 13% between 2016–20.** In several jurisdictions, BDs' credit intermediation activities continued to occur mainly through debt securities, repo, and reverse repo.<sup>78</sup> Direct lending is only a small fraction of BDs' credit intermediation activities. The median ratio of CI1 (credit assets to total financial assets) for BDs was significantly lower than in the previous year at 0.47 in 2021 compared to 0.60 in 2020 and the distribution has widened indicating varying results in participating jurisdictions. About half of this decrease was due to an additional jurisdiction being included in the sample for 2021.

**All EF3 risk metrics decreased in 2021, with the decrease in leverage being the largest (Graph 2-24).** Seven jurisdictions experienced a decrease in the maturity transformation (MT1) metric levels in 2021. Liquidity transformation (LT1) decreased slightly, decreasing in three out of seven jurisdictions. EF3 BD leverage (L1) significantly decreased. Out of 11 reporting jurisdictions, seven jurisdictions observed lower BD leverage in 2021, and two jurisdictions had larger than 45% decreases in their individual leverage risk metric. As the decrease was broad-based, the additional jurisdiction in the 2021 sample did not affect the median value result in a significant way.

**Regarding repo assets and liabilities, the net position for BDs in 2021 again showed that BDs continued to be net recipients of funding from repo markets (see Graph 2-25).** Repo assets remained largely the same in 2021, however liabilities decreased by 3.6% relative to the

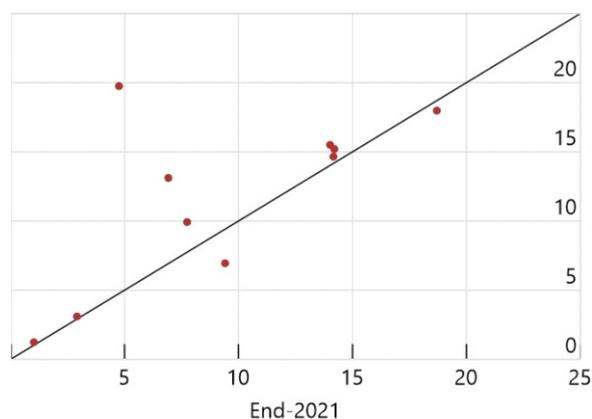
<sup>78</sup> Transactions in which a party sells or buys a security to an eligible counterparty, most likely a BD, with an agreement to repurchase or sell that same security at a specified price and at a specific time in the future.

previous year – a sign that aggregate demand for repo funding has decreased, particularly among AEs. Wholesale total funding, except repo funding, grew by 3.8% in the case of BDs in 2021, while the short-term component of wholesale funding grew only by 3.1%.

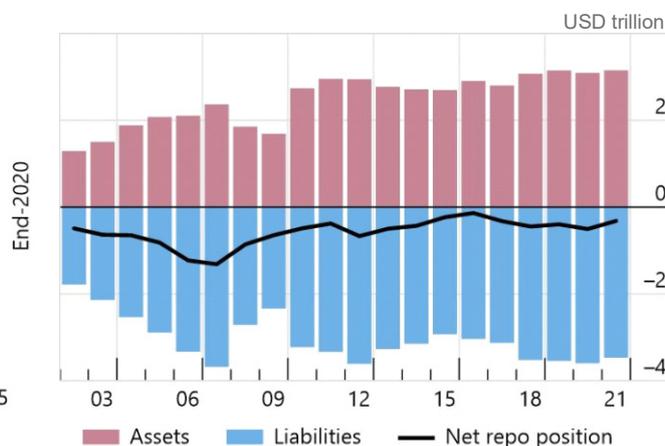
### Broker-dealers continued to be net recipients of funding from repo markets in 2021

Graph 2-25

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



BDs' repo assets and liabilities<sup>2</sup>



<sup>1</sup> Includes data from 10 jurisdictions representing 77% of total EF3 assets. Does not include data for Russia. A significant change in the 2021 value was observed for one jurisdiction because of changes in data samples. <sup>2</sup> Includes data from 13 jurisdictions representing 80% of total EF3 assets.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

### 2.5.3. Interconnectedness among EF3 entities

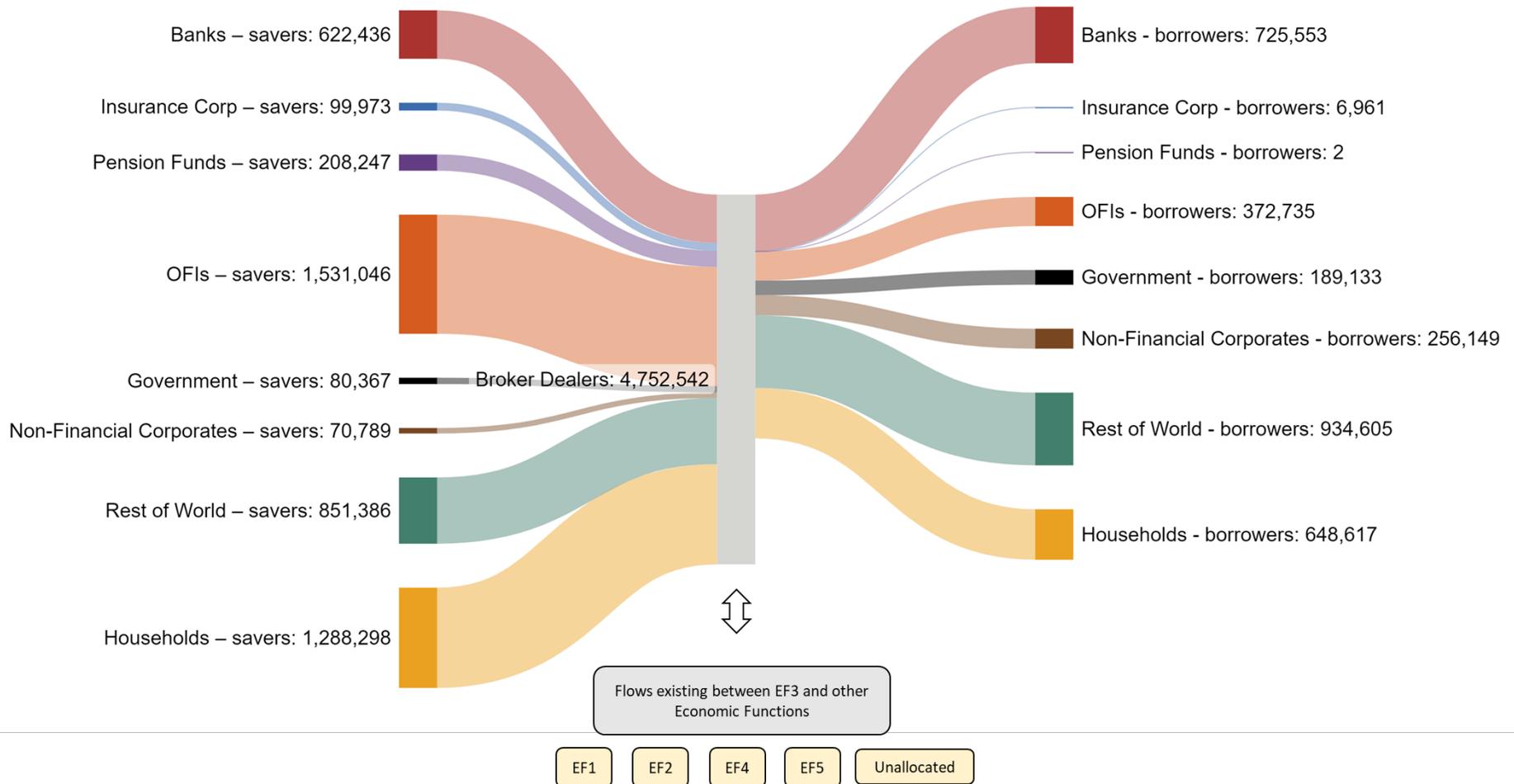
**BDs allow ultimate savers to buy and sell securities and, in the process, allow for financial asset-price discovery and market-making.** They are conduits in financial markets between ultimate savers, ultimate borrowers, non-bank lenders, and institutional investors; hence they have exposure to all other economic functions and entities outside the narrow measure. Furthermore, in the course of providing these services, BDs may develop linkages with other BDs and other types of financial intermediaries. These linkages may be with entities outside of the narrow measure, such as CCPs, or inside the narrow measure, such as SFVs, MMFs, and HFs. The annual monitoring exercise collects balance sheet interconnectedness data for BDs, but with the limitation that these data do not distinguish between BDs that are prudentially consolidated or not consolidated into banking groups. BDs' linkages with other sectors still bring relevant information about the connections of EF3 entities (Graph 2-26), although the share of unspecified linkages remains high (more than half of the claims and half of the liabilities).

# Broker-dealers' identified linkages with ultimate savers and borrowers

29-Group

Graph 2-26

USD million



Graph shows data from 17 participating jurisdictions that reported exposures of financial market participants to broker-dealers. Does not include data for Russia. The household sector appeared large because of the classification of hedge funds into this sector in the United States. The size of broker-dealers' balance sheet was estimated by taking the maximum of savings and borrowings

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

**In terms of interconnectedness, the size of the claims and liabilities of BDs did not significantly contribute to total OFI liabilities and claims, respectively.** Gross bank claims on BDs amounted to \$622 billion in 2021, whereas banks' liabilities to BDs amounted to \$726 billion. A slightly negative aggregate net position was observed for banks against both BDs that were and were not prudentially consolidated into banking groups. Notwithstanding, there was some heterogeneity at the individual jurisdiction level with AEs showing a positive net position versus a negative net position in EMEs. For example, in Mexico, BDs mainly funded their activities through repo liabilities, mostly using government and bank securities as collateral. There was an increase in the proportion of government and other private securities used in 2021 relative to 2020, however, and a corresponding decrease in banking securities. Their main counterparties were domestic banks.

In some jurisdictions such as the United States, Switzerland, and France BDs may serve as prime brokers to hedge funds. These BDs may develop indirect connections with other BDs and market participants through leveraged common exposure to assets.<sup>79</sup> Due to limited data outside the scope of the monitoring exercise, some of these links cannot be quantified – for example, BD links with credit HFs in EF1. It is however expected that these linkages play an important role in the financial system given the role of liquidity providers of BDs. In addition, BDs may interact with financial entities outside the narrow measure, such as financial auxiliaries, ICs, and PFs.

## 2.6. 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, often using off-balance sheet commitments and derivatives. In doing so, EF4 entities facilitate credit creation by attracting investors and lenders seeking to offload a portion of the credit risk associated with loans and debt securities.

**If credit, liquidity or counterparty risks are mispriced, or incentives are misaligned, EF4 entities may contribute to excessive risk-taking, potentially contributing to boom-bust cycles.** The pricing of credit protection should reflect the creditworthiness of both the borrower and guarantor, but asymmetric information or other market frictions can cause imperfect credit risk transfer. In booms, these inefficiencies could result in an oversupply of credit to the real economy, whereas in busts, they could overly restrict credit supply.

**EF4's impact and importance may be significantly understated because of the difficulty of adequately capturing off-balance sheet exposures.** The analysis in this section relies on credit insurers' balance sheets, which are often modest. Balance sheets may not reflect the nominal value of credit exposure when entities offer credit protection using derivatives contracts. Only four jurisdictions included off-balance sheet assets in EF4.

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<sup>79</sup> See for example ESMA (2022), *Ex-post analysis of derivatives risks in Archegos*, May.

Risk metrics for EF4 are not published because of the difficulty in interpreting the relatively sparse risk data provided by jurisdictions. Because of the small size of EF4 assets as a proportion of financial assets in reporting jurisdictions, reporting of risk metrics data for EF4 is particularly sparse.<sup>80</sup>

### *2.6.1. EF4 assets grew by 4.0% in 2021*

**Assets classified into EF4 in 2021 remained close to their 2020 value of \$169.4 billion, and EF4 continued to be the smallest EF in the narrow measure** (Graph 2-27 LHS). Mortgage insurers and BDs mainly drove the growth of EF4 assets of 4.0% in 2021 while ICs and financial guarantors saw slight declines.<sup>81</sup> EF4's share in the narrow measure remained generally stable at 0.2% in 2021.

**Mortgage insurers and ICs together made up more than 50% of EF4 assets, with shares of 26.9% and 25.2%, respectively.** Nine jurisdictions classified ICs into EF4. Five jurisdictions reported mortgage insurers as EF4 entities.

**Other identifiable entity types engaged in EF4 are BDs and financial guarantors.** BDs accounted for 20.2% of EF4 assets. In Korea, EF4 was comprised exclusively of BDs that provide securitisation services to SFVs as well as guarantees, credit, and liquidity lines as part of this service. Financial guarantors accounted for another 1.2% of EF4 assets.

**Increases in mortgage insurer and BD assets supported a growing trend in EF4 assets that started in 2017.** Mortgage insurers have been growing since 2014 and are the dominant EF4 entity type. The United States, Korea, France, Ireland and Italy accounted for more than 80% of EF4 assets.

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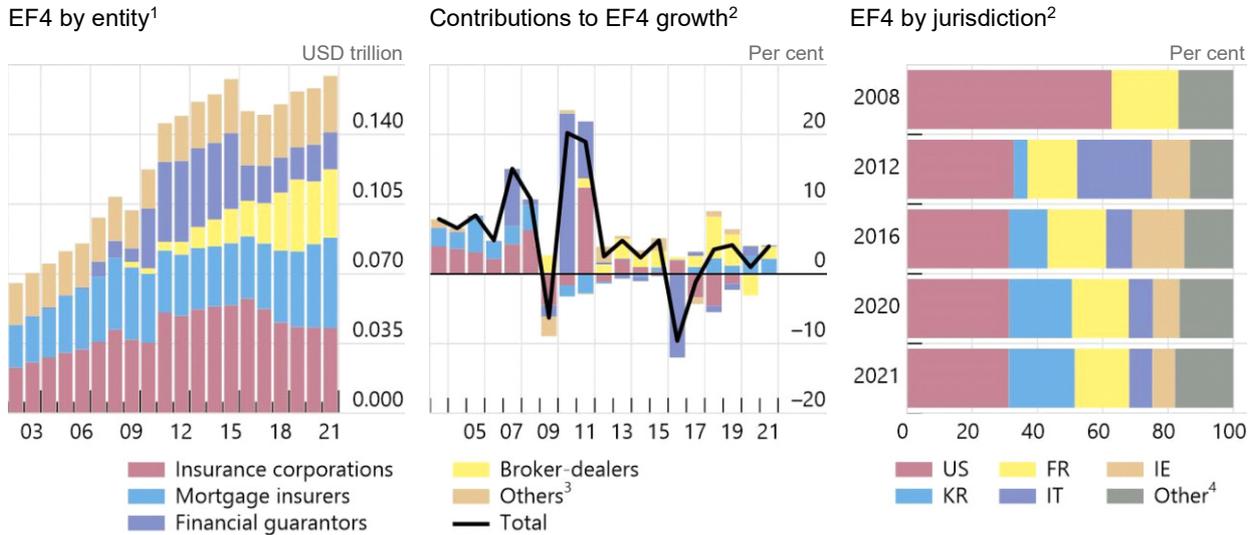
<sup>80</sup> The Experts Group establishes a threshold for reporting of risk metrics and requests risk metrics data from a jurisdiction only if an entity type's aggregate assets represent more than 1% of the jurisdiction's total financial assets or 1% of total global assets for the specific entity type classified in the narrow measure.

<sup>81</sup> Only Korea classifies BDs into EF4.

## Mortgage insurers contributed to most of the growth in EF4 and have been steadily growing since 2014

29-Group

Graph 2-27



<sup>1</sup> Includes data for Russia up until 2020. <sup>2</sup> Does not include data for Russia. <sup>3</sup> Includes SFVs and SPVs. <sup>4</sup> Other jurisdictions in 29-Group not displayed separately.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

### 2.6.2. Interconnectedness among EF4 entities

**EF4 entities can produce linkages via the activity they carry out, and also via their balance-sheets.** Given that EF4 entities support entities engaged in credit intermediation, there are direct linkages. For example, if an EF4 entity withdrew its insurance guarantees, credit intermediation might become more costly or even stop. Beyond these direct linkages, EF4 entities and ICs in particular would typically invest the premia they receive from their activities. As large asset managers, they could then be connected with EF1 entities (many ICs use investment funds to diversify their assets), with EF3 entities (when being directly active in financial markets) and with EF5 entities by investing in securitised assets. Another type of linkage is when EF4 entities use derivatives and are then exposed to margin calls. EF4 entities could use MMFs to manage their cash and redeem large funds to meet large margin calls.

**Data on the linkages of ICs might be useful to understand the linkages of some of the EF4 entities.** Linkages data covered not only ICs active in the business of providing credit guarantees and mortgage insurers, but also other types of insurers. The scope was therefore larger than the insurers part of EF4. ICs' linkages can still provide useful takeaways that might apply to EF4 entities. Typically, the assets held by ICs are funded by all of their insurance business lines and, therefore, the sectors on which ICs have claims on may be similar to those of EF4 entities. ICs held large claims on OFIs and the RoW, followed by investments into NFCs and government debt. Most of their liabilities were held by households, which reflected the insurance sector's customer base and might not necessarily apply to all EF4 entities.

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

EF5 includes entities that are involved in securitisation-based credit intermediation (e.g. issuing asset- or mortgage-backed securities and collateralised loan obligations (CLOs)) or funding of financial entities through investment funds or TCs to finance illiquid assets by raising funds from markets. Both banks and NBFIs 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>82</sup> By facilitating the transfer of credit risk off-balance sheet, securitisation reduces funding costs for both bank and NBFIs and promotes the availability of credit to the real economy. Nonetheless, securitisation may contribute to a build-up of excessive credit, maturity/liquidity transformation, or leverage. Vulnerabilities arising from securitisation-based credit intermediation may be more prominent 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.

### 2.7.1. EF5 assets rebounded in 2021

**After a decrease in 2020, global EF5 assets increased by 9.0% in 2021 to \$5.1 trillion and accounted for 7.5% of the narrow measure** (Graph 2-28, LHS). EF5's share of the narrow measure, however, continued to decline and was down from 21.8% in 2009. EF5 was composed of SFVs and TCs, which represented 93.2% and 6.8% of EF5 assets, respectively. The United States, Cayman Islands, Ireland, China, Italy and Luxembourg accounted for close to 80% of global EF5 assets. The proportion of TCs in EF5 has shrunk since 2017, as a result of a sustained decline in the assets of Chinese TCs after the introduction of tighter regulations on TCs as well as enhanced monitoring of them in recent years.<sup>83</sup>

**SFV assets classified into EF5 grew by 17.8% in 2021, continuing a trend that started in 2016.** This overall growth was supported by growth in Cayman Islands (78.5%), Ireland (21.7%), Luxembourg (14.9%) and the United States (11.8%). After the pandemic-induced disruptions in March and April 2020, markets recovered following the intervention of central banks and public authorities, which allowed for more favourable funding conditions and tighter spreads, explaining this growth.<sup>84</sup> EF5 assets in Italy, however, sustained a decrease of 3.1%, because of a reabsorption of the boom in the previous years, driven by the decrease of NPLs in Italy and the reimbursement of ABS that reached maturity.

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<sup>82</sup> See IOSCO's Report on asset securitisation incentives (IOSCO 2011).

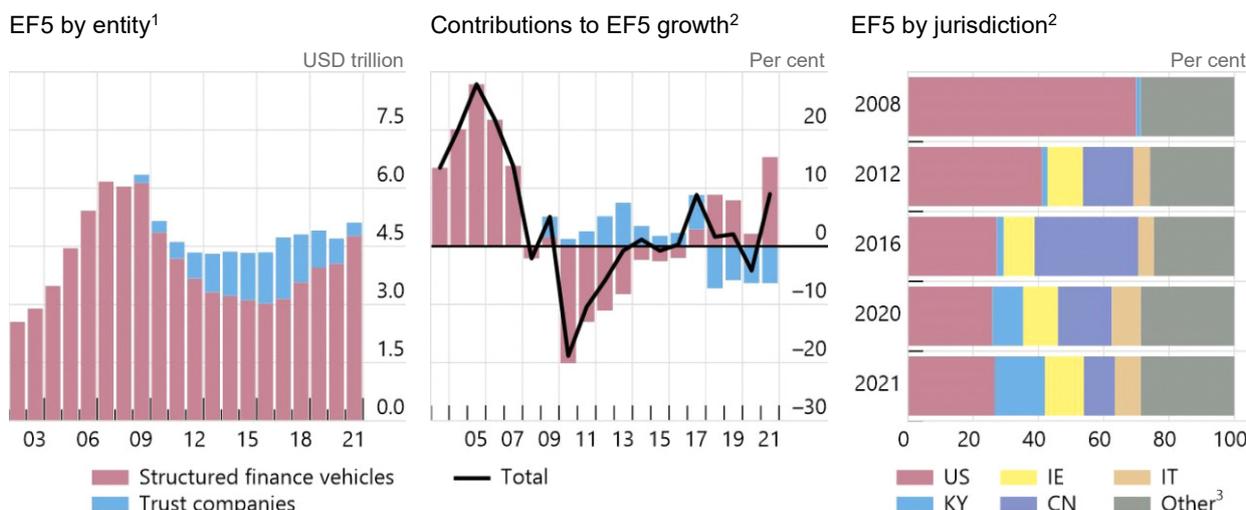
<sup>83</sup> In November 2017, a new policy was issued by the Chinese authorities to regulate banks and trust corporations, requiring that trust corporations do not provide financial institutions with a conduit service for the purpose of avoiding regulations such as investment or leverage constraints. 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 Chinese authorities. Meanwhile, the China Banking and Insurance Regulatory Commission strengthened the monitoring of conduit trusts and took enforcement action against violations.

<sup>84</sup> In the United States for example, tight spreads of ABS created favourable funding market conditions for specialty finance companies, and issuance of ABS in 2021 is running at a record pace and significantly higher compared to the same period in 2020. See Financial Stability Oversight Council (2021), *Annual Report*.

## TC assets decline continued to weigh on EF5

29-Group

Graph 2-28



<sup>1</sup> Includes data for Russia up until 2020. <sup>2</sup> Does not include data for Russia. <sup>3</sup> Other jurisdictions in 29-Group not displayed separately. Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

### 2.7.2. Risk metrics for EF5 increased slightly in 2021

**SFVs classified into EF5 continued to engage in a significant degree of credit intermediation, particularly through 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, slightly increased from 0.78 to 0.81 (Graph 2-29, LHS). The high values for CI2 indicated that SFVs typically intermediated 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>85</sup> There were also a couple of jurisdictions which consistently show a very low level of credit intermediation.

**Maturity transformation of SFVs remained low in most jurisdictions, indicating that liabilities and assets closely matched in maturities** (Graph 2-29, middle panel). The median ratio of short-term liabilities to short-term assets (both less than and equal to 12 months) (MT2) stayed slightly below one across the 14 reporting jurisdictions at 0.72. Its extreme value, however, increased significantly, showing that maturity transformation remained large in one jurisdiction.

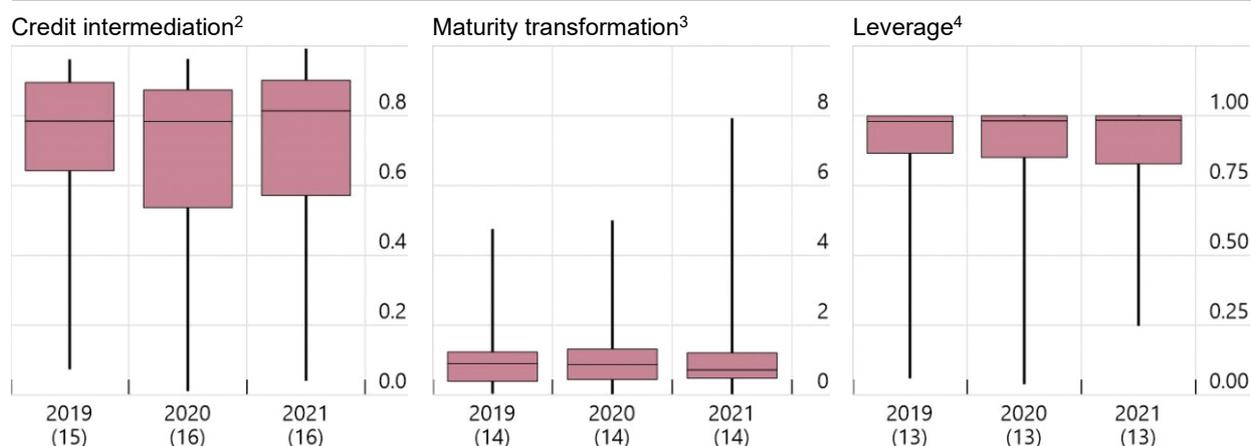
**Leverage, measured as the ratio of total liabilities to total financial assets, largely remained unchanged in 2021.** Most jurisdictions presented a ratio higher than 0.9 and the median remained close to one. In some jurisdictions, however, SFVs appeared to issue substantial equity, explaining low minimum levels of leverage (Graph 2-29, RHS). The left-side of the distribution changed because of one jurisdiction that did not provide data this year.<sup>86</sup>

<sup>85</sup> In some jurisdictions, data used to calculate risk metrics included entities prudentially consolidated into banking groups.

<sup>86</sup> Another jurisdiction provided data for the first time this year, hence the total number of jurisdictions reporting data for leverage metrics appears constant.

## Credit intermediation dispersion increased in 2020 while maturity transformation and leverage remained stable<sup>1</sup>

Graph 2-29



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 indicated the number of jurisdictions submitting the relevant data. Each jurisdiction's data submission reflected data from many individual entities within that jurisdiction. Does not include data for Russia. <sup>2</sup> Loans / total financial assets (CI2). The sample of reporting jurisdictions in 2021 represented 100% of SFV total assets. <sup>3</sup> Short-term liabilities / short-term assets (MT2). The sample of reporting jurisdictions in 2021 represented 93% of SFV total assets. <sup>4</sup> (Total financial assets – equity) / total financial assets (L5). The sample of reporting jurisdictions in 2021 represented 59% of SFV total assets.

Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

### 2.7.3. Interconnectedness among EF5 entities

**Investors holding EF5 liabilities are exposed to different levels of credit risk.** EF5 entities allow a diverse base of investors to get exposure to credit assets of different credit quality. Thus, these investors share a common credit exposure among themselves, and vis-a-vis the entities which issued the loans.

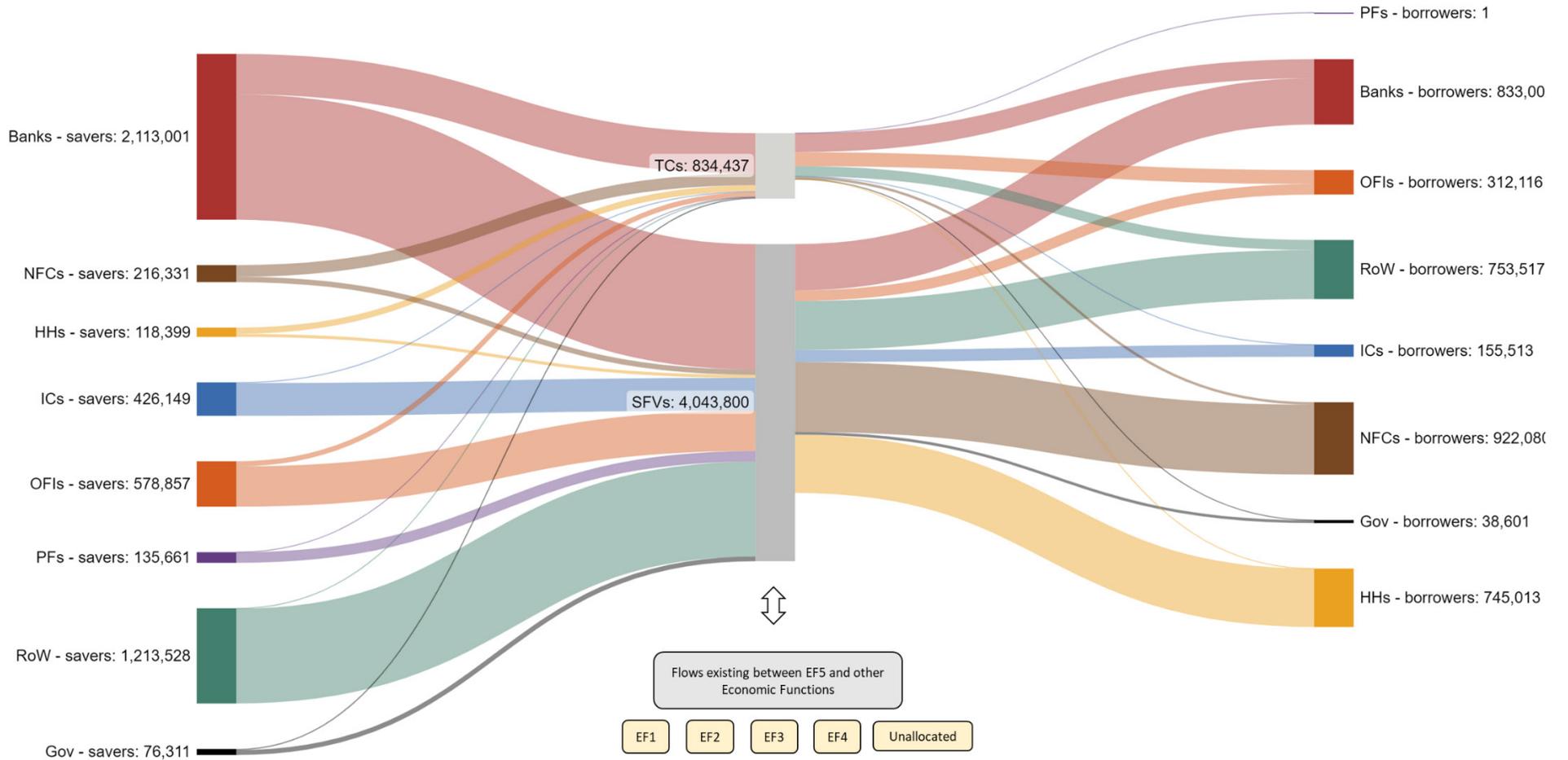
**Banks were the most significant entity within SFVs' investor base, followed by the RoW (Graph 2-30).** Most SFVs' assets were allocated to EF5, in which they were the main component, followed by TCs. Banks owned a large share of their liabilities, either providing funding or investing in the securitised assets they issue. As investors, SFVs held claims on different entities, mainly NFCs and households. TCs held claims mainly on banks and OFIs. Significant shares of the linkages remain unspecified – 40% of claims and 20% of liabilities.

# Trust companies' and structured finance vehicles' identified linkages with ultimate savers and borrowers

29-Group

Graph 2-30

USD million



Does not include data for Russia. The size of TCs' and SFVs' balance sheet was estimated by taking the maximum of savings and borrowings.

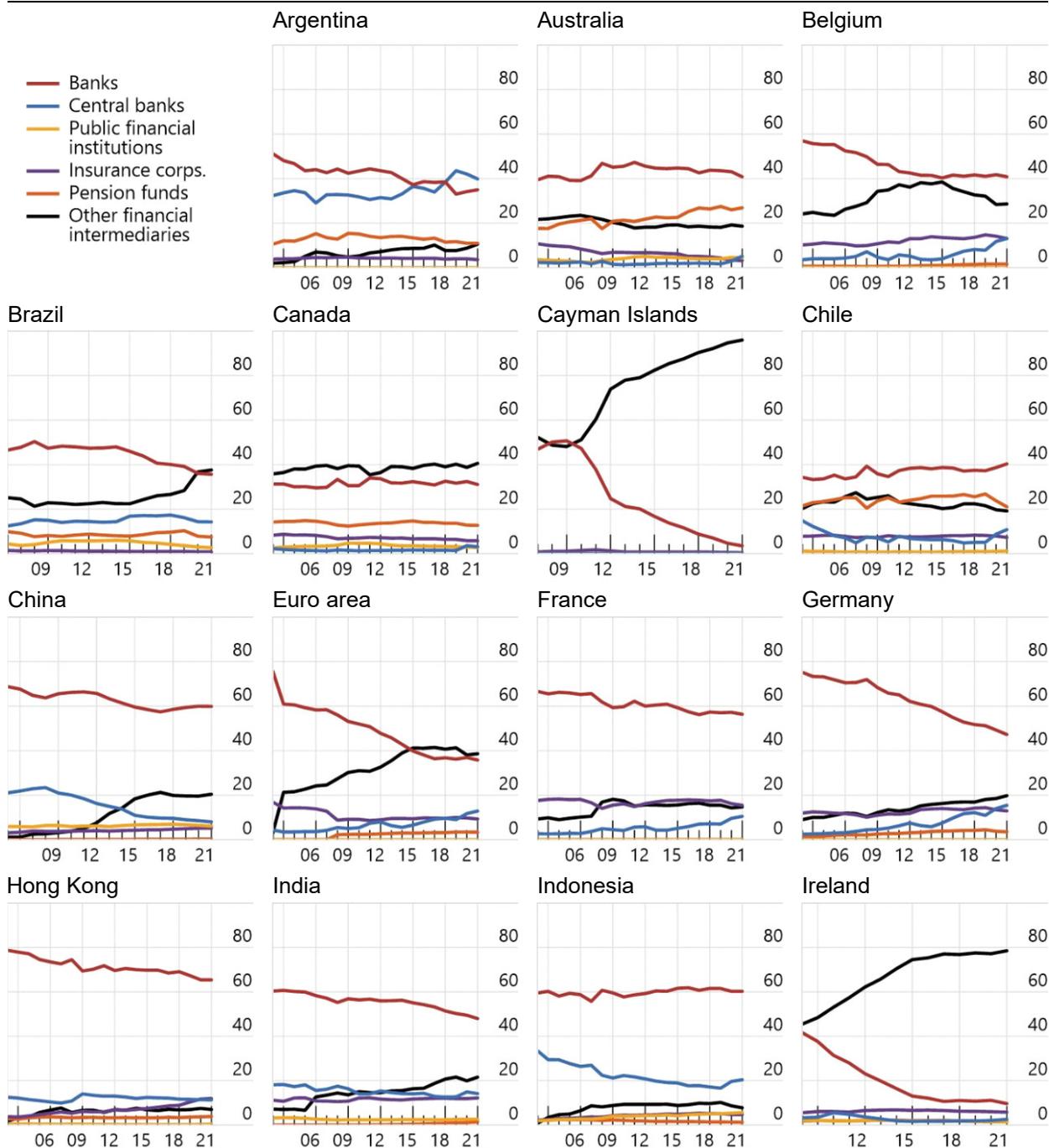
Source: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

# Annex 1: Jurisdiction-specific financial sectors

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

In per cent

Graph A1-1



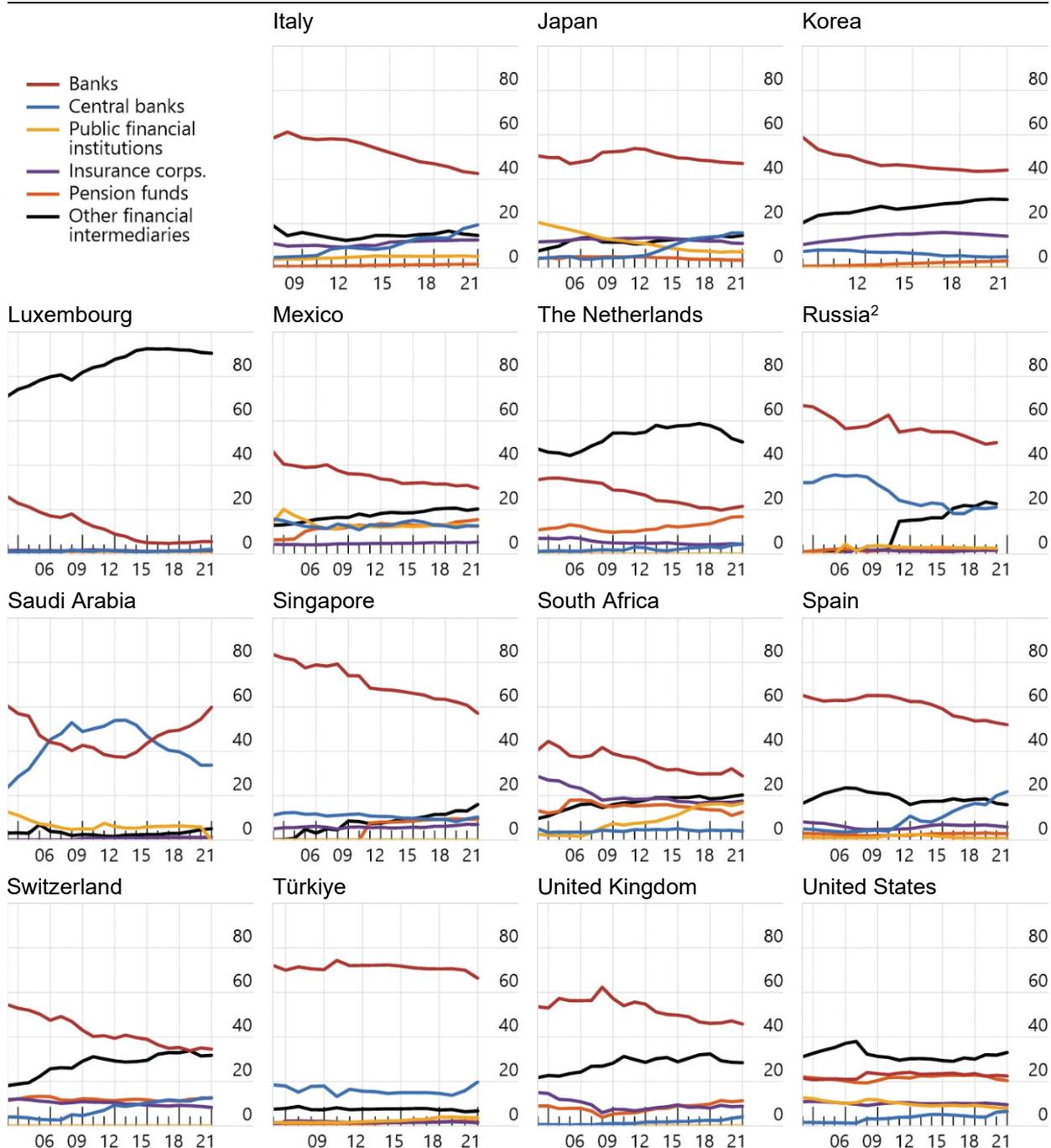
<sup>1</sup> Based on historical data included in jurisdictions' 2022 submissions. Exchange rate effects were netted out by using a constant exchange rate (from 2021).

Sources: Jurisdictions' 2022 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' 2022 submissions. Exchange rate effects were netted out by using a constant exchange rate (from 2021). <sup>2</sup> Data for Russia up until 2020.

Sources: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

## Annex 2: Summary table

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

	NBFI sector	NBFI components				Excluded from narrow measure <sup>1</sup>	Narrow measure of NBFI	Narrow measure components (by economic function (EF))					
		ICs	PFs	OFIs	FAs			EF1	EF2	EF3	EF4	EF5	Unallocated
<b>2007</b>	102.7	20.3	21.1	60.1	1.3	62.2	32.3	13.6	3.0	7.8	0.1	6.2	1.6
<b>2008</b>	100.1	19.3	19.9	59.7	1.3	57.9	31.4	14.0	3.3	5.7	0.1	6.0	2.3
<b>2009</b>	105.0	20.8	21.5	60.9	1.7	64.6	29.1	14.9	3.0	3.6	0.1	6.3	1.2
<b>2010</b>	112.9	22.3	23.5	65.3	1.8	70.4	28.6	16.1	3.0	3.3	0.1	5.2	1.1
<b>2011</b>	116.9	23.1	24.5	67.6	1.7	72.9	29.7	17.8	3.0	3.5	0.1	4.6	0.7
<b>2012</b>	127.4	24.9	26.2	74.5	1.8	80.0	33.5	21.7	3.0	3.6	0.1	4.3	0.7
<b>2013</b>	138.9	26.1	29.1	82.0	1.7	88.7	36.6	24.8	3.1	3.6	0.2	4.3	0.6
<b>2014</b>	152.8	28.1	30.8	92.1	1.8	97.9	40.4	28.1	3.3	3.9	0.2	4.4	0.7
<b>2015</b>	160.2	29.0	31.6	97.6	1.9	103.5	43.5	31.2	3.3	3.7	0.2	4.3	0.8
<b>2016</b>	172.5	30.7	33.4	106.3	2.1	114.7	46.6	34.2	3.4	3.5	0.2	4.3	1.1
<b>2017</b>	185.4	32.2	35.7	115.3	2.3	123.7	50.6	37.4	3.6	3.7	0.1	4.7	1.0
<b>2018</b>	185.3	32.5	36.0	114.4	2.4	122.4	51.3	37.4	3.8	4.0	0.2	4.8	1.1
<b>2019</b>	203.3	35.8	39.6	125.2	2.8	134.1	57.2	42.7	4.0	4.3	0.1	4.9	1.2
<b>2020</b>	220.5	38.2	42.0	137.4	3.0	145.6	61.7	46.7	4.4	4.3	0.2	4.7	1.5
<b>2020<sup>2</sup></b>	219.7	38.1	41.9	136.7	3.0	145.4	61.7	46.7	4.3	4.3	0.2	4.7	1.5
<b>2021<sup>2</sup></b>	239.5	40.0	44.7	151.4	3.4	158.7	67.8	51.6	4.6	4.6	0.2	5.1	1.7

NBFI = 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 were netted out by using a constant exchange rate (from 2021). 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 NBFI entities classified outside the narrow measure, prudentially consolidated into banking groups, or that are part of the statistical residual. <sup>2</sup> Does not include data for Russia.

Sources: Jurisdictions' 2022 submissions (national sectoral balance sheet and other data) and 2021 submission for Russia; 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 economic functions 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 \$158.7 trillion at end-2021. OFIs not classified into any economic function in the 2022 monitoring exercise include mainly captive financial institutions and money lenders (\$22.1 trillion) and equity funds, including equity ETFs (\$34.5 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 framework),<sup>87</sup> including for maturity/liquidity transformation, leverage, and imperfect credit risk transfer, and are therefore excluded from the narrow measure.<sup>88</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>89</sup> The amount of prudentially consolidated assets, including self-securitisation, as of end-2021 was \$11.1 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 \$1.9 trillion at end-2021 (0.8% 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>90</sup>

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<sup>87</sup> See Basel Committee on Banking Supervision, [Basel Framework](#).

<sup>88</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.

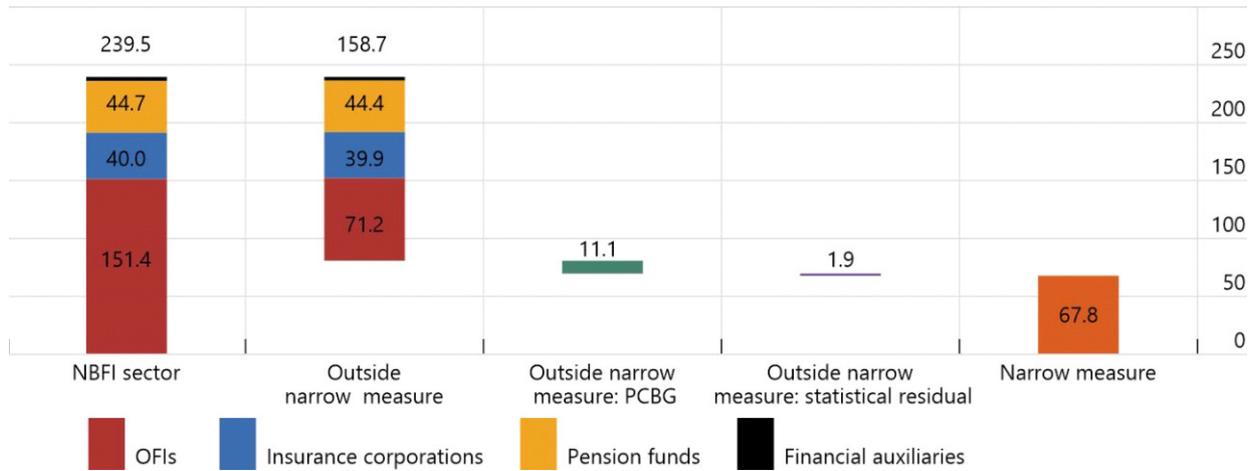
<sup>89</sup> Self-securitisation/retained securitisation vehicles take loans from a bank and turn these into debt securities to be used by the same bank as collateral, should the need arise, for accessing central bank funding.

<sup>90</sup> Residuals were reported by Argentina, Switzerland, China, Germany, France, Italy, Japan, Korea, the Cayman Islands, Luxembourg, Russia (for the year 2020), and South Africa. The \$1.9 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 \$1.9 trillion may be added to the \$67.8 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

28 jurisdictions at end-2021, in trillions of U.S. dollars

Graph A3-1



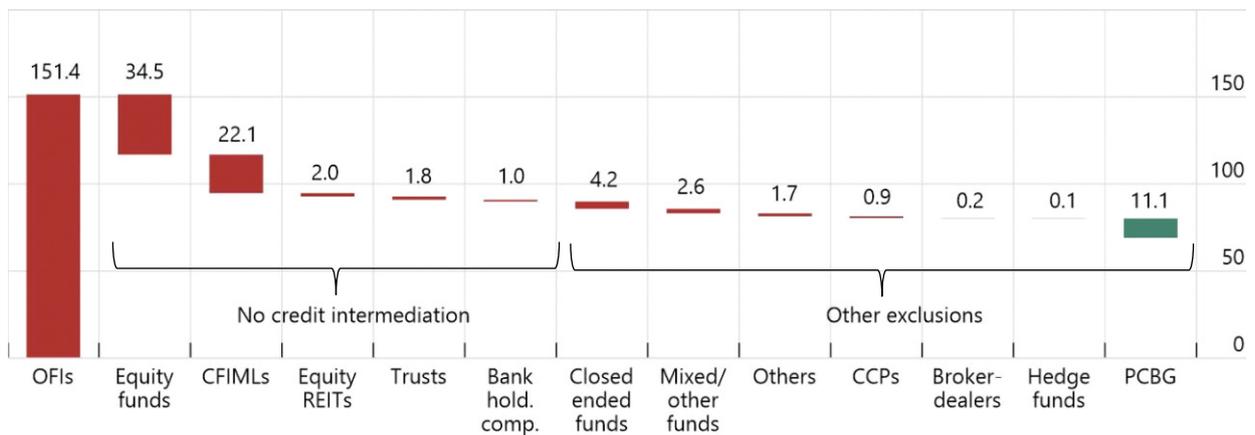
PCBG = assets of classified entity types which are prudentially consolidated into a banking group; Statistical residual = reported residual for OFIs generated by the difference between total OFIs and the sum of all known sub-sectors therein. Does not include data for Russia.

Sources: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

## Exclusion of OFI entity types from the narrow measure

28 jurisdictions at end-2021, in trillions of U.S. dollars

Graph A3-2



OFIs also includes CFIMLs; CFIMLs = 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. Does not include data for Russia.

Sources: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

**In addition to the five economic functions, the narrow measure also includes \$1.7 trillion of assets that are included in an “unallocated” category.** This category includes non-bank financial entities that authorities did not assign to a specific economic function, 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>91</sup>

<sup>91</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 economic functions or exclude them from the narrow measure. In some cases, however, the 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 economic functions.

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 2022 monitoring exercise, authorities performed a classification assessment and a series of mutual reviews to arrive at the narrow measure and excluded \$61.2 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.

- **Captive financial institutions and money lenders** 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 via collective investment vehicles) 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 invest only 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 Türkiye); 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 Türkiye 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 collective investment vehicles. For example, Discretionary Funds in Indonesia have been assessed not to be collective investment vehicles as they are separately managed and 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 because of 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 India and Netherlands 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, Ireland, Luxembourg, and the Netherlands, that largely do not engage in credit intermediation are excluded from the narrow measure. A small portion of hedge funds in Luxembourg and the Netherlands was excluded from the narrow measure as they are closed-ended and do not employ leverage and thus were assessed to not pose significant financial stability risks.

## Annex 4: Risk metrics

### Box A4-1: Risk metrics

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

Examples of risk metrics	Definition and range
<p><b>Credit intermediation (CI)</b></p> $CI1 = \frac{\text{credit assets}}{\text{total financial assets}}$ $CI2 = \frac{\text{loans}}{\text{total financial assets}}$	<p>These metrics compare the amount of credit assets and loans held by a particular entity type to its total assets (<b>CI1</b> and <b>CI2</b>, respectively). As loan assets are part of wider credit assets, CI2 can be viewed as a sub-set of CI1.</p> <p>These metrics fall between 0 and 1, with higher values showing more involvement in credit intermediation while “0” indicating no involvement in credit intermediation.</p>
<p><b>Maturity transformation (MT)</b></p> $MT1 = \frac{(\text{long term assets} - \text{equity}) - \text{long term liabilities}}{\text{total financial assets}}$ $MT2 = \frac{\text{short term liabilities}}{\text{short term assets}}$	<p><b>MT1</b> is the portion of long-term assets (&gt;12 month maturity) funded by short-term liabilities (≤ 30 days) (i.e. not funded by equity or long-term liabilities or, in the case of EF1 entities, by non-redeemable equity), 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.</p> <p><b>MT2</b> is the ratio of short-term liabilities (plus redeemable equity in the case of EF1 entities) 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.</p>
<p><b>Liquidity transformation (LT)</b></p> $LT1 = \frac{(\text{total financial assets} - \text{liquid assets (narrow)}) + \text{short term liabilities}}{\text{total financial assets}}$ $LT2 = \frac{(\text{total financial assets} - \text{liquid assets (broad)}) + \text{short term liabilities}}{\text{total financial assets}}$	<p><b>LT</b> 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 EF1 entities), approximated by short-term liabilities minus liquid assets (under a narrow definition for <b>LT1</b> and a broad definition for <b>LT2</b>).** 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.</p>
<p><b>Leverage (L)</b></p> $L1 = \frac{\text{total financial assets}}{\text{equity}}$ $L2 = \frac{\text{total financial assets} + \text{total off balance sheet exposures}}{\text{equity}}$ $L3 = \frac{\text{gross notional exposure (GNE)}}{\text{net asset value (NAV)}}$ $L4 = \frac{\text{total liabilities}}{\text{equity}}$ $L5 = \frac{(\text{total financial assets} - \text{equity})}{\text{total financial assets}}$	<p><b>L1</b> 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, <b>L2</b> 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 on the basis of data availability. For example, a non-equity ratio (<b>L5</b>) was used for SFVs instead.</p>

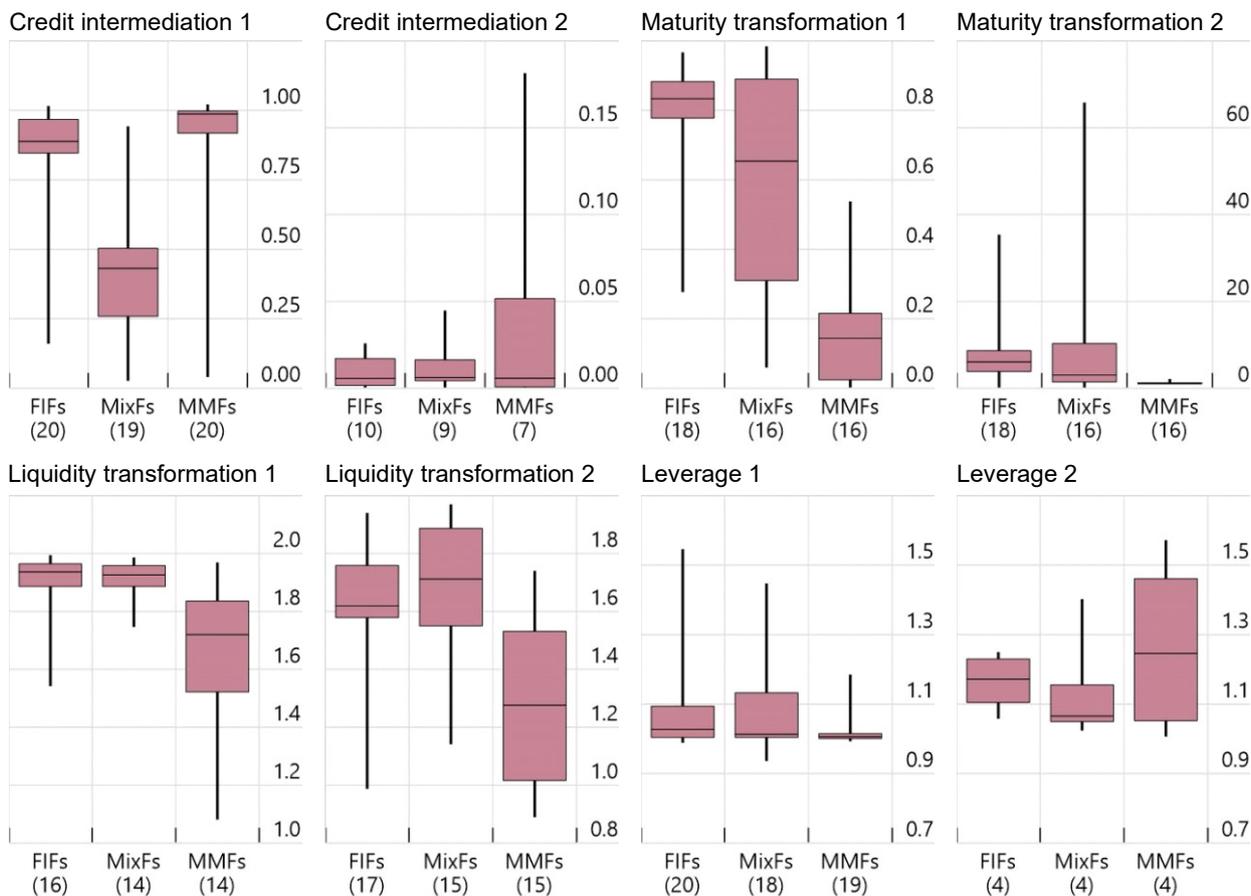
\* For EF1 entities, the collected balance sheet data and calculated risk metrics were expanded to also include assets under management (AUM) instead of total financial assets, Gross Notional Exposure and Net Asset Value (to calculate leverage ratios), and non-/redeemable equity (as a form of long-/short-term 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 include only 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-2021

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. The sample size indicates the number of jurisdictions submitting the relevant data. Does not include data for Russia.

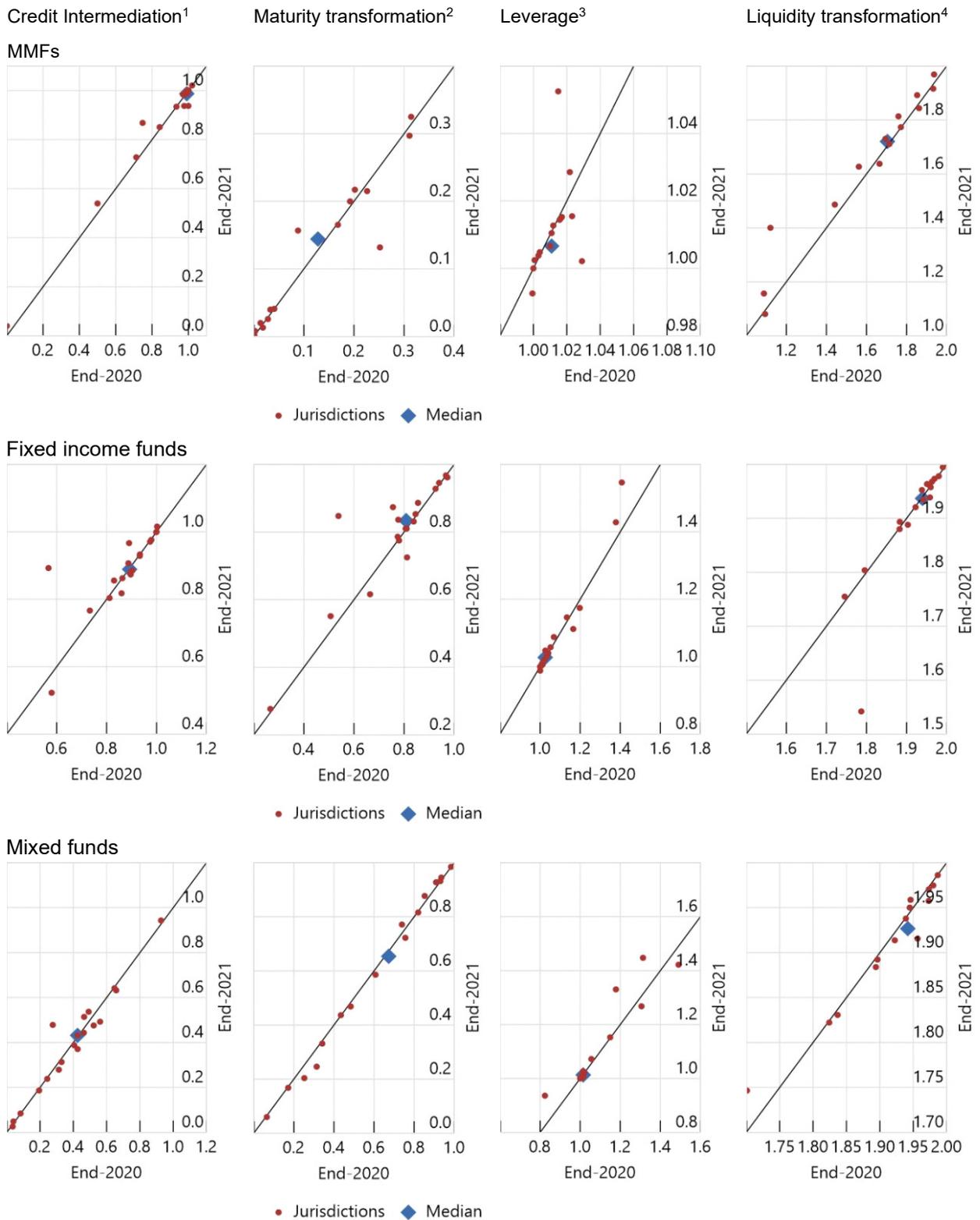
See Box A4-1 for metrics definitions.

Sources: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations

# EF1: Focus on selected risk metrics for investment funds in 2020 and 2021 across jurisdictions<sup>1</sup>

End-2021 versus end-2020

Graph A4-2



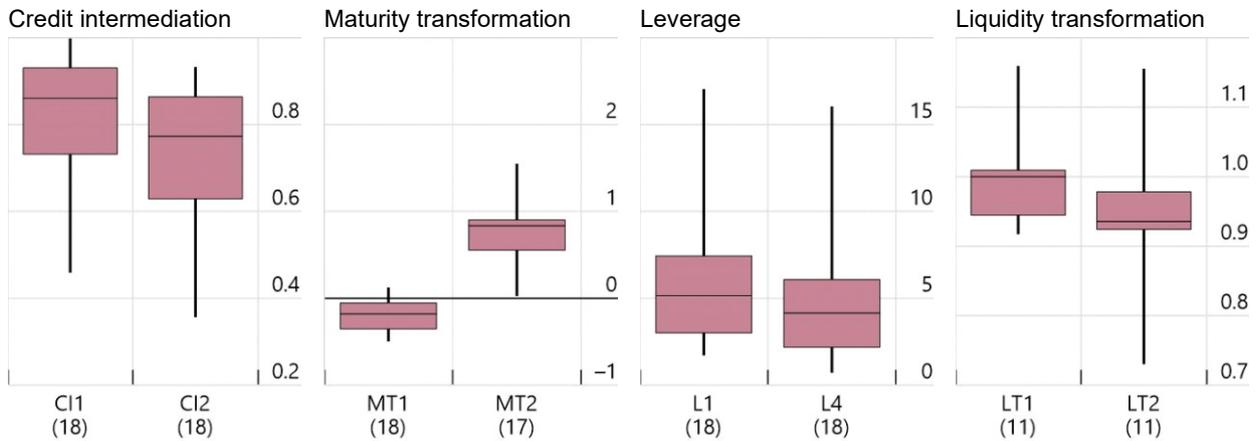
<sup>1</sup> Does not include data for Russia. <sup>2</sup> Credit assets / AUM (CI1). <sup>3</sup> (Long-term assets – non-redeemable equity – long-term liabilities) / AUM (MT1). <sup>4</sup> AUM / net asset value (leverage 1). <sup>5</sup> AUM – liquid assets (narrow) + short-term liabilities + redeemable equity) / AUM (LT1).

Sources: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

## EF2: Risk metrics for finance companies

At end-2021

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. The sample size indicates the number of jurisdictions submitting the relevant data. Panels 1, 2 and 3 include data for Russia up until 2020.

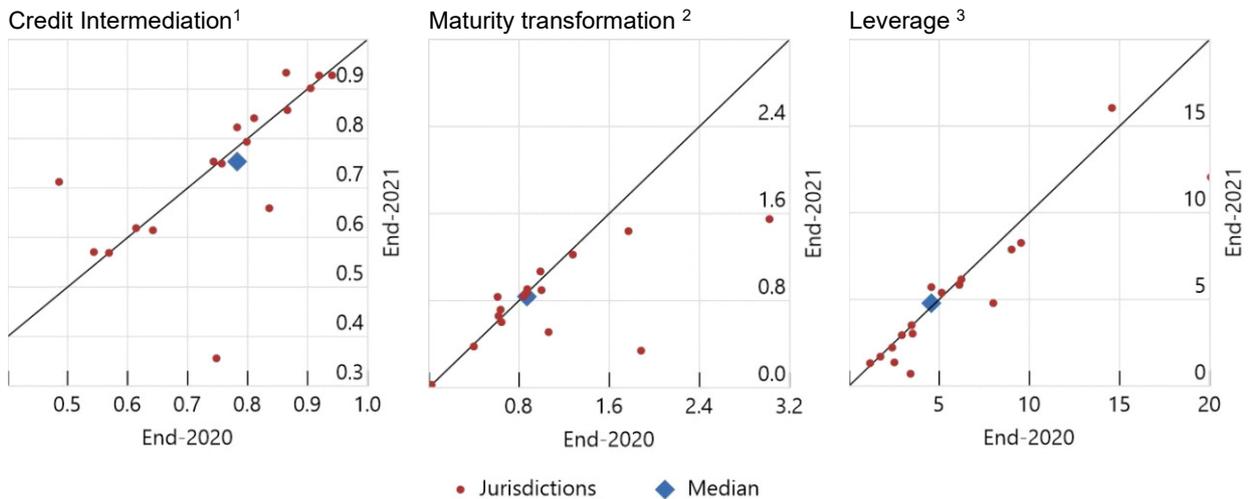
See Box A4-1 for metrics definitions.

Sources: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

## EF2: Focus on selected risk metrics for finance companies in 2020 and 2021 across jurisdictions<sup>1</sup>

End-2021 versus end-2020

Graph A4-4



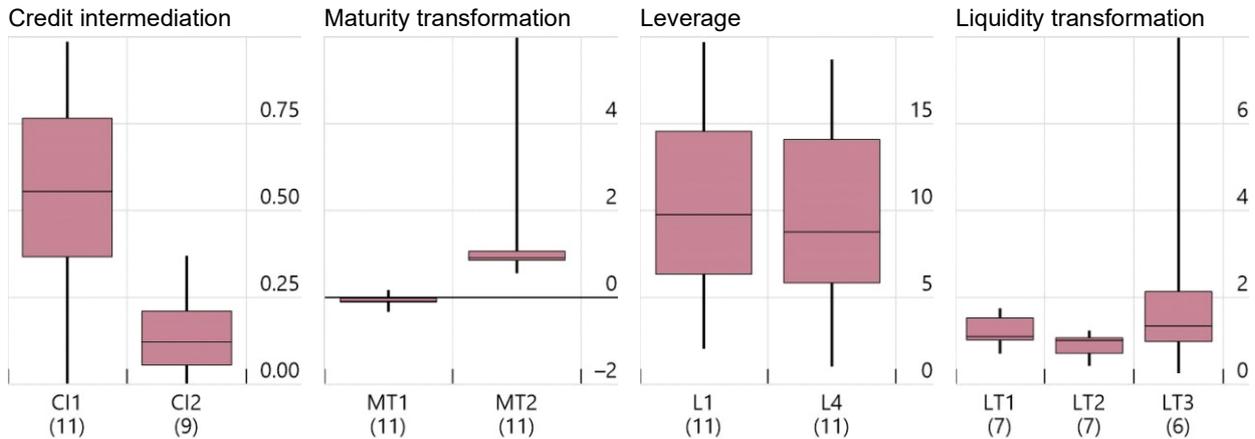
<sup>1</sup> Does not include data for Russia. <sup>2</sup> Loans / total financial assets (CI2). <sup>3</sup> Short-term liabilities / short-term assets (MT2). <sup>4</sup> Total liabilities / equity (L4).

Sources: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

### EF3: Risk metrics for broker-dealers

At end-2021

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. Panels 1, 2 and 4 include data for Russia up until 2020.

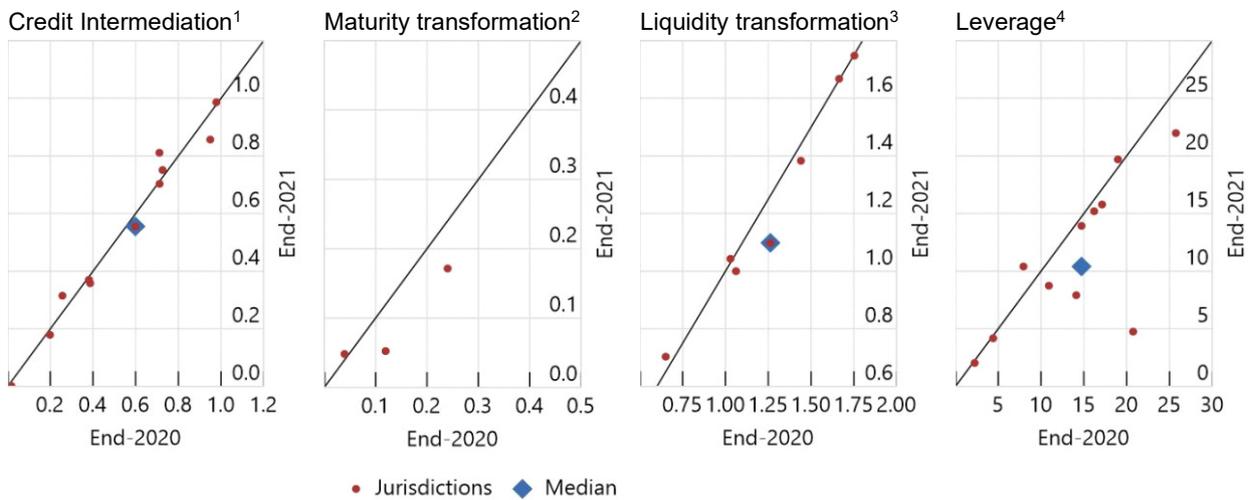
See Box A4-1 for risk metrics definitions.

Sources: Jurisdictions' 2022 submissions (national sector balance sheet and other data) and 2021 submission for Russia; FSB calculations.

### EF3: Focus on selected risk metrics for broker-dealers in 2020 and 2021 across jurisdictions<sup>1</sup>

End-2021 versus end-2020

Graph A4-6



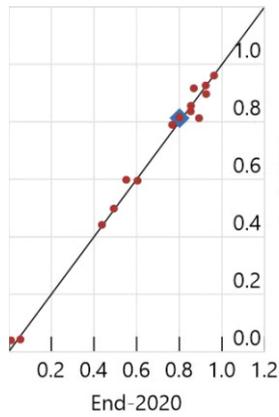
<sup>1</sup> Does not include data for Russia. <sup>2</sup> Credit assets / total financial assets (CI1). <sup>3</sup> (Long-term assets – equity – long-term liabilities) / total financial assets (MT1). <sup>4</sup> (Total financial assets – liquid assets (narrow) + short-term liabilities) / total financial assets (LT1). <sup>5</sup> Total financial assets / equity (L1).

Sources: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

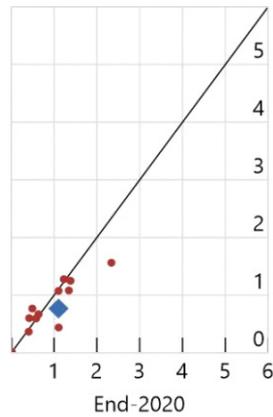
**EF5: Focus on selected risk metrics for structured finance vehicles in 2020 and 2021 across jurisdictions<sup>1</sup>**

**Graph A4-7**

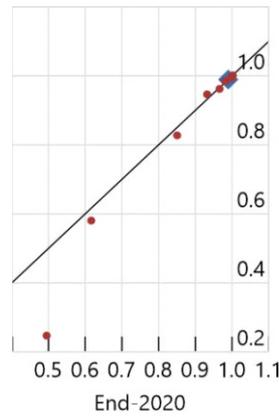
Credit intermediation<sup>1</sup>



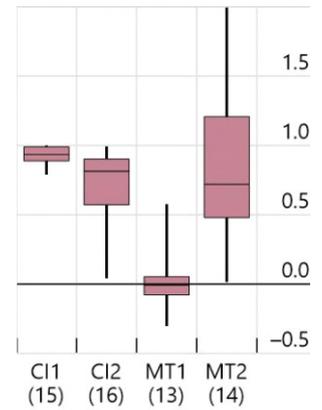
Maturity transformation<sup>2</sup>



Leverage<sup>3</sup>



Selected risk metrics at end-2021<sup>4</sup>



• Jurisdictions ◆ Median

<sup>1</sup> Does not include data for Russia. <sup>2</sup> Loans / total financial assets (CI2). <sup>3</sup> Short-term liabilities / short-term assets (MT2). <sup>4</sup> (Total financial assets – equity) / total financial assets (L5). <sup>5</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 sample size indicate the number of jurisdictions submitting the relevant data.

Sources: Jurisdictions' 2022 submissions (national sector balance sheet and other data); FSB calculations.

## Abbreviations

AEs	Advanced economies
AUM	Assets under management
BDs	Broker-dealers
CCPs	Central counterparties
CLOs	Collateralised loan obligations
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
ICs	Insurance corporations
ICPFs	Insurance corporations and pension funds
MMFs	Money market funds
NBFI	Non-bank financial intermediation
OFls	Other financial intermediaries
OIFs	Other investment funds
PFs	Pension funds
P2P	Peer-to-peer
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