FSB FINANCIAL STABILITY BOARD

Global Shadow Banking Monitoring Report 2015

12 November 2015

The report is accompanied by the publication of a dataset on a jurisdiction and aggregate level, which also includes the data underlying most of the exhibits shown in the report. These data are available at:

- Shadow Banking Monitoring Dataset 2015, http://www.fsb.org/wp-content/uploads/shadow_banking_monitoring_dataset_2015.xls; and
- Underlying data for exhibits, http://www.fsb.org/wp-content/uploads/shadow_banking_underlying_data_for_exhibits_2015.xls.

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Executive summary

The shadow banking system can broadly be described as credit intermediation involving entities and activities outside of the regular banking system.[1] Intermediating credit through non-bank channels can have important advantages and contributes to the financing of the real economy, but such channels can also become a source of systemic risk, especially when they are structured to perform bank-like functions (e.g. maturity and liquidity transformation, and leverage) and when their interconnectedness with the regular banking system is strong. Appropriate monitoring of shadow banking and the application of appropriate policy responses, where necessary, helps to mitigate the build-up of such systemic risks.

This report presents the results of the fifth annual monitoring exercise using data as of end-2014 for 26 jurisdictions, including Ireland for the first time, and the euro area as a whole, which together account for about 80% of global GDP and 90% of global financial system assets.[2,3,4]

This year's report introduces an enhancement to the monitoring methodology as a further step towards narrowing the focus to those parts of non-bank credit intermediation where shadow banking risks such as maturity transformation, liquidity transformation or leverage may occur. A new activity-based "economic function" measure of shadow banking has been introduced, based on the high-level policy framework published by the FSB in August 2013 and described in an annex of last year's Global Shadow Banking Monitoring Report. In order to ensure a certain degree of consistency in reporting, all authorities were guided to report non-bank credit intermediation if such activity was considered to give rise to shadow banking risks in at least some jurisdictions.[5] As a result, the narrow measure presented in this year's report may overestimate the degree to which non-bank credit intermediation gives rise to systemic risks. Since this was the first time that many jurisdictions took part in the assessment and this remains a work in progress, FSB members will continue to deepen their understanding of shadow banking and any potential risks through greater data availability and information-sharing. As such, the narrow measure of shadow banking may be subject to some degree of change in future reports.

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1 Some authorities and market participants prefer to use other terms such as "market-based financing" instead of "shadow banking". The use of the term "shadow banking" is not intended to cast a pejorative tone on this system of credit intermediation. However, the FSB is using the term "shadow banking" as it is the most commonly employed and, in particular, has been used in previous G20 communications.

2 Previous shadow banking monitoring reports can be found at: http://www.fsb.org/publications/r_141030.pdf; http://www.fsb.org/publications/r_131114.pdf; http://www.fsb.org/wp-content/uploads/r_121118c.pdf, and http://www.fsb.org/publications/r_111027a.pdf.

3 These figures, which apply to the *20+EA-group* (see Footnote 4), were calculated from the statistical appendix of the IMF's Global Financial Stability Review, April 2015.

4 Two samples are presented in this report. The first sample, which for ease of reference we denote the *26-group*, is comprised of 26 reporting jurisdictions (including six individual euro area countries). The second sample, denoted *20+EA-group*, comprises 20 individual non-euro area jurisdictions and the euro area aggregate. The *26-group* is more granular in terms of sector-level data and is therefore used to calculate the narrow measure of shadow banking based on economic functions (Section 2). The *20+EA-group* has a wider scope in terms of jurisdiction coverage and is used to calculate the broad measure of non-bank financial intermediation (in most of Section 4).

5 There were also cases in which authorities considered types of financial intermediation in their jurisdictions to be sufficiently distinct to warrant exclusion from the narrow measure. Annex 1 provides a review of the material exclusions made by authorities and authorities' rationale for such exclusions.

The Narrow Measure

- Based on a new methodology for assessing non-bank financial entities and activities by "economic functions" introduced this year, the narrow measure of global shadow banking that may pose financial stability risks amounted to $36 trillion in 2014 for the 26 participating jurisdictions. This is equivalent to 59% of GDP of participating jurisdictions, and 12% of financial system assets, and has grown moderately over the past several years.
- More than 80% of global shadow banking assets reside in a subset of advanced economies in North America, Asia and northern Europe.
- The new classification by economic functions shows that credit intermediation associated with collective investment vehicles with features that make them susceptible to runs (e.g. money market funds (MMFs), hedge funds and other investment funds) represents 60% of the narrow measure of shadow banking. It has grown more than 10% on average over the past four years. By contrast, the level of securitisation-based credit intermediation – among the key contributors to the financial crisis – has fallen in recent years.
- At the aggregate level, interconnectedness between the banking and the non-bank financial system, excluding those OFIs that are prudentially consolidated into banking groups, continues to decrease from its pre-crisis peak. However, in some jurisdictions, OFIs' credit and funding exposures to banking systems are reported to be quite high and merit further assessment as to the extent of concentration of exposures and underlying risks
- The measurement of shadow banking risks – including leverage, liquidity and maturity transformation, and imperfect credit risk transfer – continues to face challenges in data availability. The FSB held a workshop for participating jurisdictions to assess economic classifications, associated risks and the availability of policy tools to address and mitigate material vulnerabilities to the financial system.

The Broad Measure

- An aggregate "MUNFI" measure of the assets of other financial intermediaries (OFIs), pension funds and insurance companies grew by 9% to $137 trillion over the past year, and now represents about 40% of total financial system assets in 20 jurisdictions and the euro area.[6] In aggregate, the insurance company, pension fund and OFI sectors all grew in 2014, while banking system assets fell slightly in US dollar terms.
- Based on assets of OFIs alone, which have been the main focus of last year's report, (i.e. excluding pension funds and insurance companies), non-bank financial intermediation of the 20 jurisdictions and the euro area rose $1.6 trillion to $80 trillion in 2014. This growth was due to a combination of higher equity valuations and a substantial increase in non-bank credit intermediation, largely from capital markets.

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[6] The FSB's Monitoring Universe of Non-bank Financial Intermediation (MUNFI) includes OFIs, pension funds and insurance companies. The 20 jurisdictions and the euro area cover a larger sample of jurisdictions than the 26 jurisdictions for which the narrow measure was calculated – see Footnote 4.

- While non-bank financial intermediation shrank somewhat immediately following the financial crisis, it has been rising over the past several years. OFI assets in the 20 jurisdictions and the euro area reached 128% of GDP in 2014, up 6 percentage points from 2013 and 15 percentage points from 2011. It is nearing the previous high-point of 130% prior to the financial crisis.
- Emerging market economies (EMEs) showed the most rapid increases in OFI assets. In 2014, 8 EMEs had OFI growth rates above 10%, including two that grew over 30%. However, this rapid growth is generally from a relatively small base. While the non-bank financial system may contribute to financial deepening in these jurisdictions, careful monitoring of potential systemic risks caused by a rapid expansion of the non-bank sector is needed.
- Among OFI sub-sectors that showed the most rapid growth in 2014 are trust companies, MMFs, and fixed income and other funds. Trust companies (mostly based in China) continued to experience growth of 26%, similar to the past several years. Perhaps more surprisingly, MMFs experienced 20% growth in 2014 (largely driven by some euro area jurisdictions and China), following low or negative growth in the prior three-year period. Fixed income funds and other funds grew approximately 15% in 2014. It should be noted that hedge funds remain underestimated in the FSB's exercise due to the fact that a portion of international financial centres (IFCs), where a number of hedge funds are domiciled, are currently not within the scope of the exercise. The inclusion of IFCs in the regional monitoring report by the FSB's Regional Consultative Group (RCG) for the Americas has helped to fill this gap (see Annex 3). More frequent updates of the IOSCO Hedge Fund Survey could provide important additions to the Global Shadow Banking Monitoring Report.[7]

Methodological improvements

This year's report introduces several enhancements related to the methodologies to assess the size, activities and potential risks of shadow banking. As described in Section 2, the economic functions approach is based on the classification of non-bank financial entities into five economic functions through which non-bank credit intermediation may pose bank-like systemic risks to the financial system[8]. Through this process, each jurisdiction identified and sought to remove non-bank entities that in its supervisory judgment, do not engage in credit intermediation and also those that are prudentially consolidated into banking groups.

These steps resulted in about a 71% reduction from the broad Monitoring Universe of Non-bank Financial Intermediation (MUNFI) estimate for the sample of 26 jurisdictions. The narrowing down approach through economic function classification uses more granular data and information provided by jurisdictions, including some degree of supervisory judgment to determine where shadow banking risks may arise.[9] This year's report reflects the start of a

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[7] The publication of the 2015 IOSCO Hedge Fund Survey is expected by the end of 2015. The 2013 report is available at: http://www.iosco.org/library/pubdocs/pdf/IOSCOPD427.pdf.

[8] In this regard, the economic function classification is similar to the approach used in the previous report which removed entities that did not engage in credit intermediation (e.g. equity-only funds and equity REITs).

[9] Given that the approach allows for some degree of supervisory judgment to determine where shadow banking risks may arise, additional guidance on how to implement the approach will be developed to further enhance the consistency of classification.

process by which authorities' exclusion of entity types that they assess as not engaging in any of the defined economic functions has been subject to collective review by peer jurisdictions. The exercise took a conservative approach of including entity types into the narrow measure for all jurisdictions if the activities associated with non-bank credit intermediation could give rise to shadow banking risks at least in some jurisdictions. This year's report also seeks to explain where jurisdiction-specific exclusions from the narrow measure have occurred, and the rationale for such differences in classification (see Annex 1). To foster aligned approaches, the activity-based narrow measure remains a work in progress and is expected to improve over time with increased data availability, more consistency in the assessments and a deeper understanding of the shadow banking system.[10]

Building on the economic functions classification, Section 3 of this report introduces risk analyses as a further enhancement to the annual monitoring report.[11] It describes ways in which particular entity types may engage in leverage, liquidity and maturity transformation, and imperfect credit risk transfer in each economic function. Moreover, aggregate risk metrics across particular entity types in different economic functions are presented, illustrating how levels of risk-taking, as reported by each jurisdiction, range widely. While data gaps hamper a more thorough quantitative assessment of shadow banking risks, a review of jurisdictions' assessment of risks based on available data and supervisory judgment suggests relatively higher attention to liquidity and maturity transformation risks at the current conjuncture. With respect to these risks, FSB members noted current concerns about rising risks stemming from the overestimation by investors of the degree of liquidity in fixed income markets as well as the growth of assets under management in funds that offer on-demand redemptions but invest in less liquid assets.[12] In light of these concerns, it is important to ensure that any financial stability risks are properly understood.

Section 4 of the report provides an enhanced macro-mapping of the broad measure of non-bank financial intermediation. Monitoring the broad measure remains important to *cast the net wide* to capture emerging adaptations and innovations from which shadow banking risks may arise. This year, the monitoring scope has been increased through the inclusion of insurers and pension funds in the broad MUNFI measure,[13] in order to enable the introduction of the shadow banking measure based on economic functions. Size and growth trends of insurance companies, pension funds and OFIs are presented. The section also compares various factors including growth of banking and non-banking sectors to GDP to better understand relationships between economic and financial system developments.

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[10] Chinese authorities did not agree with the classification of certain entity types as shadow banking. Thus, China's entity types are not reflected in this year's economic functions. The report shows a narrow measure of China's shadow banking sector based on OFIs that are involved in credit intermediation, consistent with the methodology that was utilised to derive the narrow measure in last year's shadow banking monitoring report.

[11] Due to data limitations, some of the exhibits and results presented in Section 3 on shadow banking risks and interconnectedness, and Section 5 on credit and lending patterns, in particular, come from a subsample of jurisdictions and may therefore not be extrapolated to describe the entire sample of participating jurisdictions. These data trends should not be interpreted as definitive indicators of the degree of financial stability risks posed by these activities. More specifically, any conclusion from the data related to the subsample may not apply to all of the jurisdictions that participated in this report.

[12] See the FSB Plenary press release: http://www.fsb.org/2015/03/fsb-plenary-meets-in-frankfurt-germany/.

[13] Although not part of MUNFI, data on insurance companies and pension funds has already been collected in last year's monitoring exercise to capture some key insights into the broader composition of the financial system.

Data collection was expanded to include credit assets and lending of selected categories of financial entities. Section 5 analyses non-bank lending and credit intermediation trends to assess the sources and extent of incremental credit to the economy.

This year's report also includes a summary of the second regional study on shadow banking prepared by the RCG for the Americas and a country case study from Ireland of its shadow banking system.

Going forward, the monitoring exercise will continue to benefit from further improvement and thorough follow-up by jurisdictions to address identified data gaps and reporting inconsistencies. In many jurisdictions, additional improvements in data availability and granularity will be essential for authorities to be able to adequately capture the magnitude and nature of risks in the shadow banking system. In particular, jurisdictions that lack official Flow of Fund statistics are encouraged to develop them.[14] Jurisdictions are also encouraged to devote additional resources to the development of more granular data on interconnectedness between the banking and the shadow banking system, and to the development of risk data.

Future monitoring reports will continue to cast the net wide by tracking the MUNFI estimate of all non-bank financial intermediation, in addition to further improving the narrow measure of shadow banking. The implementation of policy recommendations to address financial stability risks in securities financing transactions, in particular the global securities financing data collection initiative by the FSB,[15] will also improve the coverage and granularity of the monitoring exercise. In this regard, the FSB will look to expand the data collection in future monitoring exercises to include outstanding securities finance transactions. Further encouragement of RCGs to undertake similar monitoring exercises and greater coordination with such regional monitoring initiatives will also be explored.

[14] Those that have large residuals for the OFI or other financial sector in the Flow of Funds reporting are also encouraged to improve granularity.

[15] FSB: Standards and Processes for Global Securities Financing Data Collection and Aggregation, Consultative Document, 13 November 2014, see: http://www.fsb.org/wp-content/uploads/Global-SFT-Data-Standards-Consultative-Document.pdf.

1. Introduction

The comprehensive monitoring of the size, trends, risks and adaptations of shadow banking on a global scale is an important element in strengthening the oversight of this sector and of ultimately transforming shadow banking into resilient market-based financing. To this end, the FSB coordinates an annual exercise of data collection, aggregation, and analysis of global trends and risks in the shadow banking system. This report is the fifth annual exercise by the FSB to identify the magnitude of and changes in the global shadow banking system, in other words the system of "credit intermediation involving entities and activities fully or partly outside the regular banking system".[16]

The 2015 monitoring exercise covers 26 jurisdictions,[17] including Ireland for the first time, and the euro area as a whole. The exercise may be expanded to include additional jurisdictions in future. It uses annual data through the end of 2014 provided by national jurisdictions for the 2015 exercise based on the balance sheets of the financial system, as recorded in national financial accounts (e.g. "Flow of Funds"), and also contains other supervisory data and private sector data sources. A network of representatives from participating jurisdictions was established to coordinate the shadow banking data collection.

Section 2 of this report introduces a new measure of shadow banking based on economic functions (or activities), which builds on the FSB's high-level *Policy Framework for Strengthening Oversight and Regulation of Shadow Banking Entities* (hereafter the Policy Framework) developed by the FSB in 2013.[18] Section 3 provides an assessment of the risks inherent in the activities of shadow banking entities and also considers risks arising from the interconnectedness between banks and Other Financial Intermediaries (OFIs). OFIs comprise all financial intermediaries that are not classified as banks, insurance companies, pension funds, public financial institutions, central banks, or financial auxiliaries. Section 4 presents a broader perspective by looking at the size and trends of all non-bank financial intermediation. This broader "macro-mapping" has been the focus of previous years' exercises and is updated in this report to include data through the end of 2014. Finally, Section 5 examines new data collected on credit intermediation undertaken by entities within the financial system to assess potential shifts in the providers of credit to the economy.

2. A measure of shadow banking based on economic functions

For the first time, this year's report offers an assessment of shadow banking across the major financial systems based on economic functions (or activities). The approach is based on the classification of non-bank financial entities into five economic functions, each of which

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[16] FSB: Transforming Shadow Banking into Resilient Market-based Financing, an Overview of Progress and a Roadmap for 2015, 14 November 2014, see: http://www.fsb.org/wp-content/uploads/r_121118.pdf.

[17] These are: Argentina, Australia, Brazil, Canada, Chile, China, France, Germany, Hong Kong, India, Indonesia, Ireland, Italy, Japan, Korea, Mexico, Netherlands, Russia, Saudi Arabia, Singapore, South Africa, Spain, Switzerland, Turkey, United States, and United Kingdom. While the scope of the report has been extended compared to previous years, there are other jurisdictions with significant shadow banking activities which are not, as yet, directly participating in the shadow banking monitoring exercise.

[18] FSB: Policy Framework for Strengthening Oversight and Regulation of Shadow Banking Entities, 29 August 2013, see: http://www.fsb.org/wp-content/uploads/r_130829c.pdf.

involves non-bank credit intermediation that may pose shadow banking risks (e.g. maturity/liquidity transformation and leverage).

The resulting measure of shadow banking, by establishing the principal activity of different shadow bank entities, takes the FSB's efforts to monitor the global shadow banking system a step further towards identifying the subset of non-bank credit intermediation involved in shadow banking risks that may raise financial stability concerns and where potential policy responses may be needed.[19]

The addition of the economic function (activity)-based approach to monitoring shadow banking accomplishes two goals. First, it allows policy makers to better focus on the activities of shadow banking entities and on the potential risks they might pose. Second, it allows for a more accurate refinement of the shadow banking measure through the additional exclusion of non-bank financial entities that are not involved in significant maturity/liquidity transformation or leverage, and are not typically part of a credit intermediation chain. The implementation of this approach, however, is an ambitious endeavour which will take time to fully realise, with improvements and consistency also being achieved as authorities learn from collective information-sharing.

The measure of shadow banking based on economic functions differs from that reported in previous reports in several ways. Measures of shadow banking presented in previous reports were based on the exclusion from OFIs of assets related to self-securitisation, assets of OFIs prudentially consolidated into a banking group, and entities not directly involved in credit intermediation. This year's narrowing down methodology is more comprehensive and based on the economic functions outlined in the FSB's Policy Framework (see Box 1). Therefore, this year's narrow shadow banking results are not comparable to results provided in previous publications.

2.1 Economic functions approach

The five economic functions are set out in the FSB's Policy Framework, published in August 2013. The framework is designed to allow authorities to detect and assess the sources of financial stability risks from shadow banking in the non-bank financial space and to apply appropriate policy measures to mitigate these risks.

One element of the FSB's Policy Framework is the assessment of non-bank financial entities based on economic functions. It takes into account home authorities' assessment of potential sources of shadow banking risks in non-bank financial entities in their jurisdiction from a financial stability perspective, by either classifying these entities with reference to five economic functions or excluding the entity based on the assessment that it does not pose shadow bank-like risks. Exhibit 1 sets out these five economic functions. Section 3 summarises the ways in which each economic function gives rise to shadow banking risks.[20]

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[19] Through the FSB's shadow banking information-sharing exercise, authorities from a number of jurisdictions have noted that some entity-types classified as shadow banking are highly regulated through a range of policy tools available to address and mitigate shadow banking risks. See the FSB's Policy Framework for an assessment of the FSB's policy toolkit to mitigate shadow banking risks (available at: http://www.fsb.org/wp-content/uploads/r_130829c.pdf). However, the availability, use and efficacy of such tools may range significantly across jurisdictions. Therefore, to ensure conservatism and consistency of reporting, these entity types were included in shadow banking.

[20] See the FSB's Policy Framework for further details on the five economic functions.

Classification by Economic Functions Exhibit 1

Economic Function	Definition	Typical entity types[21]
EF1	Management of collective investment vehicles with features that make them susceptible to runs	Fixed income funds, mixed funds, credit hedge funds, real estate funds
EF2	Loan provision that is dependent on short-term funding	Finance companies, leasing companies, factoring companies, consumer credit companies
EF3	Intermediation of market activities that is dependent on short-term funding or on secured funding of client assets	Broker-dealers
EF4	Facilitation of credit creation	Credit insurance companies, financial guarantors, monolines
EF5	Securitisation-based credit intermediation and funding of financial entities	Securitisation vehicles

Non-bank financial entity types typically classified into the five economic functions include certain entities that are susceptible to runs (EF1), lending dependent on short-term funding (EF2), market intermediation dependent on short-term funding or secured funding of client assets (EF3), facilitating credit creation (EF4), and securitisation-based intermediation (EF5).

The measure of shadow banking based on economic functions presented in this report covers 26 jurisdictions. As part of the shadow banking information-sharing exercise, as described in the FSB's Policy Framework, these jurisdictions considered the business models, activities, and associated shadow banking risks of non-bank financial entities and classified these entity types into the five economic functions. Classification was generally based on the guidance provided in the Policy Framework and through the information-sharing among FSB members with respect to shadow banking activities and risks. In this regard, the classification allows for supervisory judgment regarding which non-bank financial entities' activities give rise to shadow banking risks. While such judgment was permitted, the classification choice benefited from discussions with other participating authorities at workshops organised by the FSB to better understand and improve the consistency of each other's approach to identifying entities by economic functions. Given the element of supervisory judgment and also developments in business models and risk profiles, it may be the case that entity classifications change over time based on shifts in entity types' activities or risks, and supervisors' judgment of the materiality of such risks. Since this is the first year that the classification of non-bank financial entities by economic functions has been implemented by all FSB jurisdictions, the choice of whether particular entity types are classified as shadow banking can differ across jurisdictions. Further refinement of the classification process will take place going forward.

[21] The FSB Policy Framework acknowledges that shadow banking 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 create shadow banking risks, by looking through to the underlying economic function and risks of these new innovative structures. Thus, the entity types listed should be taken as typical examples.

See Annex 1 for a summary of material exclusions from the narrow measure of shadow banking, and where differences occurred across jurisdictions.

2.2 Global perspective

Global assets of financial entities classified as shadow banking under the economic functions approach in 26 jurisdictions continued their upward trend, increasing $1.1 trillion in 2014 and reaching $36 trillion (Exhibit 2).[22] Based on this measure, aggregate global shadow banking assets in these jurisdictions have increased on average by $1.3 trillion each year since 2011.[23] This number differs from that reported in previous reports as the narrow measure of shadow banking in several ways and therefore cannot be compared.

Assets of financial intermediaries

26 jurisdictions — Exhibit 2

	Size in 2014 ($ trillion)	Growth in 2014 (year-over-year, percent)	Average annual growth (2011-2014, percent)
Banks	135	6.4	5.6
OFIs	68	9.0	6.3
Shadow Banking	36	10.1	6.3

Note: Growth rates adjusted for exchange rate effects.

Sources: National financial accounts; other national sources; FSB calculations.

By way of comparison, a broader category of non-bank financial intermediation based on OFIs, whose calculation methodology remains broadly unchanged compared to previous years' reports, increased $1.4 trillion in 2014, reaching $68 trillion for 26 jurisdictions. Using the slightly different sample of 20 jurisdictions and the euro area as a whole, the new total amounted to $80 trillion in 2014, up by $1.6 trillion.

The growth in shadow banking assets globally in 2014 occurred against the backdrop of a slight decline in global banking system assets. After increasing significantly in 2011 and 2012, global banking system assets in 26 jurisdictions remained roughly stable in 2013 and decreased slightly in 2014, reaching $135 trillion.

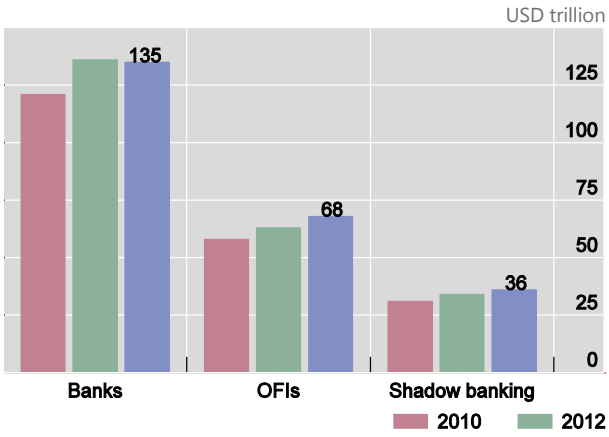
[22] Measures of growth throughout this report are based on time series data included in jurisdictions' 2015 submission, going 2014 back to 2002. This report, however, focuses mainly on estimates of growth and trends from 2011 forward, because jurisdiction-year data gaps were relatively few between 2011 and 2013, with no such gaps for 2014.

[23] Note that, in some cases, in particular prior to 2010, increases of aggregated time series may also reflect improvements in the availability of data over time on a jurisdiction level.

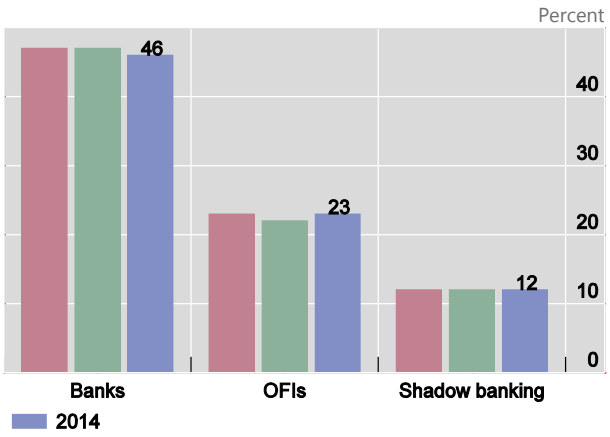
Assets of financial intermediaries

26 jurisdictions — Exhibit 3

Financial assets



Share of total financial assets



Notes: Banks = broader category of 'deposit-taking institutions'; OFIs = Other Financial Intermediaries; Shadow Banking = measure of shadow banking based on economic functions. These are not mutually exclusive categories, as shadow banking is largely contained in OFIs.

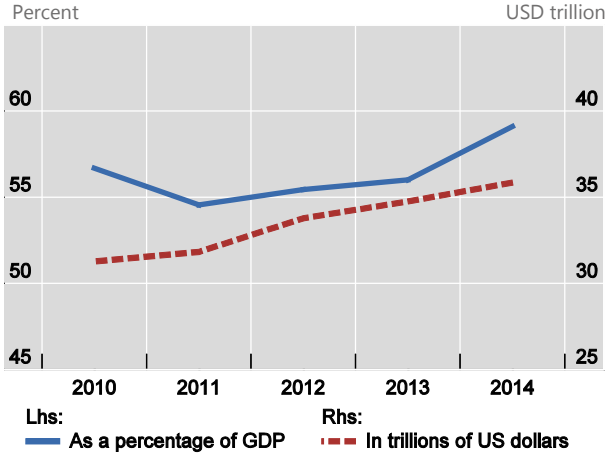
Sources: National financial accounts data; other national sources; FSB calculations.

As a share of the total financial system, shadow banking based on the economic functions measure remained relatively constant in recent years at about 12% (right panel of Exhibit 3). However, the shadow banking to GDP ratio has risen from 55% in 2012 to 59% in 2014, as the steady growth of shadow banking in recent years has outpaced GDP (left panel of Exhibit 4).

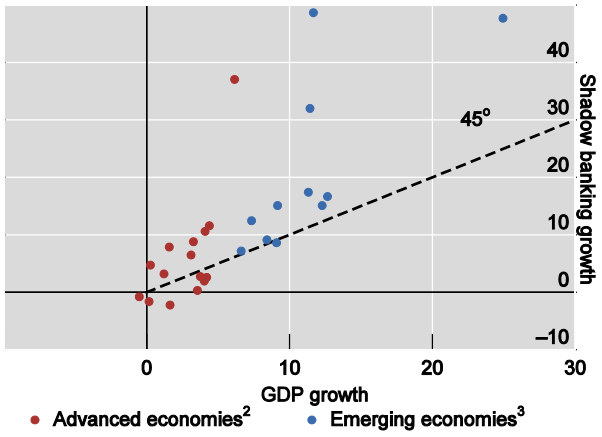
Shadow banking and GDP

26 jurisdictions — Exhibit 4

Shadow banking size relative to GDP



GDP versus shadow banking growth rates, 2011-2014[1]



Notes:

[1]: Average annual growth rate during 2011-2014, adjusted for exchange rate effects, except for Singapore where growth rates from 2012-2014. >45% line indicates shadow banking assets growing faster than nominal GDP in local currency.

[2]: Advanced economies = Australia, Canada, Germany, Euro area, France, Hong Kong, Ireland, Italy, Japan, Korea, Netherlands, Singapore, Spain, Switzerland, United Kingdom, United States.

[3]: Emerging economies = Argentina, Brazil, Chile, China, India, Indonesia, Mexico, Russia, Turkey, Saudi Arabia, South Africa.

Sources: National financial accounts data; other national sources; FSB calculations.

The growth of shadow banking has been associated with economic growth in recent years. Adjusted for exchange rate effects, jurisdictions with a greater increase in shadow banking assets between 2010 and 2014 tended to have greater increases in GDP over the same time period. As indicated by the dots above the 45°-line in the right panel of Exhibit 4, shadow banking assets grew faster than GDP since 2010 in most of the 26 jurisdictions. Strong growth in shadow banking may occur from a low base and contribute to financial deepening, in particular in EMEs with relatively less developed financial systems. However, careful monitoring is still warranted to detect any increases in systemic risk factors (e.g. maturity and liquidity transformation, and leverage) that could arise from the rapid expansion of credit relative to GDP provided by the non-bank sector.

2.3 Cross-jurisdiction analysis

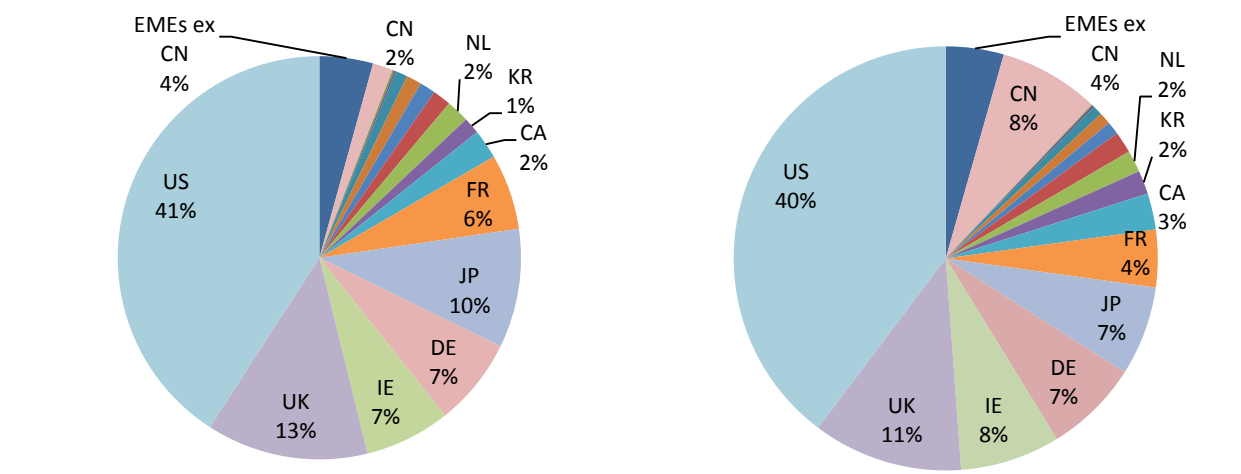
This section describes the considerable heterogeneity that exists across individual jurisdictions. It focuses on the new measure of shadow banking based on economic functions, whereas in past reports it focused on the broader measure based on OFIs.[24]

The United States continued to have the largest shadow banking sector, with $14.2 trillion in 2014, representing more than a third of global shadow banking assets reported by the 26 jurisdictions (right panel of Exhibit 5). The United Kingdom had the second largest shadow banking sector, amounting to $4.1 trillion, while the next 29% of shadow banking was concentrated in four jurisdictions in Asia and Europe. Combined, participating euro area countries[25] represented 23% of total global shadow banking assets in 2014.

Share of shadow banking assets

26 jurisdictions

Exhibit 5



Note: CA = Canada; CN = China; DE = Germany; EMEs ex CN = Argentina, Brazil, Chile, India, Indonesia, Mexico, Russia, Turkey, Saudi Arabia, South Africa; FR = France; IE = Ireland; JP = Japan; KR = Korea; NL = Netherland; UK = United Kingdom; US = United States.

Sources: National financial accounts data; other national sources; FSB calculations.

[24] In previous reports, the cross-sectional analysis focused on the broader measure based on OFIs, incorporating elements that were then later removed as part of a narrowing down process to arrive at a more accurate narrower measure of the shadow banking sector. See Box 1 for this year's narrowing steps, linking the broad measure of non-bank financial intermediation based on OFIs to the narrow measure of shadow banking based on economic functions.

[25] Participating euro area countries are France, Germany, Ireland, Italy, Netherlands and Spain.

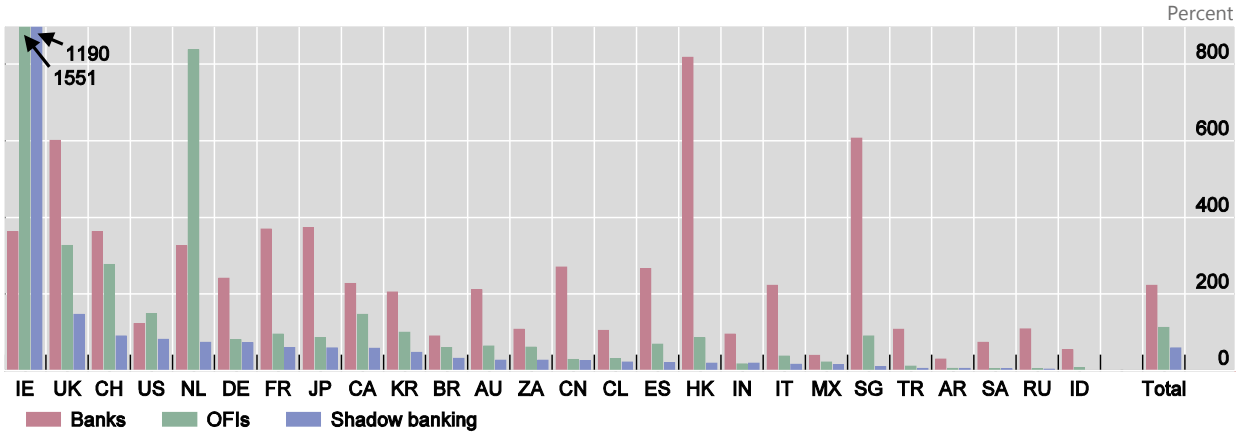
The relative size of national jurisdictions' shadow banking sectors has shifted somewhat since 2010. The relative decline of shadow banking assets since 2010, most notably in Japan, France, United Kingdom, and the United States was counterbalanced by an increase in the share in a number of other jurisdictions. Most notably, the share of EMEs doubled from 6% of global shadow banking assets in 2010 to 12% in 2014, driven mostly by China.

The size of jurisdictions' shadow banking sectors relative to their economies varies widely and appears to be related to the degree of financial intermediation and financial deepening of jurisdictions.[26] In terms of GDP, shadow banking in Ireland, the United Kingdom, Switzerland, and the United States stood at the high-end of the spectrum, with 1,190%, 147%, 90%, and 82% of GDP, respectively. On the other end, the size of shadow banking assets was below 10% of GDP in Turkey, Argentina, Saudi Arabia, Russia, and Indonesia (Exhibit 6).

The size of the banking sector exceeds that of shadow banking significantly in most jurisdictions. The notable exception is Ireland, where the size of the shadow banking sector exceeds substantially the size of the banking sector.[27]

Shadow banking, OFIs and banks as a percent of GDP

26 jurisdictions at end-2014 Exhibit 6



Note: Banks = broader category of 'deposit-taking institutions'; OFIs = Other Financial Intermediaries; Shadow Banking = economic function-based measure of shadow banking. AR = Argentina; AU = Australia; BR = Brazil; CA = Canada; CH = Switzerland; CN = China; CL = Chile; DE = Germany; ES = Spain; FR = France; HK = Hong Kong; IE = Ireland; ID = Indonesia; IN = India; IT = Italy; JP = Japan; KR = Korea; MX = Mexico; NL = Netherlands; RU = Russia; SA = Saudi Arabia; SG = Singapore; TR = Turkey; UK = United Kingdom; US = United States; ZA = South Africa.

Sources: National financial accounts data; other national sources; IMF; FSB calculations.

[26] Financial deepening may be considered as (i) the increase in the size of the financial system and in its role and pervasiveness in the economy and (ii) the broadening of the set of intermediaries beyond a core banking sector to encompass a range of actors among nonbank financial intermediaries.

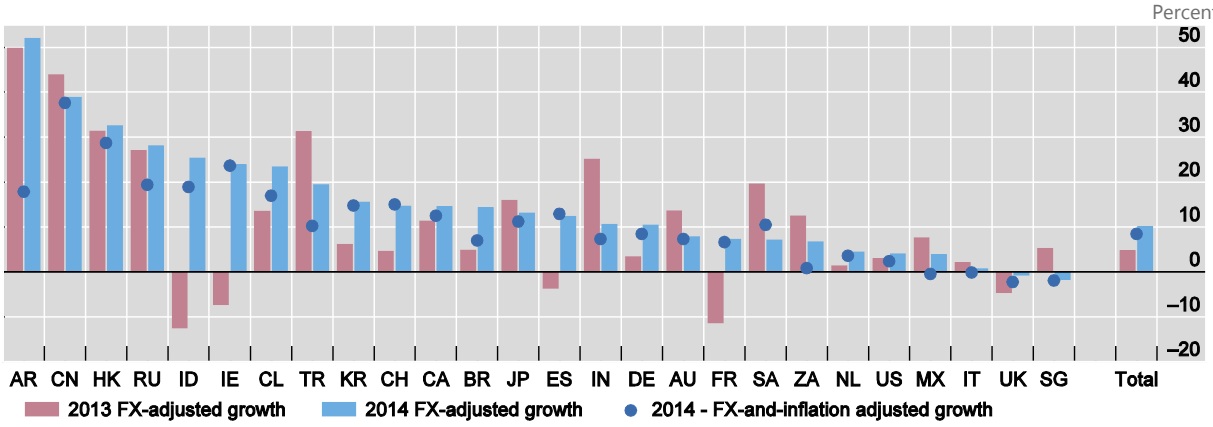
[27] This is due to the international nature of the shadow banking sector in Ireland, which has limited linkages to the domestic economy. See Annex 2 for a more detailed analysis of the Irish shadow banking system.

Total shadow banking assets in 26 jurisdictions rose by 10.1% in 2014, exceeding the 4.7% increase in 2013 (Exhibit 7).[28] The calculated growth rate is net of exchange rate effects but does not account for valuation effects, which would likely dampen the growth figures given the overall appreciation of assets prices in 2013 and 2014.[29]

However, growth rates differed considerably across jurisdictions. All but two jurisdictions saw their shadow banking assets rise in 2014, and several showed a marked increase in growth rates compared to 2013. Exchange rate-adjusted growth rates of shadow banking assets in 2014 exceeded 30% in Argentina, China, and Hong Kong. However, for Argentina and Hong Kong, the strong growth in shadow banking is largely due to the low base effect given the relatively small size of shadow banking in these jurisdictions.

Annual growth of shadow banking

26 jurisdictions — Exhibit 7



Note: Bars show year-over-year growth rate, controlling for exchange rate effects. Dots show year-over-year growth rates, controlling for exchange rate and inflation effects.
AR = Argentina; AU = Australia; BR = Brazil; CA = Canada; CH = Switzerland; CN = China; CL = Chile; DE = Germany; ES = Spain; FR = France; HK = Hong Kong; IE = Ireland; ID = Indonesia; IN = India; IT = Italy; JP = Japan; KR = Korea; MX = Mexico; NL = Netherlands; RU = Russia; SA = Saudi Arabia; SG = Singapore; TR = Turkey; UK = United Kingdom; US = United States; ZA = South Africa.

Sources: National financial accounts data; other national sources; IMF; FSB calculations.

Exhibit 8 provides a breakdown of each jurisdictions' contribution to the total *26-group* sample growth rate in 2014 of 10.1%, reflecting the size and growth rate of individual jurisdictions.

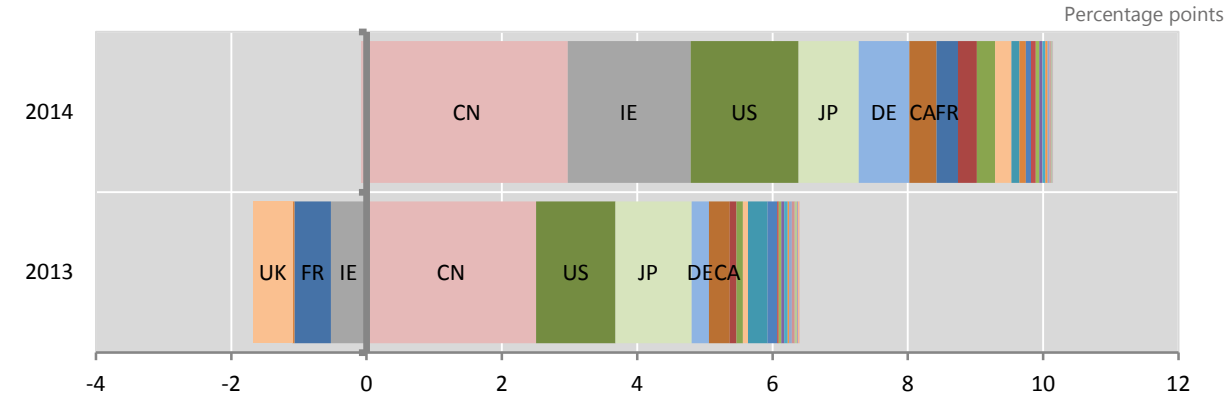
[28] The aggregate growth rate for the 26 jurisdictions is calculated as a weighted average of individual jurisdictions' growth rates measured in local currency. The weights are based on the amount of reported financial assets of the shadow banking sector measured in US dollars.

[29] Growth rates of financial assets presented in this report are not adjusted for valuation effects and therefore only approximately reflect the evolution of financial transactions from one year to another.

Jurisdiction contributions to shadow banking growth

26 jurisdictions

Exhibit 8



Note: Contributions to year-over-year growth of shadow banking, adjusted for exchange rate effects.
CA = Canada; CN = China; DE = Germany; FR = France; IE = Ireland; JP = Japan; UK = United Kingdom; US = United States.

Sources: National financial accounts data; other national sources, FSB calculations.

2.4 Breakdown by economic functions

This section provides a breakdown of shadow banking according to the different shadow banking activities described by the five economic functions. Across the 26 jurisdictions, a total of $36 trillion of non-bank financial entities' assets were reported as being:

- related to the management of collective investment vehicles with features that make them susceptible to runs (Economic Function 1);
- related to loan provision that is dependent on short-term funding (Economic Function 2);
- related to the intermediation of market activities that is dependent on short-term funding or on secured funding of client assets (Economic Function 3);
- related to the facilitation of credit creation (Economic Function 4);
- related to securitisation-based credit intermediation and funding of financial entities (Economic Function 5); or
- related to one of the five economic functions, but not attributable due to their residual nature (shadow banking not classified into economic functions).[30]

Of the five functions Economic Function 1 was by far the largest, representing $21.6 trillion or more than half of all shadow banking assets at the end of 2014 (left panel of Exhibit 9). Jurisdictions generally classified collective investment vehicles such as fixed income funds, mixed-assets investment funds, credit hedge funds, leveraged real estate funds, trusts, and money market funds into this economic function. Some regulators from participating jurisdictions did not consider particular collective investment vehicles to merit inclusion within Economic Function 1. Some authorities considered particular regulatory structures in

[30] This category includes mainly residual OFIs in some jurisdictions that were not classified into a particular economic function, but were assessed to at least partly contain shadow banking activities as described by the five economic functions or for which it was not possible to provide sufficient evidence to warrant their exclusion from the narrow measure of shadow banking.

their jurisdictions to limit leverage and liquidity/maturity transformation. However, to ensure a level of consistency and conservatism in this monitoring report, these authorities agreed to classify vehicles that exhibited shadow banking risks in at least some jurisdictions into this economic function. The FSB will look to conduct additional analysis on entity types in Economic Function 1 next year to further enhance the classification process.

Economic Function 2 amounted to $2.4 trillion, representing 7% of all shadow banking assets at end-2014. The entities most often included in this economic function by jurisdictions are finance companies, leasing companies, factoring companies, and various types of other consumer credit companies.

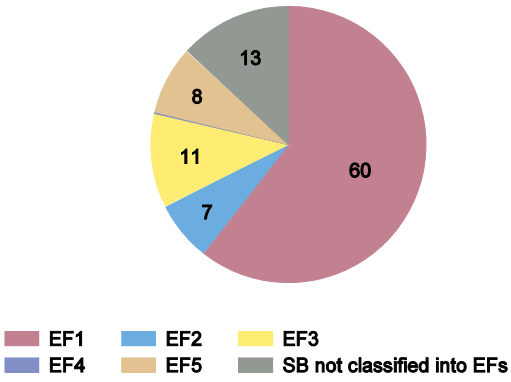
Economic Function 3 amounted to $3.9 trillion at end-2014, or 11% of all shadow banking assets. It was the second largest economic function. Broker-dealers and securities finance companies were the entities most frequently classified into this economic function.[31]

Shadow banking by economic function

26 jurisdictions — Exhibit 9

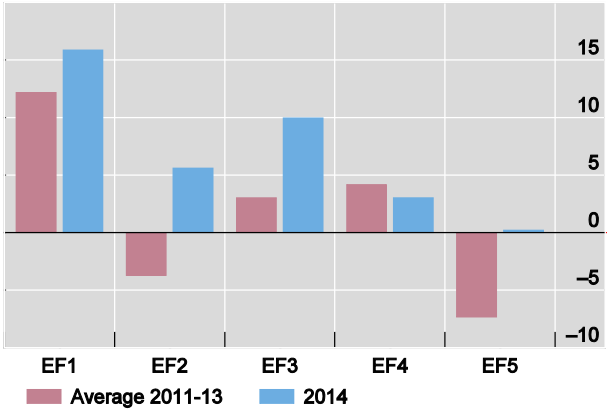
Relative size of economic functions

At end-2014



Annual growth of economic functions from 2011 to 2013[1] and in 2014

Percent



Note: EF1 = Economic Function 1; EF2 = Economic Function 2; EF3 = Economic Function 3; EF4 = Economic Function 4; EF5 = Economic Function 5; SB not classified into EFs = Residual OFI with some shadow banking risks but not classified into any of the five economic functions.

1: Controlling for exchange rate effects. Average annual growth rates not shown for "not classified" category.

Sources: National financial accounts data; other national sources; FSB calculations.

Economic Function 4 was the smallest type of shadow banking activity reported by participating jurisdictions. It amounted to 0.3% of all classified shadow banking assets, or $0.1 trillion at the end of 2014. However, it is worth noting that the size of this economic function and its importance relative to the other economic functions may be significantly understated by the fact that the comparison is conducted by focusing on balance sheet assets and not including off-balance sheet assets. The reason is that balance sheet assets of credit insurers, which are typically classified into this economic function, are often, due to the nature

31 Economic Function 3 in Japan is relatively large which is mainly due to the large volume of repo holdings by broker-dealers related to their market-making activity in Japanese government bonds. In addition entities in Japan that are subject to Basel regulatory capital and liquidity framework and assessed by the G-SIB methodology for potential designation are included.

of their business, modest, while they can facilitate substantial volumes of credit supplied by other bank or non-bank financial institutions.

Finally, Economic Function 5 represented $3.0 trillion, or 8% of all shadow banking assets at end-2014. Participating jurisdictions classified various securitisation vehicles, including asset-backed commercial paper, and synthetic exchange traded funds, into Economic Function 5.

Residual OFI assets that were assessed to at least partly contain some shadow banking risks, but which the relevant authorities were unable to clearly assign to a particular economic function due to their residual nature, or for which it was not possible to provide sufficient evidence to warrant their exclusion were treated as 'shadow banking not classified into economic functions'. Across the 26 jurisdictions, this category amounted to $4.8 trillion of assets, or 13% of all shadow banking assets at end-2014.

The right panel of Exhibit 9 compares the exchange rate-adjusted growth rate of the different shadow banking activities described by the five economic functions from 2010 to 2014 for 26 jurisdictions. Economic Function 1 experienced the fastest growth rate of 15.9% in 2014, followed by Economic Function 3 (10.0%),[32] Economic Function 2 (5.6%), Economic Function 4 (3.0%), and Economic Function 5 (0.2%).

Jurisdictions' share of economic functions varied considerably at end-2014 as did the size of the different shadow banking activities relative to total national financial sector assets. Shadow banking assets related to the management of collective investment vehicles that can be susceptible to runs (Economic Function 1) exceeded the size of other economic functions at the end of 2014 in most jurisdictions. The relative size of Economic Function 4 (facilitation of credit creation) was either zero or very small in most jurisdictions in 2014. Securitisation-based credit intermediation and funding of financial entities (Economic Function 5) relative to the size of the financial sector was particularly large in Ireland at end-2014, where the size of financial vehicles corporations was reported as almost 10% of total national financial sector assets.

The category 'shadow banking not classified into economic functions', capturing residual OFIs that were included in shadow banking but not assigned to a particular economic function, also varied significantly across the relevant jurisdictions. Given the relatively large size for some jurisdictions, relevant authorities should consider taking steps to better identify entities included in this category and to determine whether their activities are related to any of the five economic functions or clearly outside of economic functions. Some jurisdictions are already working on improving their Flow of Funds data.

Each of the five economic functions is related to non-bank credit intermediation that poses shadow banking risks (e.g. maturity/liquidity transformation and leverage). These risks are discussed in Section 3 below.

[32] Japanese authorities note that the size and growth of Japan's broker-dealers results from higher repo holdings related to their market-making activity in Japanese government bonds (JGBs), while other shadow activities either declined or remained relatively small. Credit exposures pertain mainly to short-term loans and repos collateralized by JGBs.

Narrowing down towards an activity-based measure of shadow banking **Box 1**

In its 2011 report to the G20, the FSB introduced a two-step approach to guide monitoring and policy responses to shadow banking risks:[33]

- First, authorities should *cast the net wide* to broadly monitor all non-bank credit intermediation; and,
- Second, authorities should then narrow the focus for policy purposes to the subset of non-bank credit intermediation involving maturity/liquidity transformation, imperfect credit risk transfer, and/or leverage.

The economic function measure of shadow banking introduced in Sections 2 and 3 of this report takes the FSB's efforts to monitor the global shadow banking system a step closer to a narrow measure of shadow banking (the second item above). However, a broad estimate of non-bank financial intermediation (the first item above) is also important for monitoring the trends outside of the banking sector and for detecting where shadow banking risks may arise. This monitoring is particularly helpful in detecting adaptations and cross-border regulatory arbitrage. This conservative estimate may be referred to as the MUNFI, which is approximated in this report by all non-bank financial intermediation including OFIs, insurance companies and pension funds.[34]

The relationship between the broad MUNFI measure of all non-bank financial intermediation and the economic functions-based, narrow measure of shadow banking is illustrated in Exhibit 10.

For 26 jurisdictions, the broad MUNFI measure amounted to $124.1 trillion in 2014, being comprised of $68.1 trillion OFIs, $27.0 trillion insurance companies, and $29.0 trillion pension funds. The narrowing down methodology then involves the following steps:

1. *Pension funds and insurance companies that are not part of shadow banking*. All pension fund assets, amounting to $29.0 trillion are deducted in a first step. In addition, $26.9 trillion of insurance company assets that are not classified into Economic Function 4 (facilitation of credit creation) are also excluded from the shadow banking measure.[35]
2. *OFIs reported as not shadow banking.* Assets of OFIs that jurisdictions identified as not being involved in any of the shadow banking activities described by the five economic functions are also excluded from shadow banking. $23.6 trillion are subtracted in this narrowing down step. It comprises mainly entities that tend not to directly engage in credit intermediation or to exhibit shadow banking risks. Examples include equity investment funds, closed-end funds without leverage and/or significant

[33] FSB: Shadow Banking, Strengthening Oversight and Regulation, Recommendations of the Financial Stability Board, 27 October 2011, see: http://www.fsb.org/wp-content/uploads/r_111027a.pdf.

[34] In previous reports, the starting point for narrowing down was MUNFI based on OFIs. However, the introduction of the shadow banking measure based on economic functions this year, which includes insurance companies involved in the facilitation of credit intermediation, required the widening of the scope of MUNFI to also include pension funds and insurance companies in addition to OFIs.

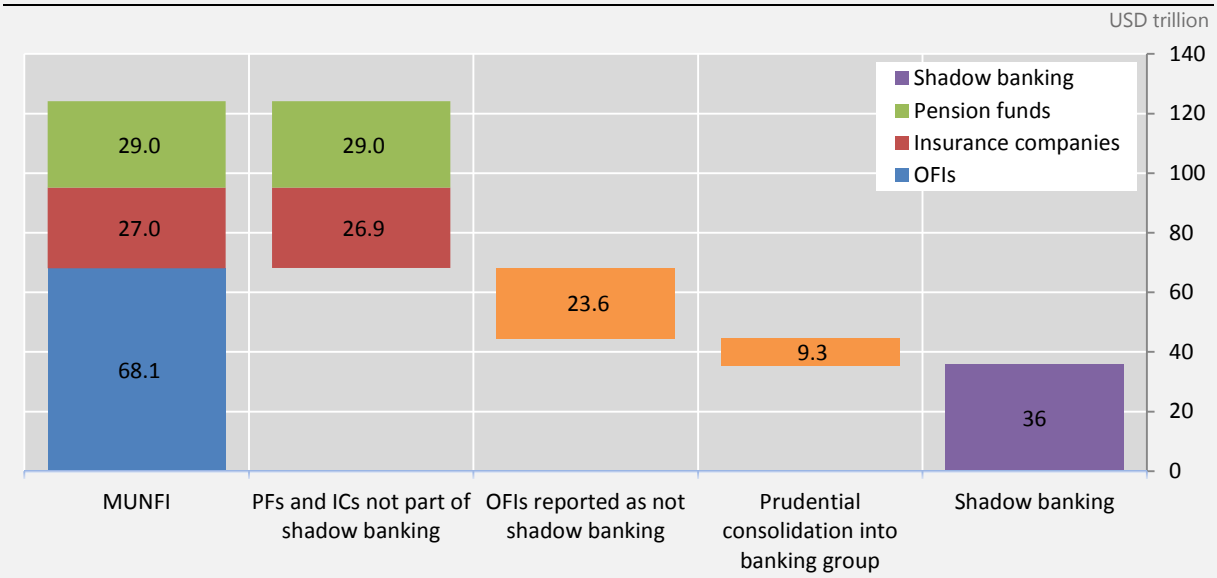
[35] While these entity types have been reported outside of shadow banking, activities within these entities may be considered shadow banking. Further assessment of securities financing activities may in the future warrant the inclusion of additional assets of these entity types into shadow banking.

liquidity/maturity transformation, and equity real estate investment trust/funds (see Annex 1).

3. *Prudential consolidation into banking group*. Entities that are consolidated into a banking group for prudential purposes are already subject to appropriate regulation/supervision of shadow banking risks (i.e. maturity/liquidity transformation, imperfect credit risk transfer, and/or leverage) and therefore excluded from the shadow banking estimate.[36] These entities typically include broker-dealers, finance companies and structured finance vehicles. The amount of prudentially consolidated assets in this year's report was $9.3 trillion.[37]

Narrowing down shadow banking

26 jurisdictions at end-2014 Exhibit 10



Notes: MUNFI = Monitoring Universe of Non-bank Financial Intermediation; PFs = Pension Funds; ICs = Insurance; OFIs =Other Financial Intermediaries. Companies; Prudential consolidation into banking group = assets of classified entity types which are prudentially consolidated into a banking group; Shadow banking = shadow banking based on the economic functions.

Sources: National financial accounts data; other national sources; FSB calculations.

The resulting measure of shadow banking based on economic function amounted to $36 trillion in end-2014 for 26 jurisdictions. It represents approximately a 71% reduction from the broad MUNFI measure of all non-bank financial intermediation for the same set of jurisdictions. This narrow measure of shadow banking includes about $5 trillion of assets which capture mainly residual OFI categories for some jurisdictions in which the relevant authorities were unable to clearly assign to a particular economic function, but which were

[36] Self-securitisation assets are excluded from shadow banking in this narrowing down step. Prudential consolidation rules consider them as banks' own assets and as such subject to consolidated supervision and capital requirements.

[37] Note that the share of broker-dealers prudentially consolidated into banking groups in the United States was approximated based on the share of the top 20 broker-dealers, composing 75% of total industry assets, that are affiliated with bank holding companies at end-2014. This share (66%) was then applied to the Flow of Funds time series for securities brokers and dealers.
(Source: http://www.treasury.gov/initiatives/fsoc/studies-reports/Documents/2015%20FSOC%20Annual%20Report.pdf).

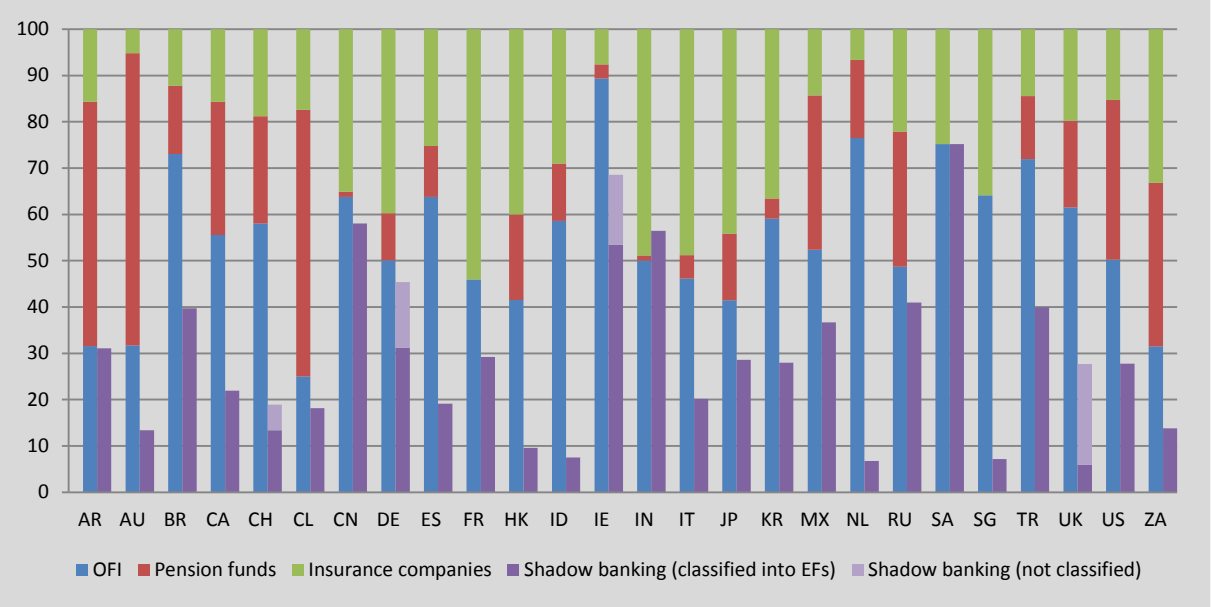
assessed to at least partly contain shadow banking activities as described by the five economic functions or for which it was not possible to provide sufficient evidence to warrant their exclusion from the narrow measure of shadow banking.[38,39]

The amount of narrowing down differs significantly across jurisdictions. Exhibit 11 compares by jurisdiction the starting point for narrowing down, i.e. the MUNFI measure consisting of OFIs, insurance companies and pension funds, with the narrow measure of shadow banking. The latter may be differentiated between the shadow banking measure based only on the classification into the five economic functions and the shadow banking measure which also includes residual OFIs which were not assigned to a particular economic function.[40]

Narrowing down shadow banking by jurisdiction

26 jurisdictions at end-2014 Exhibit 11

Percent of MUNFI



Notes: MUNFI = Monitoring Universe of Non-bank Financial Intermediation; Shadow banking (classified into EFs) = assets of non-bank financial entities classified into the five economic functions; Shadow banking (not classified into EFs) = residual OFIs with some shadow banking risks but not classified into a particular economic function. AR = Argentina; AU = Australia; BR = Brazil; CA = Canada; CH = Switzerland; CN = China; CL = Chile; DE = Germany; ES = Spain; FR = France; HK = Hong Kong; IE = Ireland; ID = Indonesia; IN = India; IT = Italy; JP = Japan; KR = Korea; MX = Mexico; NL = Netherlands; RU = Russia; SA = Saudi Arabia; SG = Singapore; TR = Turkey; UK = United Kingdom; US = United States; ZA = South Africa.

Sources: National financial accounts data; other national sources; FSB calculations.

[38] The $5 trillion also include assets of OFIs that were neither classified into any of the five economic functions nor identified by participating jurisdictions as being outside of economic functions.

[39] An alternative, bottom-up approach for calculating the economic function-based measure of shadow banking would be to sum all assets classified across the five economic functions net of assets prudentially consolidated into banking groups and add OFIs that were neither classified into economic functions nor identified as being outside of economic functions.

[40] In many jurisdictions with OFI residuals, a significant proportion of the residual is unlikely to reflect shadow banking activities. For these jurisdictions, the overall narrow measure of shadow banking system is thus likely to be an overestimate.

3. Shadow banking risks and interconnectedness

3.1 Shadow banking risks

The FSB's scoping report on shadow banking emphasised that while authorities should start by casting the net wide in monitoring, they should then narrow down shadow bank monitoring to better focus on those elements of non-bank credit intermediation where important risks may exist or are most likely to emerge.[41] Potential systemic risk concerns may arise from activities that result in maturity and/or liquidity transformation, imperfect credit risk transfer, leverage, and regulatory arbitrage concerns. In addition, the FSB's Policy Framework highlights the importance of classifying shadow banking entities by activities with common risks so that appropriate oversight and regulation to address bank-like risks can be put in place. To address such risks as they arise, authorities from participating jurisdictions note that a range of policy tools are available to varying degrees. Monitoring of shadow banking activities is important to detect and address risks that may give rise to financial stability concerns, and also to continually reassess the effectiveness of existing tools.[42]

Economic functions and related risks

The ways in which each of the economic functions, if not adequately regulated, gives rise to shadow banking concerns are summarised below:[43]

Economic Function 1*: Management of collective investment vehicles with features that make them susceptible to runs*. Collective investment vehicles (CIVs) include investment vehicles, funds, and accounts established for pooling client assets. In extreme circumstances, CIVs that are involved in credit intermediation with maturity/liquidity transformation and/or leverage can be susceptible to runs. These CIVs can face large scale redemption requests from investors within a short time period and/or have to roll over positions if the vehicles come under stress or in stressed market circumstances. If the CIV is leveraged, runs can also be instigated by lenders to the fund who can suddenly decide to pull their financing, or not renew funding, if they become concerned about the risk exposure of the CIV. To the extent that they are financed with short-term funding, leveraged funds such as hedge funds may also be susceptible to runs as lenders to the fund suddenly pull their financing if they become concerned about changes in the risk exposure of the fund. Such a run can lead affected funds to engage in fire sales of their assets, contributing to downward pressure on asset prices within and across asset markets. As well, while not a primary risk associated with this economic function, funds' use of derivatives for speculative purposes may result in synthetic

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41 FSB: Shadow Banking: Scoping the Issues, April 2011, see: http://www.fsb.org/wp-content/uploads/r_110412a.pdf.

42 The FSB has been working to identify risks associated with market liquidity and asset management activities in the current market conditions, as well as potential structural sources of vulnerability associated with asset management activities. It will evaluate the role that existing or additional activity-based policy measures could play in mitigating potential risks, and make policy recommendations as necessary. Also, it reviewed the initial findings from the longer-term work on asset management structural vulnerabilities and identified areas for further analysis. Those related to potential shadow banking risks include the mismatch between liquidity of fund investments and redemption terms and conditions for fund units, leverage within investment funds, and securities lending activities of asset managers and funds. For additional information and a full description of this work, see: http://www.fsb.org/wp-content/uploads/September-Plenary-press-release.pdf.

43 See the FSB Policy Framework for further details on the five economic functions.

leverage and imperfect credit risk transfer that under some circumstances could potentially contribute to factors that cause runs. Not all CIVs are susceptible to runs and authorities were asked to consider the susceptibility of different types of CIVs to runs carefully, taking into consideration the regulatory setting and structure of the CIV, the markets in which the CIV operates, and the CIV's investor base, among other factors.

Economic Function 2*: Loan provision that is dependent on short-term funding*. Lending and credit provision that is conducted outside of the banking system and funded with short-term liabilities may give rise to maturity transformation risks and leverage. Entities that are engaged in these activities often concentrate lending in certain sectors, which may create risks if these sectors are cyclical in nature. The risks may be exacerbated if these entities focus their activities on cyclical sectors, are heavily dependent on short-term funding or wholesale funding, or are dependent on parent companies for funding and the parent companies are in sectors that are cyclical in nature. In some cases, they may also be used as vehicles for banks to circumvent regulations. As these and similar non-bank credit intermediaries could choose to manage a substantial portion of their intermediation funded by long-term debt and equity, or manage their asset liquidity to match short term funding, data analysis is important to measure the extent of short-term funding dependence.

Economic Function 3*: Intermediation of market activities that is dependent on short-term funding or on secured funding of client assets*. Intermediation between market participants may include securities broking services (i.e. buying and selling of securities and derivatives on and off exchanges including in a market making role) as well as prime brokerage services to hedge funds. These activities may involve considerable liquidity risks (including intra-day liquidity risk) for the entities involved, depending on their funding model. These entities may be vulnerable to rollover risk and runs by lenders, if their funding is heavily dependent on wholesale funding, such as commercial paper, repos or short-term commitment lines from banks. Also, entities such as broker-dealers may at times take on significant leverage and maturity transformation in engaging in market intermediation, which could exacerbate runs if general market and asset price conditions deteriorate, and if funding providers become concerned that the price deterioration of collateral supporting short-term borrowing could precipitate viability concerns.

Economic Function 4: *Facilitation of credit creation*. The provision of credit enhancements, including guarantees and credit protection such as credit default swaps, helps to facilitate banks' and non-banks' credit creation. It does so by providing risk mitigation tools to help these entities manage credit risk of balance sheet exposures. However, these activities may create imperfect credit risk transfer, whereby credit risk is substituted for counterparty risk. Prior to and during the financial crisis, financial guarantors and monoline insurers provided a significant amount of credit protection to support triple-A ratings of subprime collateralised debt obligation (CDO) tranches. When the deterioration of the underlying collateral ultimately contributed to demise of these guarantors, holders of the tranches and other similarly insured assets were exposed to both the counterparty and the underlying collateral risk. In this manner, entities that guarantee credit risk may have contributed to the build-up of excessive credit and leverage in a financial system, and potentially facilitated systemic instability. The size and activity of financial guarantors has been greatly reduced in recent years and the business model of that sector has changed. Therefore, the risk that may arise from financial guarantors is diminished as compared to before the financial crisis. Such entities that

guarantee credit risk should continue to be monitored to ensure they do not contribute to the build-up of excessive credit in a financial system.

Economic Function 5*: Securitisation-based credit intermediation and funding of financial entities*. Shadow banking risks may arise from securitisation to varying degrees, depending on the activities performed. In this regard, securitisation can facilitate or aid in the creation of excessive maturity/liquidity transformation, leverage or regulatory arbitrage in the system. In particular, securitisation activities that are not match-funded may facilitate or aid in the creation of excessive maturity/liquidity transformation or leverage by facilitating the funding of long-term, illiquid assets with shorter-term funds. Securitisation may also serve other purposes, but are also used by banks and/or non-bank financial entities for funding/warehousing as well as to reduce their capital requirements in bank regulations. Also, securitization activities that directly fund financial entities, such as those that fuelled subprime mortgages, certain asset-backed commercial paper (ABCP) vehicles, and banks' leverage loan origination, can potentially contribute to growing leverage and liquidity mismatch.

Risk data collection

The FSB's shadow banking information-sharing exercises sought to capture risks associated with each of these economic functions through the collection of a host of balance sheet data to measure, where possible, aspects of four risks: maturity transformation, liquidity transformation, imperfect credit risk transfer, and leverage. Where sufficient data granularity exists across at least some jurisdictions, data are provided to illustrate potential risks associated with some of the economic functions.[44] However, some jurisdictions continue to face significant challenges collecting risk-oriented data, in part because regulatory data collection of various non-bank institutions is not granular, and Flow of Funds in many jurisdictions do not provide specific breakdowns with respect to maturity and liquidity factors.[45] Due to data limitations, some of the exhibits and results presented in this section come from a subsample of jurisdictions and may therefore not be extrapolated to describe the entire sample of participating jurisdictions. More specifically, any conclusion from the data related to the subsample may not apply to all of the jurisdictions that participated in this report.

[44] The reader should note that the sample size represents jurisdictions rather than individual entities. Thus, one jurisdiction's data submission could include many individual entities that range from large to small entities.

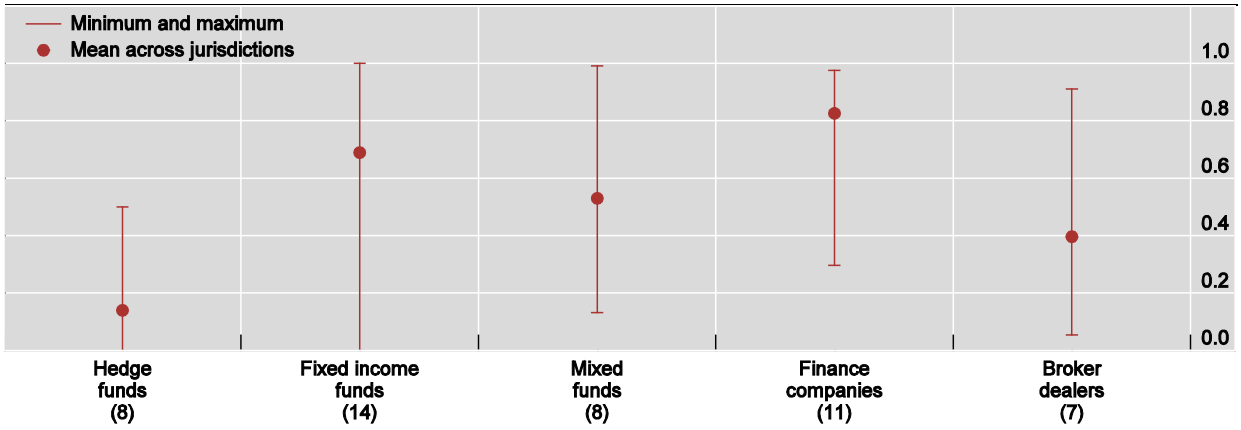
[45] These measures provide a conservative illustration of shadow banking risks because, in some cases, jurisdictions are not able to break out credit intermediation and related risks where activities are mixed between credit and non-credit investment activities (e.g. hedge funds, investment funds).

Credit intermediation

A sample of data on credit intermediation of OFIs shows the extent to which this intermediation is present. In this regard, hedge funds' credit intermediation is somewhat lower, on average, than fixed income and mixed funds, as many hedge fund strategies rely on equities or various derivatives investments. This data collection is utilised by authorities to determine the extent to which credit intermediation is occurring. Where very low levels exist, such as for equity funds, authorities may choose to remove these in the narrowing down process from further consideration.

Credit intermediation

Sample size in parenthesis[1] Exhibit 12



Note: The ratio is calculated as credit assets / total financial assets.

[1]: The sample size indicates the number of jurisdictions submitting the relevant data. The underlying sample in terms of non-bank financial entities represents data collected by authorities on individual entities within each reporting jurisdiction, which is a much larger sample set.

Sources: National flow of funds data; other national sources; FSB calculations.

Liquidity transformation

While limited, data on liquidity transformation provided by FSB jurisdictions suggests a range of risks across various entity types. While the data completeness is quite low, some entity types experience high levels of liquidity transformation, while others show a more balanced liquidity profile.[46] One of the key challenges to collecting this data is capturing both liquid assets and short-term liabilities. While regulators may define these balance sheet items to guide entities' risk management practices, definitions of liquid asset vary across jurisdictions and may not adequately capture those assets such as higher yielding fixed income securities that may suffer from less liquidity under stressed market conditions. In this regard, authorities may not collect data on liquidity in a manner that allows for consistent international comparisons. Better data collection in this area to deepen authorities' identification of liquidity transformation risks could thus be beneficial.

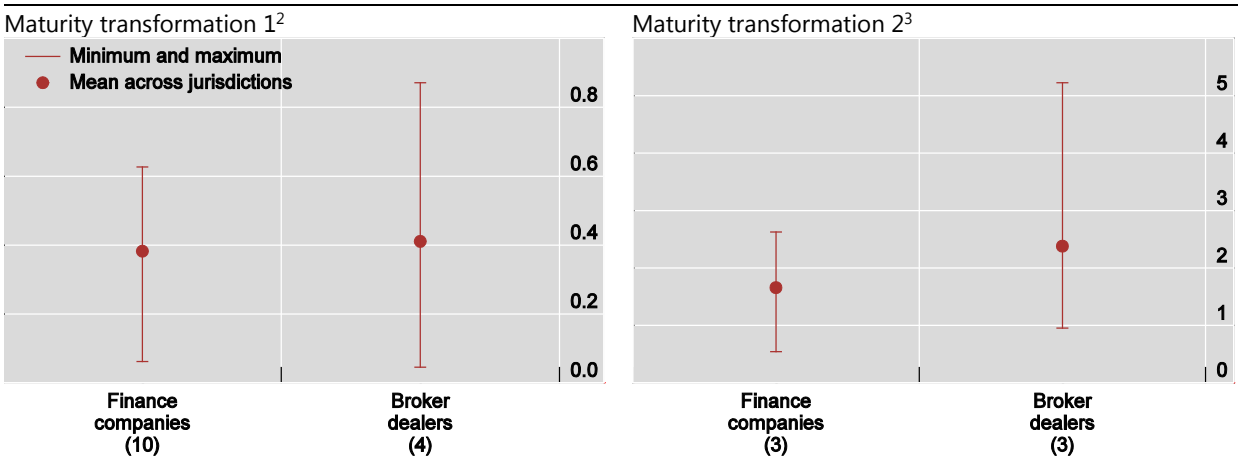
[46] Due to data incompleteness, data trends on liquidity transformation are not presented in this year's report.

Maturity transformation

Risk metrics on maturity transformation also show variation across entity types. For example, finance companies and broker dealers show moderate average levels of maturity transformation, but with a wide range that indicates higher transformation in these economic functions in some jurisdictions. It is worth noting that there are various metrics for maturity transformation and asset-liability management that different entity types may monitor and utilise for risk management purposes.[47] The FSB's metrics focus on the use of short-term liabilities (and redeemable equity for funds) to fund longer-term assets, irrespective of the liquidity profile of those assets. In this manner, the FSB's metrics for maturity transformation measure entity types' lending or market intermediation of longer-term assets using short-term funding, which may subject an entity to funding risk in the near-term.

Maturity transformation

Sample size in parenthesis[1] Exhibit 13



Notes:

[1]: The sample size indicates the number of jurisdictions submitting the relevant data. The underlying sample in terms of non-bank financial entities represents data collected by authorities on individual entities within each reporting jurisdiction, which is a much larger sample set.

[2]: The ratio is calculated as (long-term assets - (long-term liabilities + non-redeemable equity)) / total financial assets. Non-redeemable equity includes shareholders equity.

[3]: The ratio is calculated as (short-term liabilities + redeemable equity) / short-term assets.

Sources: National flow of funds data; other national sources; FSB calculations.

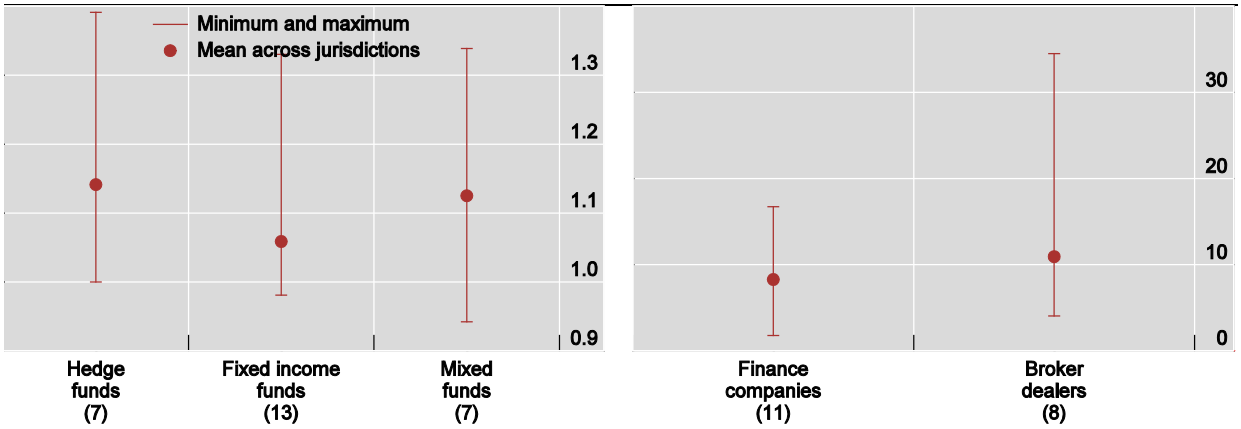
[47] Some jurisdictions' entities or market participants may use other ratios, such as average maturities of assets to liabilities, or may engage in analysis of cash flow matching, which may provide insight into particular aspects of maturity risks.

Leverage

Risk metrics on leverage show that balance sheet leverage for funds, including hedge funds, is low to moderate, while leverage for finance companies and broker dealers is relatively higher. This range is caused in part by strict balance-sheet leverage limits on public funds, whereas regulation generally allows for higher levels of broker dealer leverage.[48] While hedge fund leverage appears moderate, it does not capture derivatives-based leverage which can be significant for some types of funds and investment strategies.

Leverage

Sample size in parenthesis[1] Exhibit 14



Notes: The ratio is calculated as total financial assets / NAV for Economic Function 1 entities and as total financial assets / equity for non-Economic Function 1 entities.

[1]: The sample size indicates the number of jurisdictions submitting the relevant data. The underlying sample in terms of non-bank financial entities represents data collected by authorities on individual entities within each reporting jurisdiction, which is a much larger sample set.

Sources: National flow of funds data; other national sources; FSB calculations.

Jurisdictions' risk assessment

These various risk analyses based on economic functions support broader assessments by authorities regarding the extent of shadow banking risks posed by some non-bank financial entities and activities in their jurisdictions. Authorities' monitoring risk indicators / metrics in their jurisdictions will provide an analytical basis for assessing risks of shadow banking on a macroprudential level, which can be combined with supervisory judgement typically involving reviews of entities risk management practices, understanding of business models, and other factors. These steps help authorities arrive at a most informed, holistic view of shadow banking in their jurisdiction and in designing potential policy responses proportionate to the risks.

The FSB held an annual workshop to engage participating jurisdictions in an information-sharing on shadow banking risks and policy tools, as outlined in the FSB's Policy Framework regarding the oversight and regulation of shadow banking entities. In this workshop,

[48] These trends do not capture synthetic leverage of investment funds resulting from derivatives positions. As regulations vary across jurisdictions with respect to synthetic leverage of investment funds, there may be cases in which such funds take on significant leverage.

authorities from over 20 jurisdictions across several continents shared perspectives on shadow banking developments, identified risks and available policy tools. Also, they shared jurisdictions' risk maps that rank shadow banking risks within each economic function and across economic functions to provide a macro-view on where such risks may be relatively more likely to pose financial stability concerns. Jurisdictions' authorities generally highlighted liquidity and maturity transformation as prominent shadow banking risks at the current conjuncture. Moreover, authorities then shared perspectives on the availability, use and effectiveness of policy tools to mitigate such risks, and shared good practices in assessing risks at the jurisdiction level.[49]

In this manner, the economic function classification and risk data analysis can serve as an important input to authorities' efforts to identify and address vulnerabilities and thereby help to transform shadow banking into transparent, sustainable market-based financing.

3.2 Interconnectedness between banks and other financial intermediaries

Systemic risks emanating from either non-bank financial entities or the banking sector can be transmitted to each other through direct and indirect linkages. For example, direct linkages are created when non-bank financial entities form part of the bank credit intermediation chain, are directly owned by banks, or benefit directly from explicit or implicit bank support. Funding interdependence is yet another form of direct linkage, as is the holding of each other's assets such as debt securities. This subsection assesses how direct linkages and associated shadow banking risks may result in the transmission of stress from one sector to the other, and how it can be amplified back through feedback loops.[50]

Continued data constraints prevent a further improvement of these measures to differentiate credit and funding exposures between banks and different types of non-bank financial entities. Different non-bank financial entity types are associated with different risk factors, such as maturity and liquidity transformation, and leverage. Also, the interconnectedness measures do not capture derivatives and contingent exposures, such as bank lines of credit to OFIs, which proved to be key channels of contagion during the prior financial crisis. Lack of data also prevents a comprehensive assessment of the interconnection between banks and OFIs across borders.

Nevertheless, this section of the report seeks to combine the analysis of jurisdictions' interconnectedness between banking systems and OFIs with some data and descriptions of the shadow banking risks associated with these linkages.

Interlinkages between banks and OFIs can take a variety of forms. Banks' credit exposure to OFIs can result from loans to institutions, fixed income securities, reverse repos and investment in money market and other investment funds. OFIs may gain exposure to banking institutions by placing uninsured deposits, engaging in reverse repos and holding various debt instruments. The risks associated with such interconnections relate to the credit quality of the

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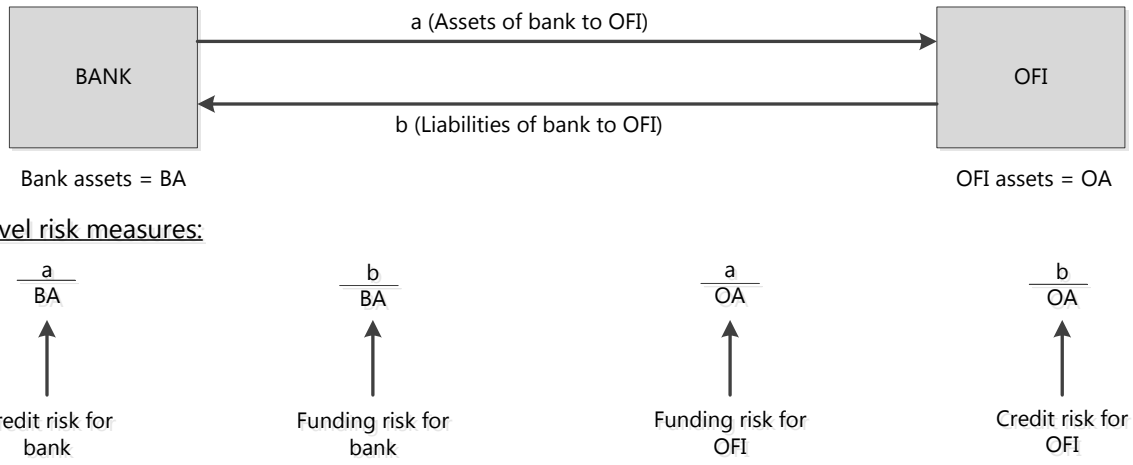
[49] Entity types that are classified as engaging in shadow banking activities and risks fall within regulatory perimeters in some jurisdictions and are subject to policy measures, particularly with respect to investor and consumer protection. However, the availability of such tools may not mitigate vulnerabilities that give rise to financial stability risks.

[50] In addition, indirect linkages also exist through a market channel, as the two sectors may invest in similar assets, or be exposed to a number of common counterparties.

counterparty and the funding duration of the credit intermediation. For example, efforts by an entity to reduce credit risk by materially decreasing the maturity or size of its credit exposure in turn increases the funding risk of its counterparty.

To assess direct linkages, it is essential to compile measures of interconnectedness between banks and OFIs. Building on previous global shadow banking monitoring reports, direct measures of credit exposure and funding dependence are calculated using the methodology as shown in Exhibit 15. The methodology is based on the aggregate balance sheet bilateral exposure between the two sectors (assets and liabilities of banks to OFIs and OFIs to banks) and makes adjustments for assets and liabilities of OFIs that are prudentially consolidated into banking groups whenever jurisdictions were able to provide the required granularity in their data submissions.[51] It is worth noting that interconnectedness results are not strictly comparable across jurisdictions, as not all jurisdictions reported interconnectedness measures net of prudential consolidation. In addition, some authorities were only able to report a subset of banks' assets and liabilities to OFIs.[52]

A risk analysis framework of interconnectedness between banks and OFIs — Exhibit 15



Some high-level observations of interconnectedness are as follows:

- In comparison to last year's data submissions, the sample of jurisdictions reporting interconnectedness data increased in terms of the total number of respondents. In particular, two additional jurisdictions were able to provide data on one or both of the interconnectedness measures (banks' assets and banks' liabilities to OFIs). However, several jurisdictions were still unable to report the relevant data for the interconnectedness analysis, thus preventing a comprehensive assessment of interconnectedness risks.[53]

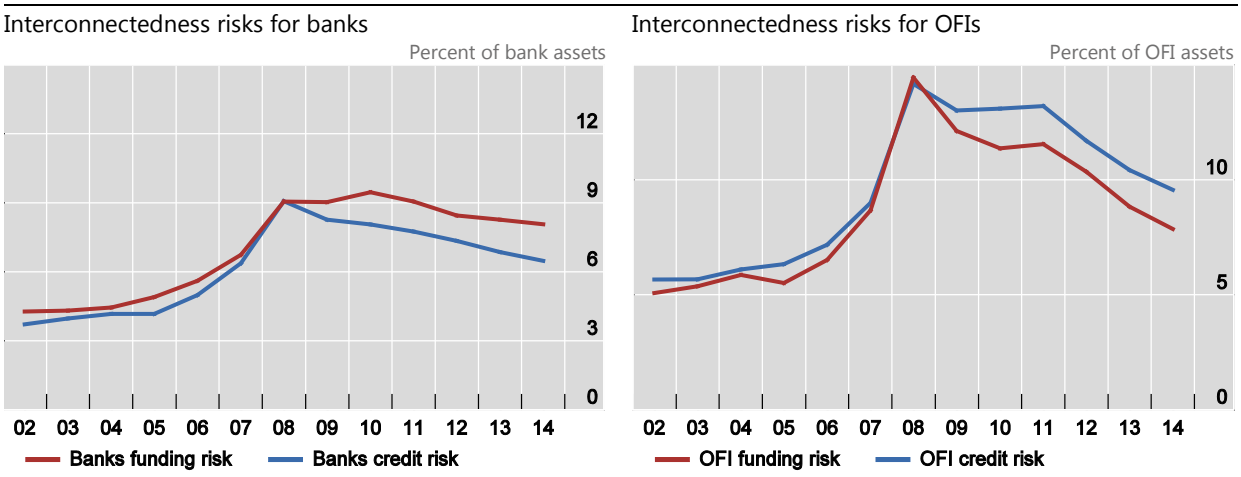
[51] Significant challenges remain with regard to the treatment of banks' partial ownership of an OFI entity. Most jurisdictions have followed their respective accounting rules and brought the full amount of an entity's assets back onto the bank's balance sheet, even in the case of partial ownership.

[52] For example, due to limitations in data availability, the United States and South Africa only reported a subset of bank assets/liabilities (e.g. loans/deposits) to (some) OFI sectors, instead of all bank assets/liabilities to OFIs.

[53] No interconnectedness data were reported by China, France, Italy, Japan, Korea, Russia and Singapore.

- Funding and credit interconnectedness, which peaked during the financial crisis, has declined somewhat. While the decline related to OFI risks is more pronounced, the level of OFI interconnectedness risks among some jurisdictions remains elevated (Exhibit 16).
- This year's results show that the level of interconnectedness exposures across jurisdictions, including those in the euro area, declined on a year-over-year basis. Aggregated across jurisdictions, banks' assets to OFIs declined by 8% from $4.0 trillion at the end of 2013 to $3.7 trillion a year later, while banks' liabilities to OFIs declined by 5% to $5.1 trillion. However, interconnectedness trends ranged considerably across jurisdictions: growth of bank asset to OFIs as a percent of bank assets ranged from -6.9 to 0.9 percentage points, and bank liabilities as a percentage of bank assets from -4.2 to 2.6 percentage points.

Banks' assets and liabilities to OFIs[1] Exhibit 16



Notes: [1] Average for 20 jurisdictions and the euro area (China, Japan, Korea, and Singapore did not report data on banks' assets and liabilities to OFIs, Hong Kong did not report banks' liabilities to OFIs).
Source: National financial accounts data; other national sources, FSB calculations.

The interconnectedness is measured based on the size and growth of banks' exposures due to funding from OFIs, which create OFI credit exposures, and also OFIs' exposure due to funding from banks, which in turn reflects banks' credit exposures. In general, where a jurisdiction's banking system is large relative to the OFI sector, OFIs that fund bank liabilities may have significant credit exposures to the banking sector. However, they represent a minor funding risk to the banks that have other sources of deposit and wholesale funding. Likewise, if the OFI sector is large relative to banks, there may be a higher propensity for OFIs to be a key funding source of banks' wholesale liabilities.

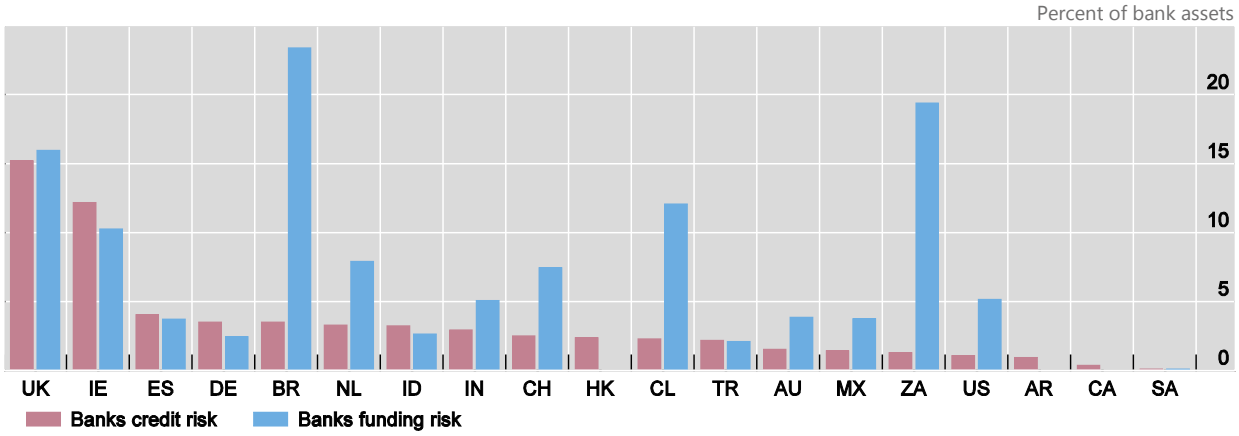
Bank risks of interconnectedness

Bank risks of interconnectedness include both funding risks from OFIs and credit exposures to OFIs. Banks are leveraged institutions that, to varying degrees, may be reliant on short-term wholesale funding and may therefore face going-concern challenges if material OFI credit deterioration or a reduction of funding occurs. It is difficult to assign a threshold for concern, as the risks associated with interconnectedness measured by assets in this exercise do not shed light on credit quality and maturity profiles. However, the following assessment

seeks to provide a relative basis of comparison that may serve as a guidepost for further analysis by supervisory and regulatory authorities.

Banks' assets and liabilities to OFIs

At end-2014 Exhibit 17



Note: Banks' refer to the broader category of 'deposit-taking institutions'. AR = Argentina; AU = Australia; BR = Brazil; CA = Canada; CH = Switzerland; CL = Chile; DE = Germany; ES = Spain; HK = Hong Kong; IE = Ireland; ID = Indonesia; IN = India; MX = Mexico; NL = Netherlands; SA = Saudi Arabia; TR = Turkey; UK = United Kingdom; US = United States; ZA = South Africa.
For the United States, bank assets to OFIs include bank loans to OFIs only, while bank liabilities to OFIs include checkable and time and savings deposits of OFIs only. For South Africa, the measure of banks' credit risk is based on bank loans to only some OFIs, while the measure for banks' funding risk represents bank liabilities from a broader range of OFIs. For the United Kingdom, interconnectedness measures reflect banks' assets and liabilities to OFIs and to financial auxiliaries.

Sources: National financial accounts data; other national sources, FSB calculations.

Bank credit exposure to OFIs

- Growth in banks' credit exposure to OFIs as a share of bank assets was generally modest, and showed small increases in 2014 in Brazil, Germany, and Turkey. Jurisdictions experiencing moderate decreases included the Ireland, Netherlands, and the United Kingdom.
- Banks' credit exposures to OFIs were over 10% of total bank assets in the United Kingdom and Ireland. This may suggest that banks' credit risk to OFIs is relatively modest, particularly if assets are comprised of high quality and liquid instruments. However, to the extent that OFIs in particular jurisdictions are investing in lower quality loans, credit instruments or vehicles, unexpectedly high losses could potentially result in material capital erosion. At the same time, a portion of this interconnectedness may represent market intermediation activities with fairly matched assets and liabilities in which the maturity and liquidity mismatches are modest.

Bank funding from OFIs

- Banks' potential funding risk to OFIs as a share of bank assets showed moderate increases in 2014 in Brazil and Chile, and modest decreases in Ireland and South Africa. A comparison of jurisdictions' funding interconnectedness to overall OFI growth shows little relationship, in part because the growth or decline of overall bank assets contributes to this relationship.

- Banks' funding risks from OFIs were over 15% of total assets in Brazil, South Africa and the United Kingdom, and also above 10% in some other jurisdictions.[54] This may suggest that banks' funding risk from OFIs is generally modest. However, a better understanding of the maturity of OFI funding to banks and any concentrations of short-term OFI funding among particular institutions would help determine the extent of vulnerabilities. For example, OFI repo and money market funding of bank short-term liabilities might result in greater funding risk than mutual fund holdings of bank term debt, due to the shorter maturity profile of the former source of funding. Jurisdictions with relatively high bank funding risks to OFIs may seek to better understand the extent to which roll-over risk, maturity walls and credit concentrations exist, particularly if non-OFI funding risks are also present.
- There is little relationship between the extent of interconnectedness between banks and OFIs as a share of OFIs' assets, the growth of OFI assets, and the size of OFIs relative to the financial system (see Exhibit 19).

OFI risks of interconnectedness

OFI interconnectedness risks include both funding risks from and credit exposures to banks.[55] As OFI sectors tend to be smaller than banking sectors in most jurisdictions, interconnectedness relative to OFI assets can be fairly large in some jurisdictions, compared to bank risks from interconnectedness. In this regard, as smaller OFI sectors in financial systems with large banking sectors generally have higher exposure to banks, there is a modest negative correlation between the size of OFI sectors relative to banking sectors and OFI interconnectedness. Also, there is a moderate positive correlation between a jurisdictions' overall GDP growth (2011-2014) and OFI interconnectedness (see Exhibit 19).

OFI business models vary considerably, such that some are more leveraged and sensitive to capital loss and short-term liabilities, while others may have low leverage but susceptible to run risk associated with liquidity transformation. While these differences may give rise to idiosyncratic risks, this assessment illustrates the range of exposures and examples of OFI sectors that are exposed to their jurisdiction's banking sector. While it is difficult to assign a threshold for concern, relatively high OFI exposures among a few jurisdictions may merit authorities' further attention as to potential credit, liquidity and funding risks, as well as concentration to particular banking institutions that serve OFIs as market-based or credit intermediaries.

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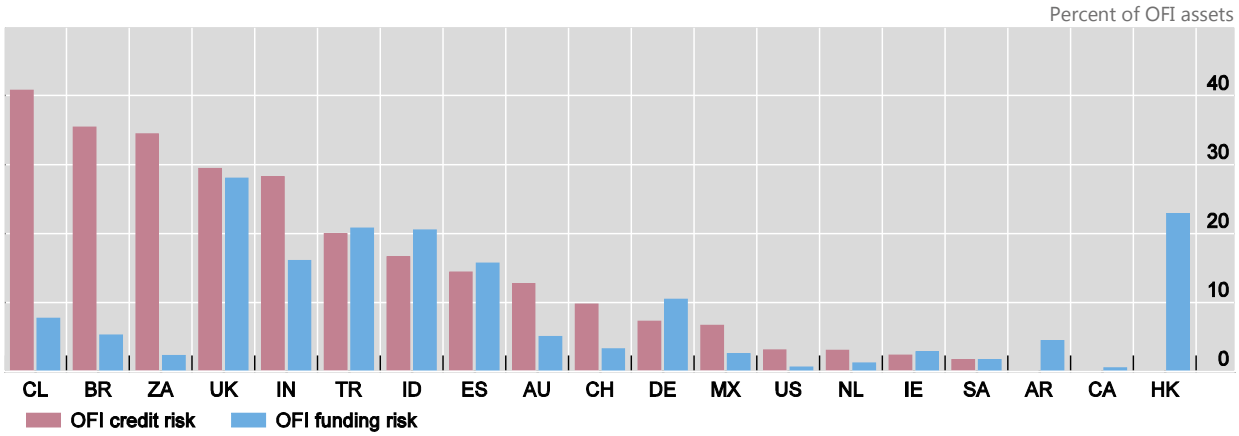
[54] In Brazil, investment funds comprise the majority of the OFI sector, and about half of the funds' assets under management is composed of federal government bonds and repurchase agreements with the banking system collateralised using federal government bonds.

[55] As the nominal value of a bank's exposure to an OFI is the same as the OFI's funding exposure to the bank (representing the numerator in interconnectedness ratios), the jurisdictions' OFI size relative to that of banks causes the differences in OFI-related measures of interconnectedness (through the denominator of interconnectedness ratios).

OFIs' assets and liabilities to banks

At end-2014 Exhibit 18



Note: 'banks' refer to the broader category of 'deposit-taking institutions', OFI = Other Financial Intermediaries. AR = Argentina; AU = Australia; BR = Brazil; CA = Canada; CH = Switzerland; CL = Chile; DE = Germany; ES = Spain; HK = Hong Kong; IE = Ireland; ID = Indonesia; IN = India; MX = Mexico; NL = Netherlands; SA = Saudi Arabia; TR = Turkey; UK = United Kingdom; US = United States; ZA = South Africa.

For the United States, bank assets to OFIs include bank loans to OFIs only, while bank liabilities to OFIs include checkable and time and savings deposits of OFIs only. For South Africa, the measure of banks' credit risk is based on bank loans to only some OFIs, while the measure for banks' funding risk represents bank liabilities from a broader range of OFIs. For the United Kingdom, interconnectedness measures reflect banks' assets and liabilities to OFIs and to financial auxiliaries.

Sources: National financial accounts data; other national sources, FSB calculations.

OFI credit exposure to banks

- OFI credit exposure to banks as a share of total OFI assets, while declining moderately in aggregate, showed mild increases in 2014 in Chile and Brazil, and declines in South Africa, Ireland and the United Kingdom. There appears to be little relationship between OFI growth and OFI credit exposure to banks (see Exhibit 19), although there are some exceptions. In this regard, the growth of OFI credit risk to banks in Chile is from a relatively high base, which bears monitoring.
- OFI credit exposures to banks were above 40% in Chile and over 10% in eight other jurisdictions. OFIs' credit exposure to jurisdictions' banking systems remains high relative to banks' credit exposures to OFIs, which were generally much less than 20%, and also reflects that OFI sectors are much smaller than banking sectors in most jurisdictions.
- The level of concern over such credit exposures would depend on banks' credit quality, concentration, and the extent to which there are multiple interconnections across various OFIs and banks. If one or a small number of large banks –particularly those with high leverage or liquidity transformation– are significant borrowers from OFIs, material bank credit deterioration could precipitate broader contagion across multiple OFIs in different industries.

OFI funding from banks

- OFI funding from banks as a share of total OFI assets, while declining moderately in aggregate, showed moderate increases in 2014 in Turkey, and Germany, and notable declines in Ireland, the United Kingdom, and Argentina, and Spain. Again, there appears to be little relationship between OFI growth and OFI funding risk from banks, suggesting

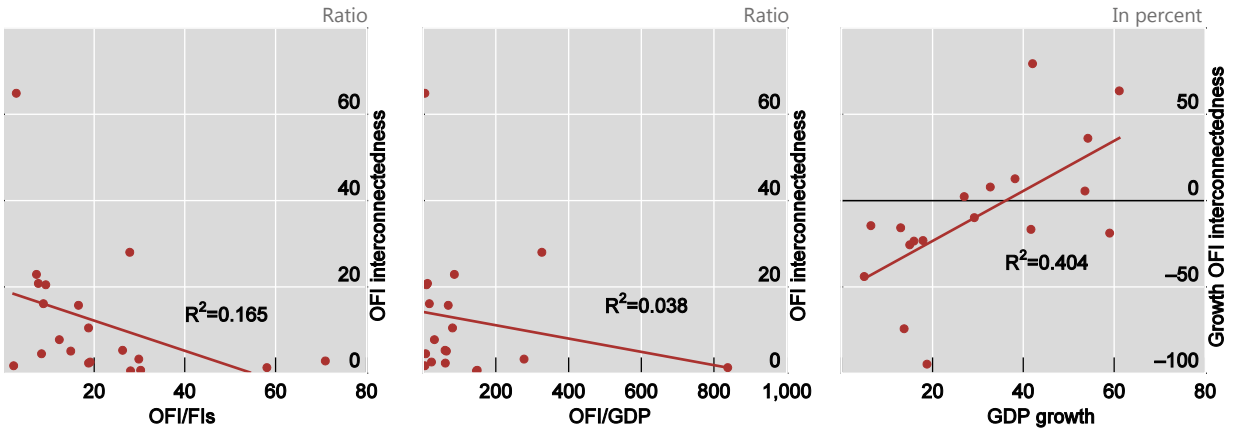
that corporates, households and other non-bank financial entities, rather than banks, are the primary contributors to OFI growth where it exists. Given that funds were by far the largest contributor to overall OFI growth, it is reasonable to expect that this growth would be supported by a reach for yield for seemingly liquid assets from corporates, pensions, insurance companies and individual investors.

- Nevertheless, OFI funding from banks remains large in a number of jurisdictions. OFI funding from banks was over 20% in the United Kingdom, Hong Kong, Turkey, and Indonesia. Overall, seven of the jurisdictions' OFI sectors were reliant on banks for at least 10% of funding, which is higher than bank funding to OFIs (five jurisdictions above 10% funding exposure). While exposures themselves do not necessarily equate to elevated funding risks, a better understanding of the maturity and diversity of funding is warranted. To the extent that banks are supplying short-term funding to investment funds or leveraged non-bank credit institutions, the abrupt withdrawal of this type of funding could under some circumstances precipitate funds' asset sales and contagion, and going-concern challenges at more leveraged institutions with acute maturity mismatches.

OFI interconnectedness

20 jurisdiction

Exhibit 19



Note: OFI = Other Financial Intermediaries; FIs = Financial Institutions.

Sources: National flow of funds data; other national sources; FSB calculations.

While the existing analysis of jurisdictions' bank to OFI interconnectedness is rudimentary and constrained by data gaps, this analytical effort illustrates a range of exposures that may give rise to vulnerabilities depending on the extent of underlying risks. Through domestic regulatory frameworks and FSB shadow banking initiatives, authorities are assessing these risks and comparing them across jurisdictions. Yet, a range of risks associated with interconnectedness will not be effectively measured until more granular data on types of exposures are collected and assessed.[56]

[56] Such exposures may include entity type, activity, maturity, concentrations, derivatives and contingent assets and liabilities, currency mismatches, and cross-border exposures.

Going forward, the establishment of a network analysis that includes banks and the different shadow banking sectors on an aggregate basis could facilitate an assessment of the key factors that can contribute to interconnectedness risks. Such analysis would better map potential negative feedback loops between the bank and non-bank sectors, and also identify pockets of credit and funding concentrations.

Moreover, where such exposures due to interconnectedness exist, authorities should assess potential risks under both normal and stressed conditions to unmask potential vulnerabilities under a range of downside scenarios. While bank stress testing has gained acceptance and widespread usage as a supervisory policy tool following the financial crisis, non-bank stress testing is in a more nascent stage of development. A survey of member jurisdictions of the FSB's Analytical Group on Vulnerabilities identified a number of stress test exercises being implemented, or under development, to determine the extent of tail risks at particular non-bank institutions across several industries. Some authorities have begun to engage in systemic macro-stress tests and network analyses to better understand how shocks to one large firm or industry could propagate risks throughout the financial system. These efforts hold promise for a more thorough assessment of potential risks arising through bank and shadow banking interconnectedness to help authorities in their use of available policy tools to ensure that growing market-based finance plays a constructive and sustainable role in economic growth.

4. Broader macro picture of all non-bank financial intermediation[57]

Section 4 presents the results from the first step of the monitoring and assessment exercise (see Box 1), which casts the net wide by monitoring the size and trends in all non-bank financial intermediation at the level of the MUNFI. This broad measure remains important for authorities to capture and monitor the dynamic nature of the shadow banking system and to detect new or changing entities and activities that may give rise to shadow banking risks. It is therefore a valuable tool in a first step to cover and track changes in non-bank credit intermediation that may also arise through adaptations or innovations in the financial system and that may lay the ground for evolving shadow banking risks.

In an effort to maximize the scope and granularity of available data, results in Section 4 are presented for two different samples of FSB jurisdictions.[58] The first sample, which for ease of reference we denote the *26-group*, is comprised of 26 individual reporting jurisdictions.[59] The second sample, denoted *20+EA-group,* comprises 20 individual jurisdictions and the euro area aggregate. It excludes jurisdiction-level reporting of individual euro area members (France, Germany, Ireland, Italy, Netherlands and Spain) and instead uses European Central Bank (ECB) data at the aggregate euro area level. The *26-group* is more comprehensive in terms of sector-level data granularity, while the *20+EA-group* sample has a wider scope in terms of jurisdiction coverage.

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[57] Compared to last years' shadow banking monitoring exercise, the availability and quality of data changed in some jurisdictions. As a consequence, the results presented in this report cannot be compared to the results presented in last year's report.

[58] To be precise, these are 24 FSB jurisdictions plus Chile and Ireland.

[59] The set of jurisdictions included in the *26-group* sample is identical to the sample used in Section 2 in this report.

4.1 Insurance Companies and Pension Funds

Insurance companies and pension funds are increasingly active players in credit intermediation through the direct purchase of credit assets, investments in vehicles that purchase credit assets, and occasional engagement in direct lending activities. Therefore, for the second consecutive year, this monitoring report includes an overview of the size and trends of insurance companies and pension funds.

The absolute and relative size of insurance companies and pension funds continued to grow in 2014 (Exhibit 20). The two sectors' combined assets rose to $57 trillion in 2014 from $56 trillion in 2013. Together, insurance companies and pension funds accounted for 18% of total financial system assets in the *20+EA-group*. The combined size of insurance companies and pension funds also grew as a share of GDP, from 88% in 2013 to 91% in 2014. Insurance companies and pension funds in the *20+EA-group* were similar in size in 2014, at $28 trillion and $29 trillion, respectively. Insurance companies' assets grew at an exchange rate adjusted rate of 8% in 2014, slightly faster than pension funds (7%).

The size of insurance companies and pension funds varied considerably across jurisdictions in 2014. For example, the two sectors constituted 41% of total financial system assets in South Africa, 37% in Chile, and 32% in Australia. On the other hand, the assets of insurance companies and pension funds in proportion to total financial assets were about 3% in Russia and Turkey.

4.2 Other Financial Intermediaries (OFIs)

The size of OFIs is measured by all financial institutions that are not classified as banks, insurance companies, pension funds, public financial institutions, central banks, or financial auxiliaries. OFIs are sub-divided into eight core subsectors[60] and additional sectors reported by jurisdictions on a voluntary basis.

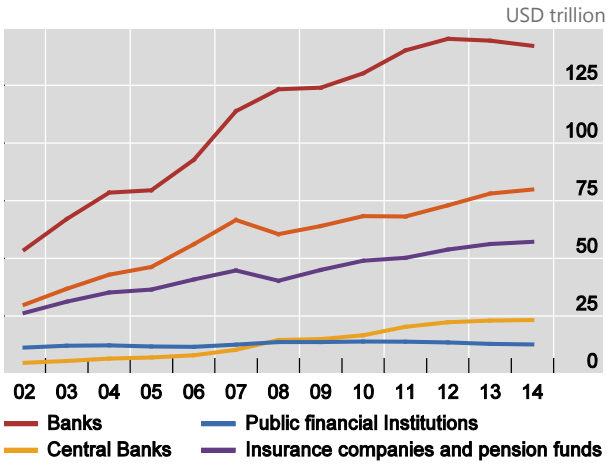
OFIs in the *20+EA-group* continued to grow in terms of its absolute size in US dollars and in proportion to other sectors of the financial system. The financial assets of OFIs rose $1.6 trillion to $80 trillion in 2014 (left panel of Exhibit 20). The growth in OFIs' assets in 2014 outpaced that of the banking sector, insurance companies and pension funds, and public financial intermediaries. As a result, their share of total financial system assets rose 0.5 percentage point to 25%. In the meantime, the share of bank assets fell for the third year in a row to 45% (right panel of Exhibit 20).

[60] For 2015, these subsectors are money market funds, finance companies, structured finance vehicles, hedge funds, other funds, broker-dealers, real-estate Investment trusts and funds. See the template at http://www.fsb.org/wp-content/uploads/shadow_banking_reporting_templates_2015.xls for more details.

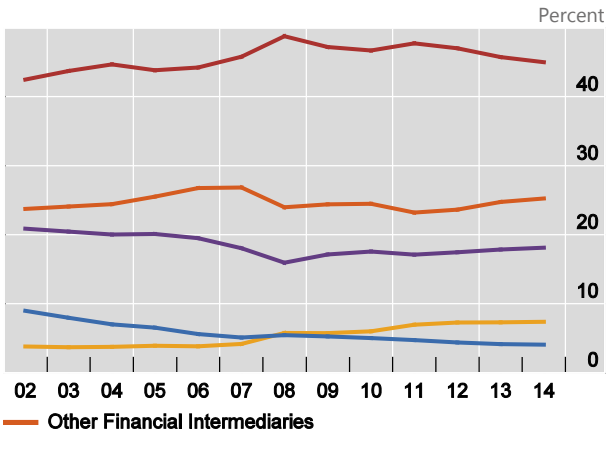
Assets of financial intermediaries

20 jurisdictions and euro area — Exhibit 20

Total financial assets



Share of total financial assets



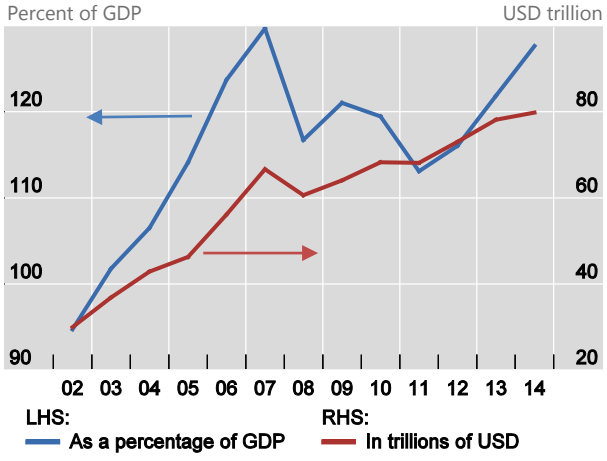
Note: Banks = deposit-taking institutions; OFIs = Other financial intermediaries.
Sources: National flow of funds data; other national sources; FSB calculations.

OFI assets are also becoming ever larger as a share of the *20+EA-group* GDP – reaching 128% of GDP in 2014, up 6 percentage points from 2013 (left panel of Exhibit 21). Their level bottomed in 2011 at 113 % of GDP and has increased in every year since. In the *26-group* sample, jurisdictions with the most prominent increase in their OFI assets-to-GDP ratios since 2011 were Ireland, and the Netherlands. Meanwhile, the United Kingdom and Spain experienced a significant decline (right panel of Exhibit 21).

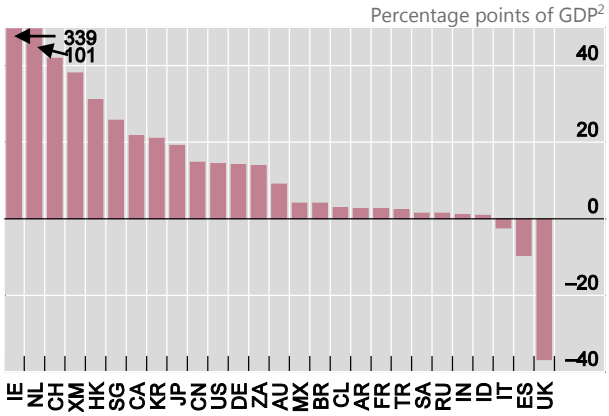
Assets of OFIs compared to GDP

Exhibit 21

Assets of OFIs



Change in OFI assets-to-GDP ratio, 2014 vs 2011[1]



Note: AR = Argentina; AU = Australia; BR = Brazil; CA = Canada; CH = Switzerland; CN = China; CL = Chile; DE = Germany; ES = Spain; FR = France; HK = Hong Kong; IE = Ireland; ID = Indonesia; IN = India; IT = Italy; JP = Japan; KR = Korea; MX = Mexico; NL = Netherlands; RU = Russia; SA = Saudi Arabia; SG = Singapore; TR = Turkey; UK = United Kingdom; US = United States; ZA = South Africa.

[1]: Average increase in *20+EA-group* was 14.6% of GDP.

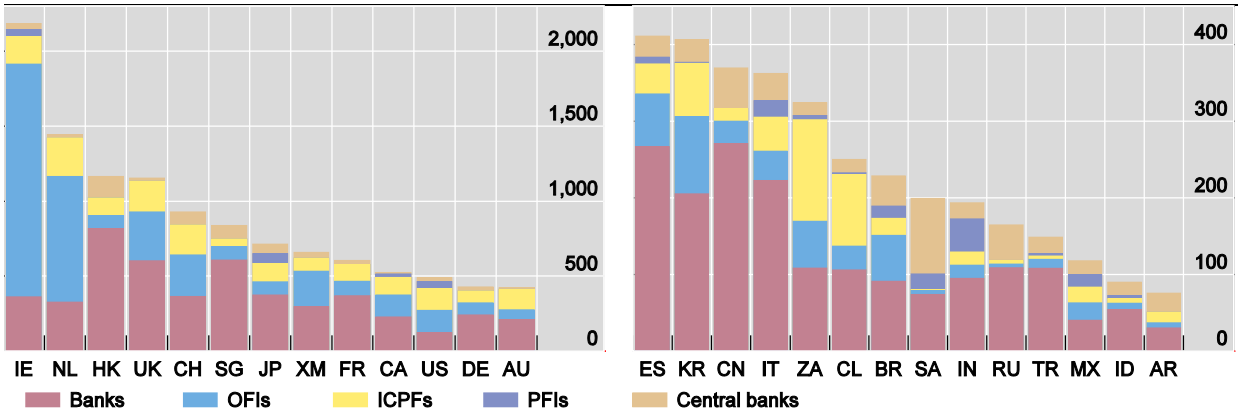
[2]: The change is calculated as the difference between the OFI-to-GDP ratio in 2014 and the OFI-to-GDP ratio in 2011.

Sources: National flow of funds data; other national sources; FSB calculations.

Advanced economies with developed financial markets tend to have larger OFI sectors both in terms of their size as a share of GDP and relative to other sectors of jurisdictions' financial system. The OFI sector is close to the size of the banking sector in Canada, the euro area, Switzerland, and the United States and is a significant part of the financial landscape in Ireland and the Netherlands (Exhibit 22). By contrast, the OFI sector in EMEs is generally smaller relative to GDP. This holds in particular when compared to the banking sector, which is by far the most important financial system element in EMEs.

Composition of financial systems

Percent of GDP at end-2014 Exhibit 22



Note: Banks = deposit-taking institutions; ICPFs = insurance companies and pension funds; PFIs = public financial institutions; OFIs = other financial intermediaries. AR = Argentina; AU = Australia; BR = Brazil; CA = Canada; CH = Switzerland; CN = China; CL = Chile; DE = Germany; ES = Spain; FR = France; HK = Hong Kong; IE = Ireland; ID = Indonesia; IN = India; IT = Italy; JP = Japan; KR = Korea; MX = Mexico; NL = Netherlands; RU = Russia; SA = Saudi Arabia; SG = Singapore; TR = Turkey; UK = United Kingdom; US = United States; XM = Euro area; ZA = South Africa.

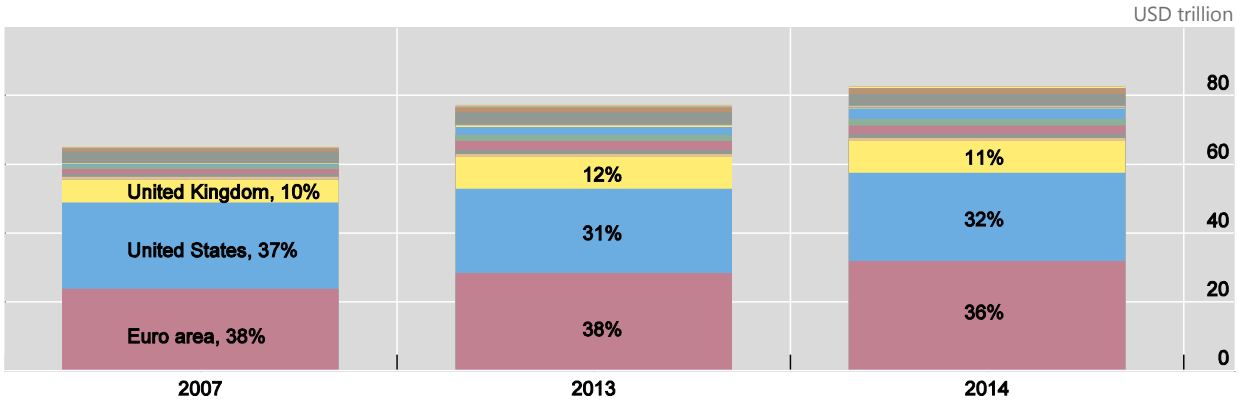
Sources: National flow of funds data; other national sources, FSB calculations.

The absolute size of the OFI sector was largest at the end of 2014 in the euro area ($29 trillion), the United States ($26 trillion) and the United Kingdom ($9 trillion) – together they comprised 80% of the *20+EA-group* total, a proportion which has been roughly stable over the last three years (Exhibit 23). However, the relative size of OFI sectors across jurisdictions is shifting – especially compared to the pre-crisis period. In particular, the relative size of OFI sector has shrunk significantly in the United States, counterbalanced by a rising share in some EMEs, most notably China (from 0.5% in 2007 to 3.8% in 2014).[61]

[61] Note, in some cases, increases of aggregated time series may also reflect improvements in the availability of data over time.

Assets of OFIs

20 jurisdictions and euro area | Exhibit 23



Sources: National flow of funds data; other national sources; FSB calculations.

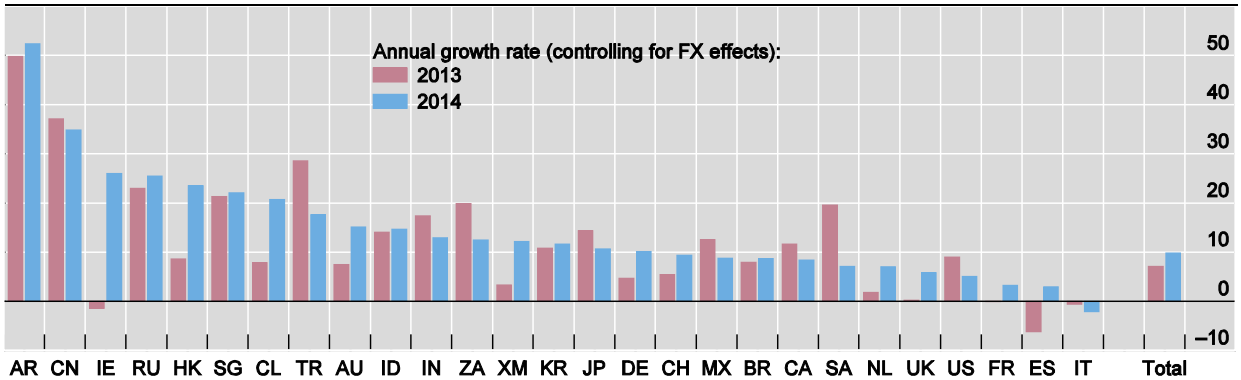
Growth trends of other financial intermediaries' assets across jurisdictions

The annual growth of OFIs in the *20+EA-group* reached 9.8% in 2014, up from 7.1% in 2013 (Exhibit 24). Growth rates are calculated as a weighted average of exchange rate-controlled jurisdiction growth rates and are therefore net of exchange rate effects, but still likely affected by valuation effects due to asset price changes.

As was established earlier, the OFI sector is relatively small in EMEs. However, Exhibit 24 illustrates how OFIs are growing strongly in most EMEs, which could be a welcome indication of financial deepening. Nonetheless, careful monitoring of fast-growing sectors is warranted to detect early indications of systemic risk build-up and to ensure availability of appropriate policy tools. The exchange rate adjusted growth rate reached 30% and above in 2014 in Argentina and China.[62] OFI sector growth rates in advanced economies were largely below 10% in 2014.

Annual growth of OFIs

In percent, by jurisdiction | Exhibit 24



Note: AR = Argentina; AU = Australia; BR = Brazil; CA = Canada; CH = Switzerland; CL = Chile; DE = Germany; ES = Spain; FR = France; HK = Hong Kong; ID = Indonesia; IE = Ireland; IN = India; IT = Italy; JP = Japan; MX = Mexico; NL = Netherlands; RU = Russia; TR = Turkey; SA = Saudi Arabia; SG = Singapore; UK = United Kingdom; US = United States; XM = Euro area; ZA = South Africa; Total = *20+EA-group* aggregate.

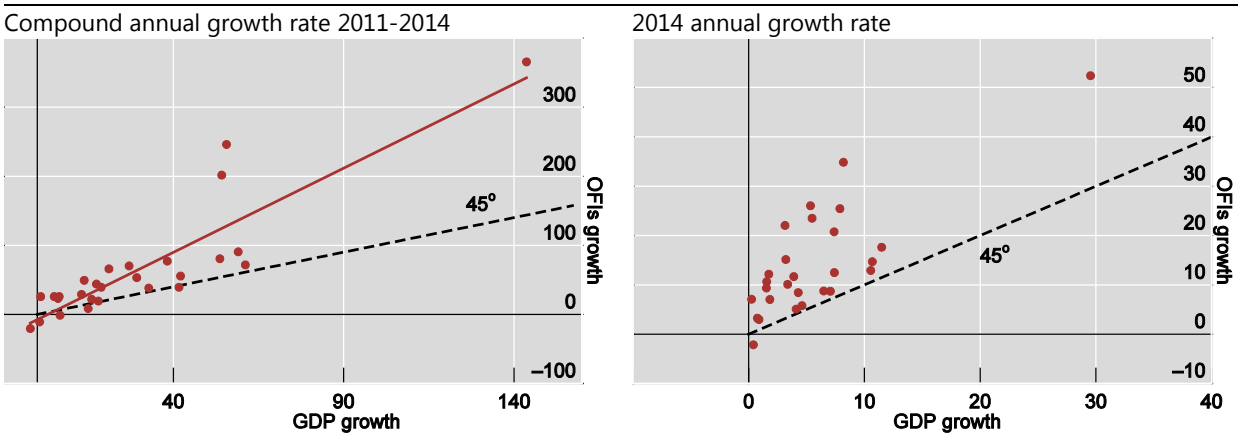
Sources: National flow of funds data; other national sources; FSB calculations.

[62] In general, these increases may be driven by increases in price level. This applies in particular to Argentina.

Exhibit 25 illustrates that there is a positive relationship between the growth of GDP and the growth in OFI sector assets, both in terms of 2011-2014 and 2014 growth rates. The dots above the 45°-line indicate that assets of OFIs grew faster than GDP in most of the 26 jurisdictions, both in 2014 and in terms of a compound annual growth rate from 2011 to 2014.

The relation of GDP growth and OFI growth

26 jurisdictions and euro area, exchange rate adjusted — Exhibit 25



Sources: National financial accounts data; other national sources; IMF; FSB calculations.

Composition of Other Financial Intermediaries

This section looks at the composition of OFIs in the *26-group*.[63] Other investment funds, comprised of equity funds, fixed income funds and other funds (those which do not correspond to either equity funds or fixed income funds), are by far the largest subsector of OFIs with assets in excess of $27 trillion in 2014 (Exhibit 26 and Exhibit 27). They account for 40% of OFI assets in 2014, up from 39% in 2013. A little more than half of all the other funds' assets were allocated to equity funds ($14.1 trillion), followed by fixed income funds ($9.1 trillion), and other funds ($4.2 trillion).

Broker-dealer assets of $9.6 trillion in 2014 accounted for 14% of all OFI assets, a stable proportion compared to the previous year. Assets held in structured finance vehicles declined to $4.9 trillion in 2014 from $5.5 trillion in 2013. Their share in OFIs shrank by 1 percentage point to 7% (and down from a sample peak of 15% in 2009). MMFs' assets grew to $4.3 trillion in 2014, accounting for 6% of OFI assets. Finance companies' assets declined slightly to $3.6 trillion (or 5% of OFI assets) in 2014. Trust companies' assets (which are almost entirely accounted for by China) rose to $2.7 trillion in 2014, their share in OFI increased to 4% from 3% one year ago.

[63] In this section, we focus on the *26-group* instead of *20+EA-group* of jurisdictions in order to benefit from higher granularity of sector data reporting in the former group.

OFI subsectors

26 jurisdictions — Exhibit 26

	MMFs	Finance Compa-nies	SFVs	Hedge Funds[1]	Invest-ment Funds	Broker-Dealers	REITs	Trust Compa-nies
Size in 2014 ($ trillion)	4.3	3.6	4.9	0.4	27.4	9.6	2.1	2.7
Growth in 2014 (year-over-year, %)	19.8	2.5	-2.0	104.6	12.2	10.5	12.1	26.2
Average annual growth (2011-2014, %)	4.7	-1.1	-5.0	34.3	11.6	5.5	13.9	39.6

Note: Growth rates adjusted for exchange rate effects. SFVs = Structured Finance Vehicles, REITs = Real Estate Investment Funds and Trusts.

[1]: Hedge funds are significantly underestimated in this report, and their growth rate may therefore not be representative.

Sources: National financial accounts data; other national sources; FSB calculations.

Jurisdictions reported hedge funds' assets of $0.4 trillion or 0.6% of OFI assets in 2014. However, these numbers are underestimated due to two factors. First, a portion of international financial centres, which host a number of hedge funds, are not included in the current scope of the reporting exercise.[64] Second, in many jurisdictions the Flow of Funds statistics are not granular enough to separate the assets of hedge funds from other sectors. Data from the private sector sources (Hedge Fund Research and Hedge Fund Journal) indicate that assets managed by the global hedge fund sector reached $3.1 trillion in 2014. In addition, jurisdictions with the largest hedge fund presence -the United States and United Kingdom- publish results from their national hedge fund surveys. According to the Financial Conduct Authority (FCA), $623 billion hedge fund assets were managed in the United Kingdom in 2014.[65] The US Securities and Exchange Commission (SEC) report shows that hedge fund gross asset value stood at $6.1 trillion at end-2014.[66] Note that these numbers are not directly comparable since they are from different sources with generally different methodologies and survey coverage.

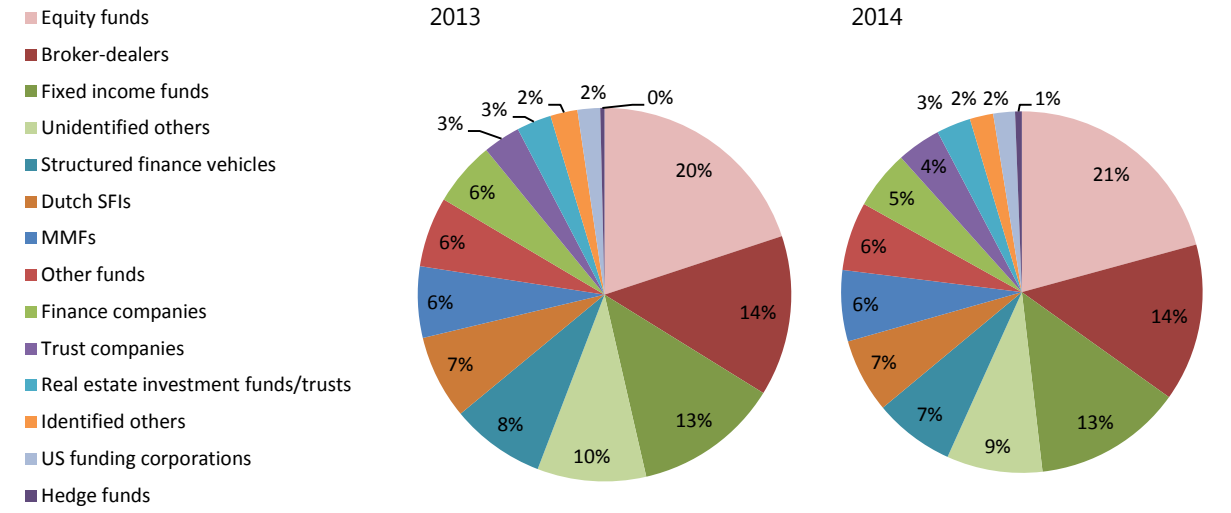
64 The reporting of "credit hedge funds" by the United States also includes funds that are domiciled abroad and marketed into the United States.

65 Survey data was obtained from 52 firms operating in the United Kingdom with 132 funds under management. The firms managed $632 billion worth of global hedge fund assets as of September 2014, of which $418.6 billion are captured in the fund information of the survey. $265 billion were reported as being managed out of United Kingdom. See http://www.fca.org.uk/static/documents/hedge-fund-survey.pdf.

66 This number captures the gross assets of hedge funds advised by SEC-registered investment advisers with private fund assets under management of at least $150 million. See the report at http://www.sec.gov/divisions/investment/private-funds-statistics/private-funds-statistics-2014-q4.pdf.

Share of subsector assets of OFIs

26 jurisdictions | Exhibit 27



Sources: National flow of funds data; other national sources; FSB calculations.

Dutch special financing institutions (SFIs) and US funding corporation are two large jurisdiction-specific OFI subsectors.[67] Their assets totalled $4.5 trillion and $1.3 trillion, respectively, in 2014, a fairly stable level compared to 2013.

Other jurisdiction-specific entity assets added up to $1.4 trillion in 2014. The remaining $5.8 trillion were reported in unidentified entities, and their share in OFIs was 9%.

Recent trends in OFI subsectors

The results presented in this section for the *26-group* sample need to be interpreted with caution since growth rates shown in Exhibit 28 are not adjusted for valuation effects. In particular, the FSB receives national jurisdiction's data converted to US dollars using the end-of-year market exchange rates. The FSB then uses reported exchange rates to calculate the adjusted growth rates that eliminate the effect of exchange rate movements on financial asset values. Still, the growth rates might be further affected by asset price changes that are not accounted for in the results presented in this section.

Trust companies showed the fastest annual growth of 26% in 2014, but their growth decelerated compared to the 2011-2013 average. This year, five jurisdictions reported data on trust companies assets, of which China accounted for more than 80% total reported assets.[68]

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[67] There are about 14,000 special financing institutions in the Netherlands, which are typically owned by foreign multinationals who use these entities to attract external funding and facilitate intra-group transactions. US funding corporations include funding subsidiaries, custodial accounts for reinvested collateral of securities lending operations, Federal Reserve lending facilities, and funds associated with the Public-Private Investment Program. Note that US government-sponsored enterprises, including Fannie Mae and Freddie Mac, were reported as public financial institutions and hence not included in the analysis presented in this report.

[68] The definition of trust companies varies across reporting jurisdictions. In some jurisdictions, trust companies' activities are limited to accounting, administrative and legal services to foreign corporations. However, in China, they conduct asset management activities on behalf of their customers. They invest in various financial instruments, such as bond and equity securities, but can also provide credit directly to non-financial firms in the form of loans. For more information, please see FSB "Peer Review of China", 13 August 2015, available at: http://www.fsb.org/wp-content/uploads/China-peer-review-report.pdf.

Trust companies' assets as a share of Chinese GDP reached 22% in 2014, from 8% in 2010. Given the fast growth in sector assets, a careful monitoring of potential risk build-up is warranted.

The growth of money market funds (MMFs) rebounded in 2014 to 20%, in sharp contrast to a flat growth rate from 2011-2013. MMFs assets in China almost tripled and the euro area saw a 13% increase (especially in the Netherlands and Ireland) in 2014.

Other funds (including equity funds, fixed income funds, and other funds), the largest OFI subsector, have grown at a growth rate exceeding 12% in recent years, and this growth rate was maintained in 2014. Growth in the euro area region and the United States (the two largest markets) drove the growth of the aggregate in 2014, but most other jurisdictions also experienced positive growth in investment funds (Singapore was the only jurisdiction where sector assets contracted in 2014). Investment funds' assets in most EMEs grew at somewhat higher annual rates than in advanced economies.

The assets of REITs grew more than 12% in 2014, in line with the 2011-2013 average growth. The growth in the aggregate is largely accounted for by the United States and the United Kingdom, though all other reporting jurisdictions (except Japan) experienced growth in sector assets in 2014.

Broker-dealers' assets increased 11% in 2014, a rate which is twice as fast as the average growth rate from 2011-2013, mostly due to a substantial increase in growth in the United Kingdom, while US assets contracted more slowly than in 2013. Japan also contributed significantly to the broker-dealer expansion in the *26-group* in 2014.

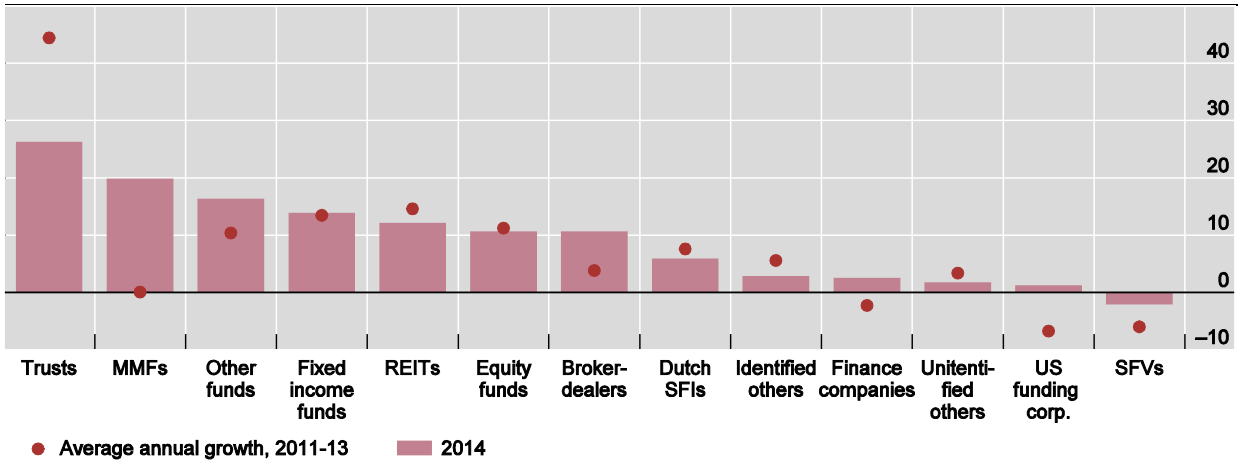
Finance companies' assets rose modestly in the two jurisdictions with large sector assets, the United States and the United Kingdom, after a 6-year period of contraction in the United States and a 3-year decline in the United Kingdom. The return to growth in 2014 in those jurisdictions, plus double-digit growth in most EMEs, especially Argentina, Hong Kong, Turkey, and India, led to a 2% increase in *26-group* aggregate in 2014, after an average 2.2% decline over the 2011-2013 period.

Structured finance vehicles (SFVs) contracted again in 2014 albeit at a slower pace than their average growth rate of -5.9% from 2011 to 2013. SFV assets increased in all reporting EMEs (except South Africa) in 2014. A slower contraction in the *26-group* aggregate was mostly due to a slower pace of decline in the United States.

Dutch SFI assets grew at a below-average 6% rate, and US funding corporations' assets increased slightly in 2014.

Annual growth of OFIs' subsectors

26 jurisdictions, in percent, controlling for exchange rate effects Exhibit 28



Note: Trusts = trust companies; MMFs = money market funds; REITs = real estate investment trusts and funds; Dutch SFIs = Dutch special financing institutions; SFVs = structured finance vehicles.

Sources: National flow of funds data; other national sources, FSB calculations.

5. Credit and lending patterns

This year's data collection template was expanded to include credit assets and lending (subsectors of total financial assets, i.e. loans)[69] of the following entities: banks and other deposit taking institutions, insurance companies, pension funds, public financial institutions, and the aggregate OFI sector and its sub-components – finance companies, hedge funds, fixed income funds, other funds, and broker-dealers. The intention of this expansion was to identify which non-bank financial entities are involved in credit intermediation based on balance-sheet numbers, and analyse how credit supply evolves and to identify potential shifts between sectors. As lending is a subset of credit, it was included as an "of which" column.[70]

5.1 Credit assets

Bank credit intermediation, based on credit assets, peaked at $84 trillion in 2012 for the *20+EA group* and has since declined each year to $77 trillion in 2014 (left panel of Exhibit 29). However, this general trend mainly applies to the euro area. In fact, credit growth rates

[69] 'Credit assets' is defined as the amount of loans and receivables, investments in debt securities, and other credit-related assets, e.g. government debt and other debt instruments, excluding intercompany receivables (i.e. balances between companies within a group). 'Loans' (or 'lending') is defined as the amount of loans and receivables. These definitions were included in the template for data collection (available at http://www.fsb.org/wp-content/uploads/shadow_banking_reporting_templates_2015.xls). Note that credit and lending to financial institutions and the government are also included.

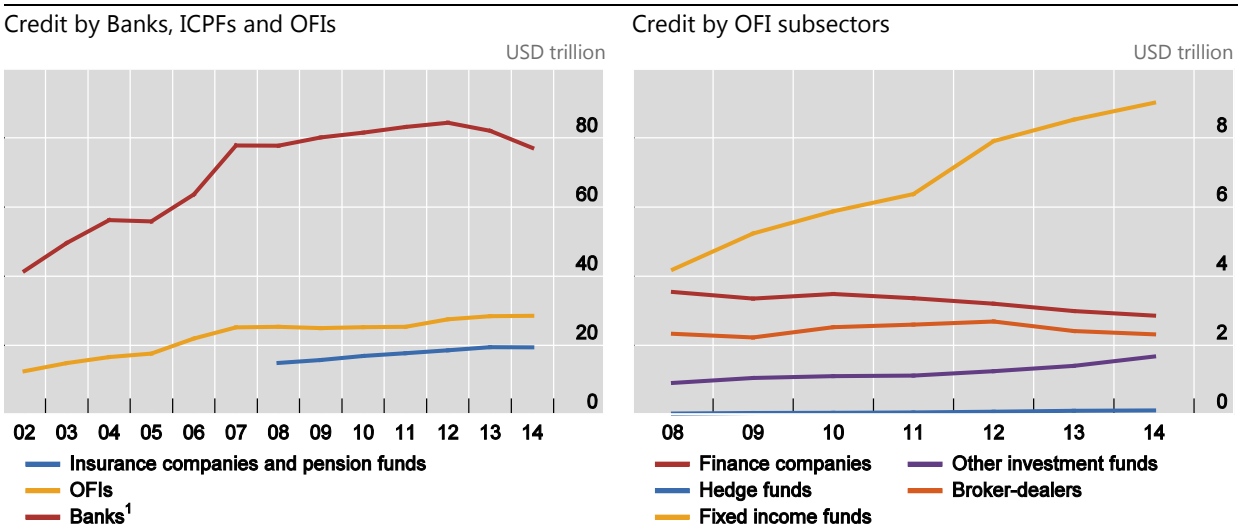
[70] Reporting of credit and lending assets was more limited than that of the sectors' total financial assets. 24 jurisdictions plus the euro area as a whole reported credit assets for banks, pension funds and insurance companies. 16 jurisdictions plus the euro area reported credit assets held by OFIs on aggregate. Reporting of credit assets by OFI subsectors mostly started in 2008 or later. Regarding lending assets, 24 jurisdictions plus euro area reported data on banks loans. 23 jurisdiction plus euro area reported loan assets for insurance companies and pension funds. 16 jurisdictions plus euro area reported data on lending by OFIs. Lending assets by OFIs subsectors mostly started in 2008 and was limited to a few jurisdictions for some sectors. Some of the exhibits and results presented in this section of the report therefore are based on a subsample of jurisdictions and may not be representative of the entire sample of 26 jurisdictions.

(adjusted for exchange rate changes) show that credit assets actually increased across most jurisdictions over this period, led by EMEs and the United States. In particular, Argentina, Brazil, Indonesia, and Turkey saw significant bank credit growth since 2011. Bank credit contraction was limited to some advanced economies, especially to some jurisdictions in the euro area.

For 11 jurisdictions and the euro area, credit assets represented about 36% of total financial assets of OFIs in 2014.[71] The credit intermediation by OFIs has been increasing steadily since 2010 and reached $29 trillion in 2014. Hong Kong, Chile, and Japan saw the fastest expansion of OFI credit intermediation in 2014. On a best-efforts basis, jurisdictions were also asked to submit data on credit assets of OFI subsectors. The right panel of Exhibit 29 indicates that fixed income investment funds have largely accounted for the steady increase in OFI credit assets. Credit intermediation by fixed income funds in 10 jurisdictions and the euro area rose from just above $4 trillion in 2008 to $9 trillion in 2014. Credit intermediation by finance companies and broker-dealers declined slightly in the past several years.

Meanwhile, credit assets of insurance companies and pension funds have grown from $15 trillion in 2008 to close to $19 trillion in 2014 in 18 jurisdictions and the euro area.[72]

Credit assets — Exhibit 29



Notes: ICPFs = insurance companies and pension funds; OFIs = other financial intermediaries. Some underlying series have breaks (see accompanying data file for details).

[1]: Banks' refer to the broader category of 'deposit-taking institutions'.

Sources: National flow of funds data; other national sources; FSB calculations.

[71] Credit assets of OFIs were reported by: Australia, Brazil, Chile, France, Germany, Hong Kong, India, Indonesia, Japan, Mexico, Netherlands, Spain, Switzerland, United Kingdom, and United States. The ECB also reported credit assets of OFIs for the euro area as a whole.

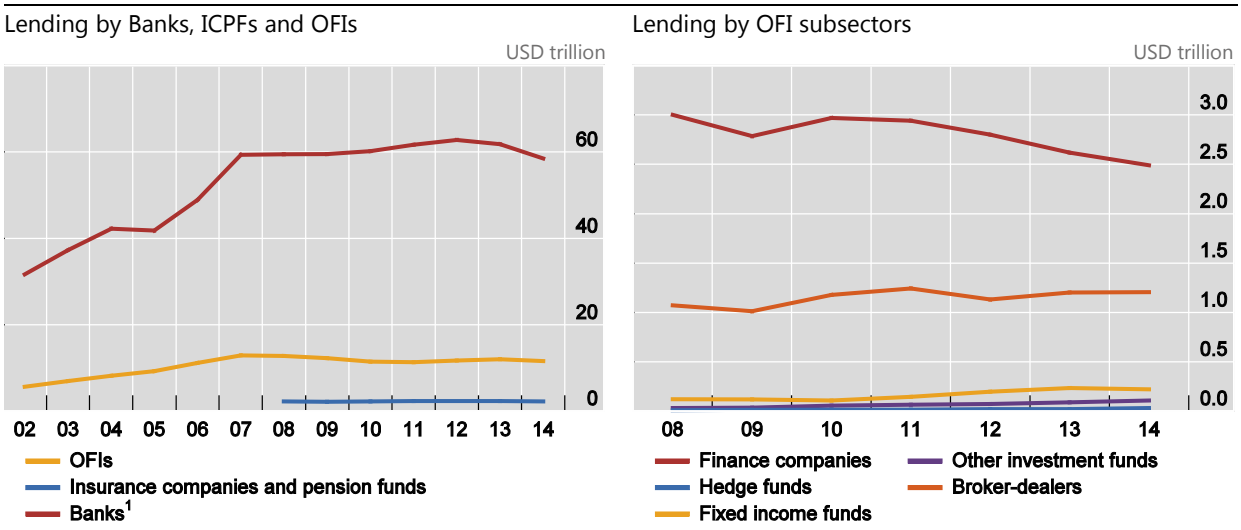
[72] Credit assets of insurance companies and pension funds were reported by: Argentina, Australia, Brazil, Canada, Chile, Hong Kong, India, Indonesia, Japan, Korea, Mexico, Saudi Arabia, Singapore, Turkey, Switzerland, United Kingdom, United States, and South Africa. The ECB also reported credit assets of insurance companies and pension funds for the euro area as a whole.

5.2 Lending

Bank loans represented with 47% the biggest portion of total credit assets in 2014. They have been slowly declining in US dollar terms from their sample peak in 2011 (left panel of Exhibit 30).[73] However, when measured in local currency, banks' overall credit intermediation and lending experienced renewed growth in aggregate and across many participating jurisdictions. While bank loan assets have been shrinking in some euro area countries, they have been rising in many other jurisdictions. Loan assets of insurance companies and pension funds have been relatively steady in US dollar terms for the last 7 years.

Meanwhile, loans extended by the OFI sector have been growing on average at around 4% annually in 12 jurisdictions and the euro area since 2011.[74] Over the same period, OFI loan assets grew at an exchange rate adjusted annual rate of 20% or more in Hong Kong and Japan, but contracted by around 25% and 24% in Brazil and the United Kingdom, respectively. The right panel of Exhibit 30 suggests that finance companies and broker-dealers accounted for the largest portion of the OFI loan book.

Lending — Exhibit 30



Notes: ICPFs = insurance companies and pension funds; OFIs = other financial intermediaries. Some underlying series have breaks (see accompanying data file for details).

1: Banks' refer to the broader category of 'deposit-taking institutions'.

Sources: National flow of funds data; other national sources; FSB calculations.

[73] Exchange rate adjusted, bank loans in 18 jurisdictions and the euro area have shown an average growth rate of around 2% since 2011. These jurisdictions are: Argentina, Australia, Brazil, Canada, Chile, Hong Kong, India, Indonesia, Japan, Korea, Mexico, Saudi Arabia, Singapore, Turkey, Switzerland, United Kingdom, United States, and South Africa.

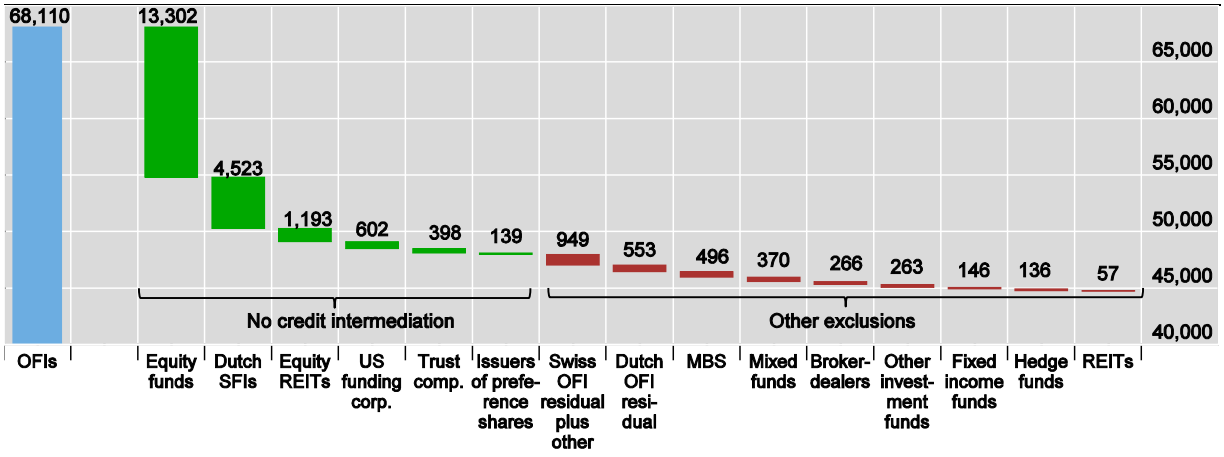
[74] Lending by OFIs were reported by: Australia, Brazil, Chile, France, Germany, Hong Kong, India, Indonesia, Japan, Mexico, Netherlands, South Africa, Spain, Switzerland, United Kingdom, and United States. The ECB also reported lending of OFIs for the euro area as a whole.

Annex 1: Exclusion of OFI entity types from shadow banking

Exclusion of OFI entity types from shadow banking

In USD billion, for 26 jurisdictions

Exhibit 31



Note: OFI = other financial intermediaries; SFIs = special financing institutions; REITs = real estate investment trusts and funds. Excluded entity types are captured in their entirety in Exhibit 31, without any adjustment for entities prudentially consolidated into banking groups. For example almost half the issuers of preference shares are prudentially consolidated into banking groups.

Source: National flow of funds data; other national sources; FSB calculations.

Through the FSB's information-sharing exercise and narrowing down process authorities collectively removed $23.6 trillion of OFIs from the MUNFI measure by determining that entity types did not engage in credit intermediation or did not engage in activities as described by the five economic functions (see Box 1).[75] This annex seeks to provide the reader with a more detailed breakdown of what was removed and why it was considered not to be engaged in shadow banking activities. However, many FSB jurisdictions participated in the information-sharing activities for the first time this year, and further assessment of these exclusions may warrant reconsideration in future monitoring reports.

Entity types that do not engage in credit intermediation

- Equity investment funds and equity REITs that do not invest in fixed income products, other than small amounts for liquidity risk management purposes.
- Dutch special financing institutions ("SFIs"), which include financial and non-financial holding companies of international corporations. There are about 14,000 special financing institutions in the Netherlands, which are typically owned by foreign multinationals who use these entities to attract external funding and facilitate intragroup transactions. The majority of these institutions are not considered to be actively engaged in credit intermediation beyond the subsidiaries of the particular corporation to which they belong.
- US funding corporations include funding subsidiaries, custodial accounts for reinvested collateral of securities lending operations, Federal Reserve lending facilities, and funds

[75] Single entity types under $50 billion are not presented in this assessment.

associated with the US government's Public-Private Investment Program. As such, these structures are not considered financial intermediaries distinct from their parent organizations.

- Trust companies in Singapore and South Africa provide a range of administrative and advisory services to individual clients. As these are not collective investment vehicles, they were not classified into Economic Function 1.
- In Spain, some entities' issuance of preference shares is categorized within the OFI sector. It has been removed from shadow banking as it does not entail credit intermediation.

Other exclusions

- The Swiss OFI residual, which is the portion of the Swiss national accounts that is the residual after accounting for all other identified financial intermediaries. The Swiss authorities identified that this portion of the residual does not include credit intermediation activities that give rise shadow banking risks. Also, the Swiss central mortgage bond institutions were excluded because these institutions issue long-term bonds that are secured by mortgage loans.[76]
- The Dutch OFI residual, which is the portion of the Dutch national accounts that is the residual after accounting for all other identified financial intermediaries. This residual includes head offices and holdings of Dutch non-financial and financial corporations. Participating jurisdictions did not raise any direct objections to the assessment by the Dutch authorities that this residual does not include material credit intermediation activities that give rise to shadow banking risks.
- Authorities from Canada and Korea did not classify most mortgage-backed securities in Economic Function 5, where these were government-guaranteed and also issued by prudentially-regulated entities (in the case of Canada mostly by federally-regulated banks, in the case of Korea by a public financial entity), thereby limiting shadow banking risks.
- Dutch prime brokers that are owned by pension funds, exclusively serve pension funds, and are prudentially supervised.
- Hedge funds in Ireland and to a lesser extent in Canada that largely do not engage in credit intermediation. These funds may engage in equity or derivatives strategies, though do not provide credit directly to the economy.
- Authorities have determined that a portion of mixed and/or other funds in Brazil, Canada, Chile, Spain, Hong Kong, Ireland, Korea and Russia either do not engage in material credit intermediation or are closed-ended, such that liquidity and maturity transformation risks are substantially reduced. Funds either present immaterial leverage or their use of balance-sheet leverage is strictly limited by regulations.
- A portion of fixed income funds in Brazil, Chile, Indonesia, and Ireland are closed-ended, such that maturity and liquidity transformation risks are limited. Such funds are also limited from acquiring material balance sheet leverage or they present immaterial leverage.

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[76] See the Swiss country case study published as part of the Global Shadow Banking Monitoring Report 2014.

- Real estate investment trusts in Ireland and Mexico that do not engage in material credit intermediation (e.g. they invest in equity of real estate projects) and/or are closed-ended, such that maturity mismatch is limited. Such funds generally do not take on leverage or their ability to take on leverage is limited by regulation.

Annex 2: The non-bank financial sector in Ireland[77]

Ireland is participating for the first time in this year's Global Shadow Banking Monitoring Report. Ireland has a significant OFI sector relative to GDP which includes a broad array of entities and activities. This case study describes the key components of the non-bank financial sector in Ireland and presents a run risk test on investment funds. Following FSB guidelines, Ireland is applying a conservative approach to measuring shadow banking. As highlighted in the main text, further refinement of the measurement will be made in future years. As such, the measured size of the Irish shadow banking sector is €2,250 billion at the end of 2014.

The majority of the sector falls under Economic Function 1 (collective investment vehicles with features that make them susceptible to runs), Economic Function 5 (securitisation-based credit intermediation and funding of financial entities) and the residual, unidentified OFI sector (taken from flow of funds data). The majority of the assets and liabilities of these entities are located outside of Ireland. This highlights the international nature of the sector in Ireland and the need for international cooperation (both in terms of data sharing and monitoring) in order to assess fully the potential build-up in systemic risk. From a regulatory perspective, the majority of investment funds fall within the regulatory perimeter (either through the UCITS[78] or the AIFMD[79] regimes) whereas securitisation vehicles fall on or outside the regulatory perimeter. While currently still subject to negotiations, both the implementation of the securitisation initiative[80] and the Money Market Fund regulation[81] in Europe would improve regulatory oversight of the sector going forward. The Central Bank of Ireland is also planning to increase oversight of the OFI residual through the extension of reporting requirements to Special Purpose Vehicles (SPVs) not primarily engaged in securitisation activities.

Mapping the shadow banking system in Ireland

The total financial sector in Ireland amounts to €4,054 billion at end 2014. Within this, credit institutions accounted for €773 billion[82] while the remaining 81% of activity is outside of the regular banking system. Exhibit 32 shows the main components of the non-bank financial sector in Ireland.

Investment funds make up the largest component with approximately €1,634 billion in assets, while Money Market Funds (MMFs) and Financial Vehicle Corporations[83] (FVCs) are roughly of equal size and each represent approximately €400 billion in assets. Insurance

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77 This case study has been contributed to by Brian Golden, Brian Godfrey, Kitty Moloney, Cian Murphy and Evin O'Reilly with thanks to Gareth Murphy, Joe McNeill, Martin Moloney and James Leen for comments made and Mark Bohan for data analysis (Central Bank of Ireland).

78 http://www.centralbank.ie/regulation/industry-sectors/funds/ucits/Pages/default.aspx.

79 https://www.centralbank.ie/regulation/marketsupdate/Pages/AIFMD.aspx.

80 http://ec.europa.eu/finance/general-policy/docs/shadow-banking/140129_proposal_en.pdf.

81 http://ec.europa.eu/finance/investment/money-market-funds/index_en.htm.

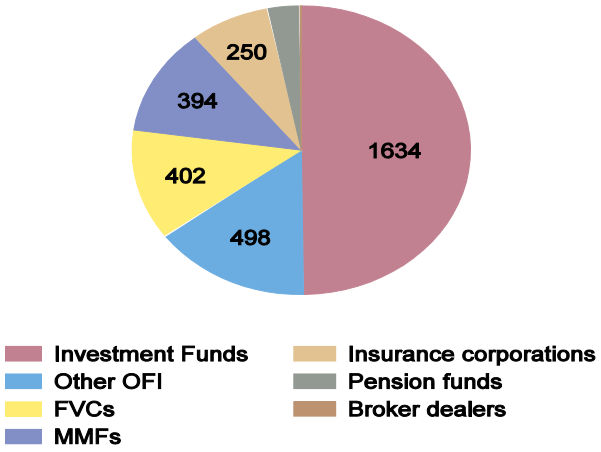
82 This total comprises private sector deposit taking corporations (€686 billion) and public financial institutions (€87 billion).

83 Financial Vehicle Corporations are defined by ECB regulation and are bankruptcy remote securitisation vehicles funded through the issue of marketable securities, for further details see: https://www.centralbank.ie/polstats/stats/reporting/Pages/fcvlinks.aspx.

Corporations and Pension Funds together account for approximately €350 billion in assets. As in many other euro area countries, there remains a significant residual OFI sector in Ireland. Work is on-going at improving the statistical oversight of components of the non-bank financial sector and therefore this residual is expected to reduce over time.

Breakdown of non-bank intermediaries in Ireland

In EUR billion at end-2014 Exhibit 32



Note: FVCs = financial vehicle corporations; OFI = other financial intermediaries.
Source: Central Bank of Ireland.

Exhibit 33 shows the location of assets and liabilities of non-bank financial institutions in Ireland. The majority of linkages are with the international financial system with limited direct links to the domestic economy. Irish figures for funds are dominated by fund cross-holdings, at €115 billion, while, for FVCs, the National Asset Management Agency, a state-backed property vehicle, accounts for €75 billion.[84]

Total assets and, within total liabilities, entity ownership (NAV) by country/region[1]

End-2014, in billions of euros Exhibit 33

	Ireland	Other Euro Area	United Kingdom	United States	All other countries	Total
Assets	291	436	536	617	551	*2,431*
IFs	151	230	386	496	371	*1,634*
MMFs	7	109	94	93	92	*395*
FVCs	133	97	56	28	88	*402*
Liabilities	308	464	815	138	340	2,065
IFs	98	351	540	63	223	*1,275*
MMFs	15	58	228	47	40	*388*
FVCs	195	55	47	28	77	*402*

[1] The difference between assets and liabilities arises as liabilities for Investment Funds and MMFs reflect NAV only whereas assets include assets funded by leverage.

Source: Central Bank of Ireland.

[84] Loans held by NAMA are valued at nominal value.

Investment funds

Irish domiciled investment funds have doubled in size in recent years with total assets amounting to €1,634 billion at end-2014, increasing from €819 billion at end-2011. This growth has mainly been driven by positive asset revaluations of €613 billion (on the back of buoyant debt and equity markets). The majority of investment funds are governed by a conservative investment strategy under existing European regulations. Nevertheless, hedge, mixed and other fund types tend to have more aggressive investment strategies and while most of these funds are not significantly leveraged, pockets of heightened risk exist among a cohort of highly leveraged hedge funds and exchange traded funds (ETFs)[85].

As Exhibit 34 shows, hedge funds account for 10 per cent of all investment funds (based on net asset value) and represent around half of the leverage in the industry. The majority of the leverage within the investment funds industry is accounted for by derivatives, at €222 billion (gross) and securities financing transactions (SFTs)[86] €42 billion. Irish domiciled investment funds are authorised and supervised by the Central Bank of Ireland. The investment managers for these funds are generally located outside of the jurisdiction and are subject to supervision by the relevant national competent authorities.

Breakdowns by Irish investment fund types

In billions of euros

Exhibit 34

	Total assets	NAV	Leverage[1]	SFTs	Derivatives[2]	Run risk test results
Bond	580	436	77	2	75	32
Equity	523	502	15	2	12	8
Mixed	184	150	31	17	9	47
Hedge	268	130	136	16	112	7
Real Estate	11	8	2	0	0	0
Other	69	49	20	5	14	10
Total	1635	1275	281	42	222	104

[1] Leverage is calculated as the difference between total assets and NAV less unsettled trades and miscellaneous liabilities, as both of these tend to be short-term and provisioned for in the cash accounts. [2] Derivative positions are taken from the liability side of the balance sheet.

Source: Central Bank of Ireland.

Money Market Funds

Irish domiciled MMFs have increased by €58 billion[87] or 20 per cent in the last three years and amount to €395 billion at end-2014. MMFs invest in money market instruments and

[85] Most ETFs are to be found in equity and bond fund types.

[86] Securities financing transactions include a variety of secured transactions that have similar economic effects such as lending or borrowing securities and commodities, repurchase (repo) or reverse repurchase transactions and buy-sell back or sell-buy back transactions. The main SFTs are securities lending and repos. See: http://europa.eu/rapid/press-release_MEMO-14-64_en.htm.

[87] This figure excludes reclassifications of €48 billion.

engage in securities financing transactions. They are therefore an important source of financing for both banks and other financial institutions. MMFs are regulated under European and domestic legislation and domestic regulatory requirements.

Financial Vehicle Corporations

FVCs are defined by ECB regulation[88] and are bankruptcy remote securitisation vehicles funded through the issue of marketable securities. Irish domiciled FVCs have decreased by €98 billion or 19% in the last three years (from assets of €500 billion at end-2011 to €402 billion at end-2014). Apart from the National Asset Management Agency (NAMA)[89], over 70% of Irish FVC assets and liabilities are located outside of Ireland at end 2014. FVCs lie on or outside of the regulatory perimeter depending on the nature of their activities.[90]

Other OFI sector

The remainder of the OFI sector comprise treasury companies, finance leasing companies, holding companies and SPVs that are not primarily engaged in securitisation activities. Granular balance sheet data on these entities are currently not available. This hinders a full assessment of these vehicles' shadow banking activities. The Central Bank of Ireland plans to extend granular data collection to SPVs falling outside the FVC definition from Q3 2015.[91] Some of these SPVs are involved in loan origination, and may be considered part of the shadow banking sector owing to their credit intermediation activities. Going forward the increasing granularity in data collection should refine the measurement of this residual.

Economic Functions and a run risk test

The OFI sector in Ireland falls mainly within Economic Function 1 (collective investment vehicles with features that make them susceptible to runs) and Economic Function 5 (securitisation-based credit intermediation and funding of financial entities). Consistent with the FSB's conservative approach, all investment funds with debt security holdings are included in the measure. Investment funds with shares in other funds are also included as these funds may be part of a credit intermediation chain. This measure excludes equity funds, real estate funds and investment trusts and close ended funds. All MMFs are also included under Economic Function 1. The total figure under Economic Function 1 amounts to €1,387 billion as at end 2014. As FVCs are securitisation vehicles, they are included under Economic Function 5 and amounted to €361 billion (excluding retained securitisation vehicles[92]) as at end 2014. A small amount of broker dealer activity, €4 billion, counts as financial intermediation in Economic Function 3. The Other OFI sector, amounting to €498 billion, is

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88 See https://www.centralbank.ie/polstats/stats/reporting/Documents/Regulation%20ECB_2008_30.pdf.

89 NAMA is a state-backed property vehicle. For more information, see: https://www.nama.ie/about-us/.

90 For example, entities who engage in derivative transactions must report information on their transactions to an approved trade repository under the European Market Infrastructure Regulation (EMIR).

91 Godfrey B., Killeen N., and Moloney K, "Data Gaps and Shadow Banking: Profiling Special Purpose Vehicles' Activities in Ireland", Central Bank Quarterly Bulletin Q3 2015.

92 Retained securitisation vehicles take loans from a bank and turn these into debt securities which are given back to the same bank for use as collateral for accessing central bank funding.

included in the shadow banking total (making that €2,250 billion) but not under an economic function.

For this case study, a simple run risk test was applied to investment funds to target run risk more precisely. Investment funds were stressed by seeing if they could meet both a 10% investor redemption request and the withdrawal of leverage callable within one week at current market prices. Investment funds that are either significantly leveraged or that engage in liquidity transformation may not have sufficient liquid assets (defined here as sellable[93] within 7 days) to be able to meet their redemption requests. The analysis shows that funds which fail the run risk test account for 6% of the total investment fund industry in Ireland (see Exhibit 34 for a breakdown). We note a limitation of this analysis is the lack of granular data for the financial crisis in 2007-08.

Conclusion

Overall, the shadow banking system in Ireland is large relative to GDP with significant interconnections with the international financial system. The Central Bank of Ireland expects to refine this measure over time through improved data collection and regulatory oversight. In particular, significant increases in the size of the investment fund and MMFs sectors have taken place between 2011 and 2014. Roughly half of the sector falls under the regulatory perimeter (e.g. most investment funds and MMFs). Initiatives at the European and Irish levels are set to further improve regulatory oversight of securitisation vehicles, MMFs and the residual OFI sector. Going forward, improved monitoring of shadow banking, both internationally and in Ireland, will require increased regulatory oversight and co-ordination across jurisdictions.

[93] Sellable means that an asset can be disposed of at a price within 10% of its current market price.

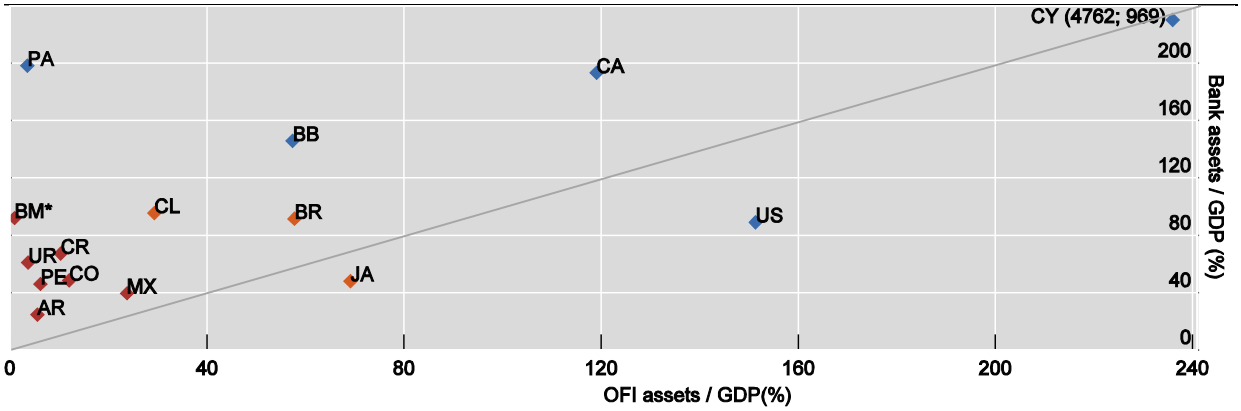
Annex 3: FSB Regional Consultative Group for the Americas second report on shadow banking

Introduction

In December 2012, the FSB Regional Consultative Group for the Americas (RCGA) decided to conduct a shadow banking monitoring exercise similar to that of the FSB at the regional level to achieve a better understanding of shadow banking in these jurisdictions and identify specific characteristics of the shadow banking sector in the Americas. For this purpose, the RCGA set up a working group (WGSB) to design and conduct the exercise based on the FSB's Analytical Group on Vulnerabilities (AGV) methodology.

Relative sizes of banking and other financial intermediary (OFI) sectors

As a percent of assets over GDP, 15 jurisdictions, at end-2013 Exhibit 35



Note: AR = Argentina; BB = Barbados; BM = Bermuda; BR = Brazil; CA = Canada; CY = Cayman Islands; CL = Chile; CO = Colombia; CR = Costa Rica; JA = Jamaica; MX = Mexico; PA = Panama; PE = Peru; UR = Uruguay; US = United States.

* All OFI activities have been classified under IFC because it is estimated that the domestic proportion is immaterial.

Sources: National flow of funds data; other national sources.

The WGSB presented its first report to the FSB Plenary in London in March 2014 and published it in August 2014.[94] The first report recommended that the work of the WGSB should continue, that future work on shadow banking in the RCGA should place particular attention on four areas (open-ended investment funds that hold illiquid assets; large and highly leveraged broker-dealers; non-bank deposit taking institutions; and finance companies), and that broader participation in the RCGA exercise should be encouraged, particular by jurisdictions engaged in significant international financial centre (IFC) activities. Consistent with these recommendations, the WGSB expanded its membership to include other IFCs, namely Bahamas, Barbados, Bermuda and British Virgin Islands.[95] The WGSB also

[94] *FSB Regional Consultative Group for the Americas Report on Shadow Banking in the Americas*, available at: http://www.fsb.org/wp-content/uploads/r_140822b.pdf. A summary of this report is included in Annex 5 of the *Global Shadow Banking Monitoring Report 2014*.

[95] All RCGA members and some other jurisdictions in the region were invited to join the WGSB. In addition to Bahamas, Barbados, Bermuda and the British Virgin Islands, Argentina also joined the WGSB for the second monitoring exercise. The number of participating jurisdictions increased from 12 to 17. These are: Argentina (AR); Bahamas (BH); Barbados (BB); Bermuda (BM); Brazil (BR); British Virgin Islands (BVI); Canada (CA); Cayman Islands (CY); Chile (CL); Colombia (CO); Costa Rica (CR); Jamaica (JA); Mexico (MX); Panama (PA); Peru (PE); Uruguay (UR) and the United States (US).

modified the two reporting templates (one specific to IFCs) based on the experience from the first exercise, updated the macro-mapping exercise with end-2013 data and conducted two questionnaires, one on non-bank deposit taking institutions and one on broker-dealers, including the regulatory and supervisory aspects of these entities. The WGSB held a two-day workshop in Panama in November 2014 to review the results of the monitoring exercise and two questionnaires.

Principal Results

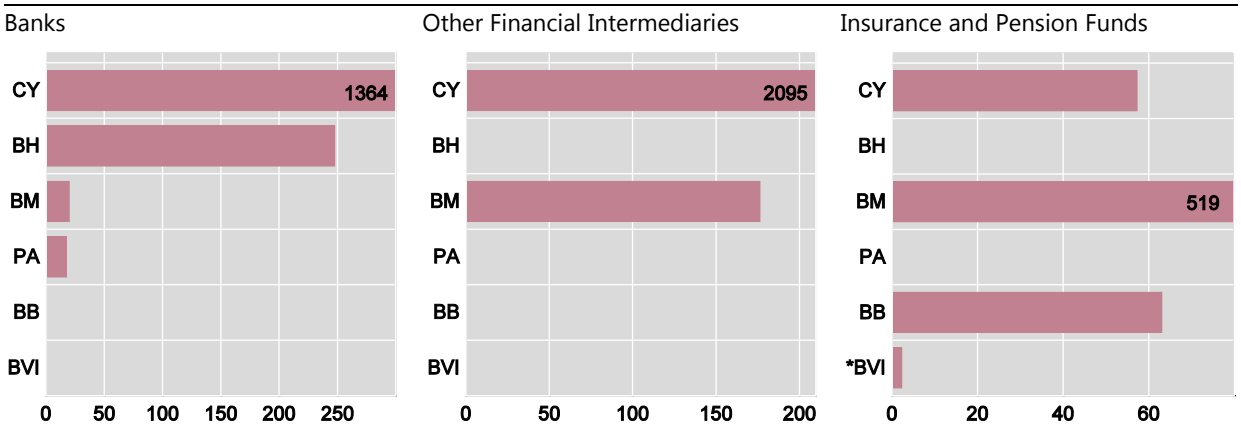
The key findings from the second shadow banking monitoring exercise are:

- Banks dominate financial activities in the Americas as they hold more than 40% of financial assets; however, their share of financial assets has been declining from 2008 due to faster growth in other financial intermediaries (OFIs), and is lower on average than the share for banks in AGV member jurisdictions (49% of financial assets);
- The size of the OFI sector relative to GDP is heterogeneous across the WGSB jurisdictions and is larger in economies with most developed financial sectors;
- The OFI sector in several jurisdictions have exhibited positive growth rates since the global financial crisis, although some jurisdictions with the highest growth rates start from a relatively low base for their OFI sector.
- The largest subsector of OFIs in the region are investment funds – money market funds and public and private funds;[96]
- In several jurisdictions, the links between OFIs and domestic banks are significant; and
- The offshore assets of the IFCs in the Americas are significant at USD 4.6 trillion, and the relative importance of various offshore financial entities (banks, insurers and private funds) varies by IFC.

[96] One difference between the WGSB and AGV templates is that in WGSB template, investment funds are split into money market funds, public funds and private funds. This contrasts with the AGV template that divides investment funds into money market funds, hedge funds and other funds categories. The WGSB defined public funds as funds that have no restrictions on the type of investor, minimum subscription amount or sales method (i.e., not restricted to private placements). This definition included closed-end and open-end funds. Private funds, in contrast, are not public and have similar characteristics to hedge funds. The WGSB believed that the private funds category reflected the characteristics of hedge funds, while capturing other funds with very similar characteristics that are not labelled as "hedge funds" in participating jurisdictions.

Size of financial intermediaries in the international financial centres

Offshore assets, 6 jurisdictions, at end-2013, in USD billion Exhibit 36



* At end-2012

Sources: National flow of funds data; other national sources.

The key findings from the two questionnaires are summarized below.

- *Non-bank deposit taking institutions*[97]

While their assets represent a relatively small share of national financial assets, the growth rate in assets of non-bank DTIs has exceeded that of banks in recent years. Credit unions and cooperatives are the most common, but there is heterogeneity across countries with other non-bank DTIs playing important roles. Where data were available, financial links between non-bank DTIs and banks were found to be relatively low. All non-bank DTIs are regulated and most are supervised, and they are often regulated and/or supervised by the banking regulator/supervisor. Regulatory and supervisory approaches differ. Capital requirements, for example, generally include a Basel I, II or III approach, but can vary both across and within countries. Accordingly, the gaps between bank and non-bank regulatory requirements represent a potential source of regulatory arbitrage. The potential for riskier credit intermediation activities to migrate to non-bank DTIs merits close monitoring.

- *Broker-dealers*[98]

Broker-dealers are an important part of the financial system in most jurisdictions that responded to the questionnaire. These entities are regulated and supervised in all reporting jurisdictions, but there is a lack of regulation in specific areas. For instance, maturity and/or currency mismatches, holding of specific assets (derivatives, loans) and issuance of liabilities, concentration of counterparty, and related business. Broker-dealers are usually highly levered and have significant liquidity risk using repurchase agreements as an important source of financing, although in some jurisdictions repos encumber sovereign bonds as the underlying collateral. Finally, some authorities have recently changed their regulation to address some of the potential risks arising from this sector.

[97] The FSB AGV exercise excludes non-bank deposit taking institutions, such as cooperatives, on the basis that their risks are adequately regulated and supervised. The WGSB felt that because these financial institutions play an important role in several jurisdictions in the region and represent a potential destination for risk migration from banks, they deserve further study.

[98] The United States did not participate in the survey on which the following discussion is based.

Concluding Remarks and Recommendations

The second round of the WGSB shadow banking monitoring exercise was valuable because the exercise was refined and expanded to include a wider set of jurisdictions. Consequently, it provided useful data on non-bank credit intermediation in the Americas region, particularly for the non-FSB members, including IFCs. This complements the work of the AGV in identifying global trends in the size and risks of non-bank credit intermediation. Further, the monitoring exercise is a useful vehicle for disseminating the AGV methodology to non-FSB members and as a constructive forum for discussing and sharing experiences on overseeing and analysing non-bank activities and their risks. In several participating constituencies, it has led to important efforts to improve the collection and analysis of data on non-bank financial institutions.

Looking ahead, the WGSB agreed that further work needs to be done on open-ended investment funds, in the context of illiquid markets, and finance companies (including micro-credit). It also agreed to conduct the monitoring exercises in sync with the AGV exercises to ensure comparability of approaches and data.

Recommendation #1. The work of the WGSB should continue and the shadow banking monitoring exercise should be conducted by the RCGA on the same basis as the FSB AGV exercise. In particular, effort should be made to narrow the scope of the monitoring consistent with the AGV exercise, use more granular data to leverage the work of the FSB's workstream on other shadow banking entities (WS3) on shadow banking entities and activities and begin developing and incorporating risk metrics into the exercise.

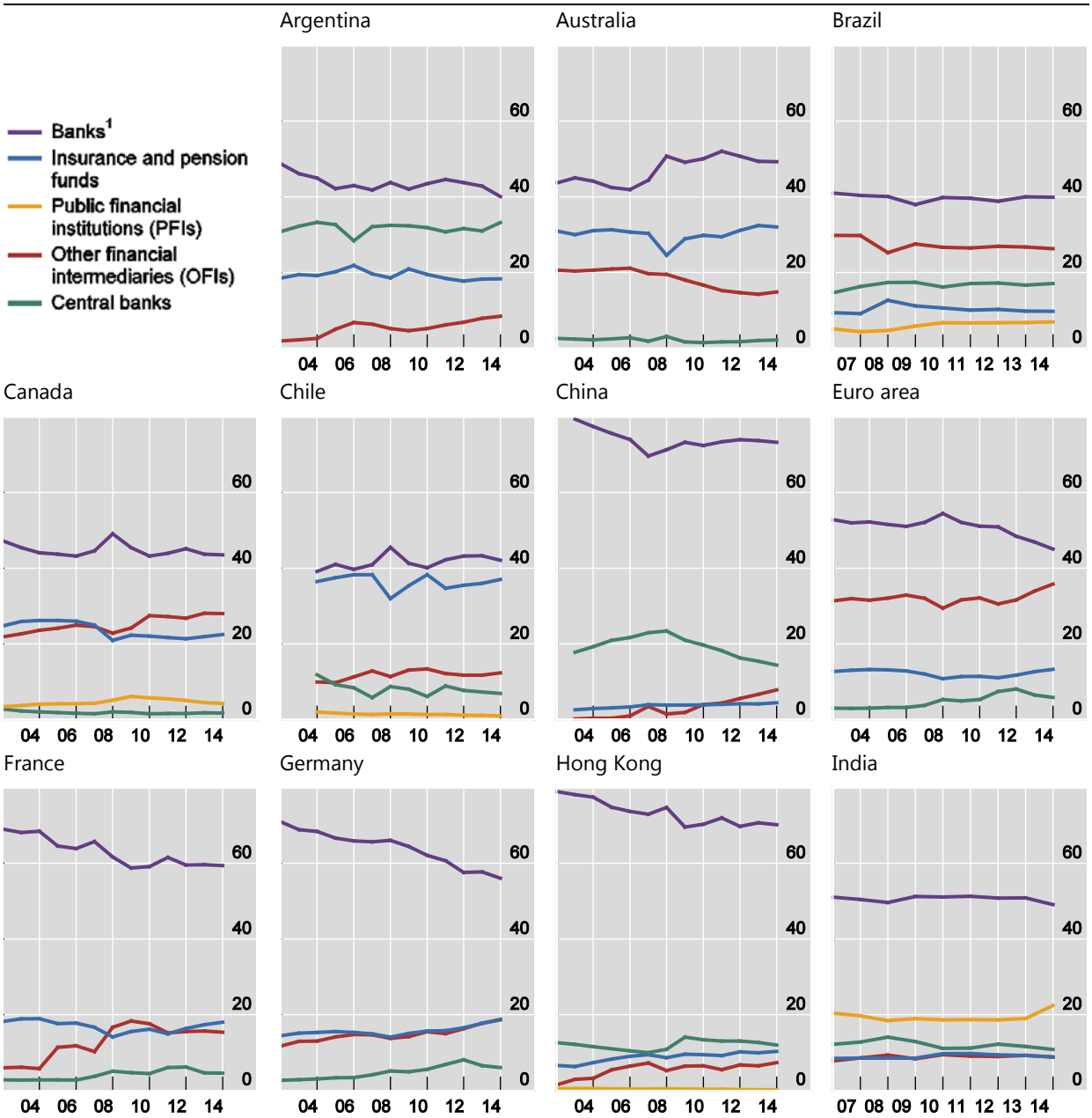
Recommendation #2. Future work on shadow banking in the RCGA should pay particular attention to two areas that were identified as posing potential risks to financial stability in the region: open ended funds (in particular in the context of illiquid markets), and finance companies (including micro-credit).

Recommendation #3. Other FSB RCGs should conduct similar exercises to map non-bank credit intermediation in their regions, including for international financial centres.

Annex 4: Share of total financial assets by jurisdiction

Share of total financial assets by jurisdiction

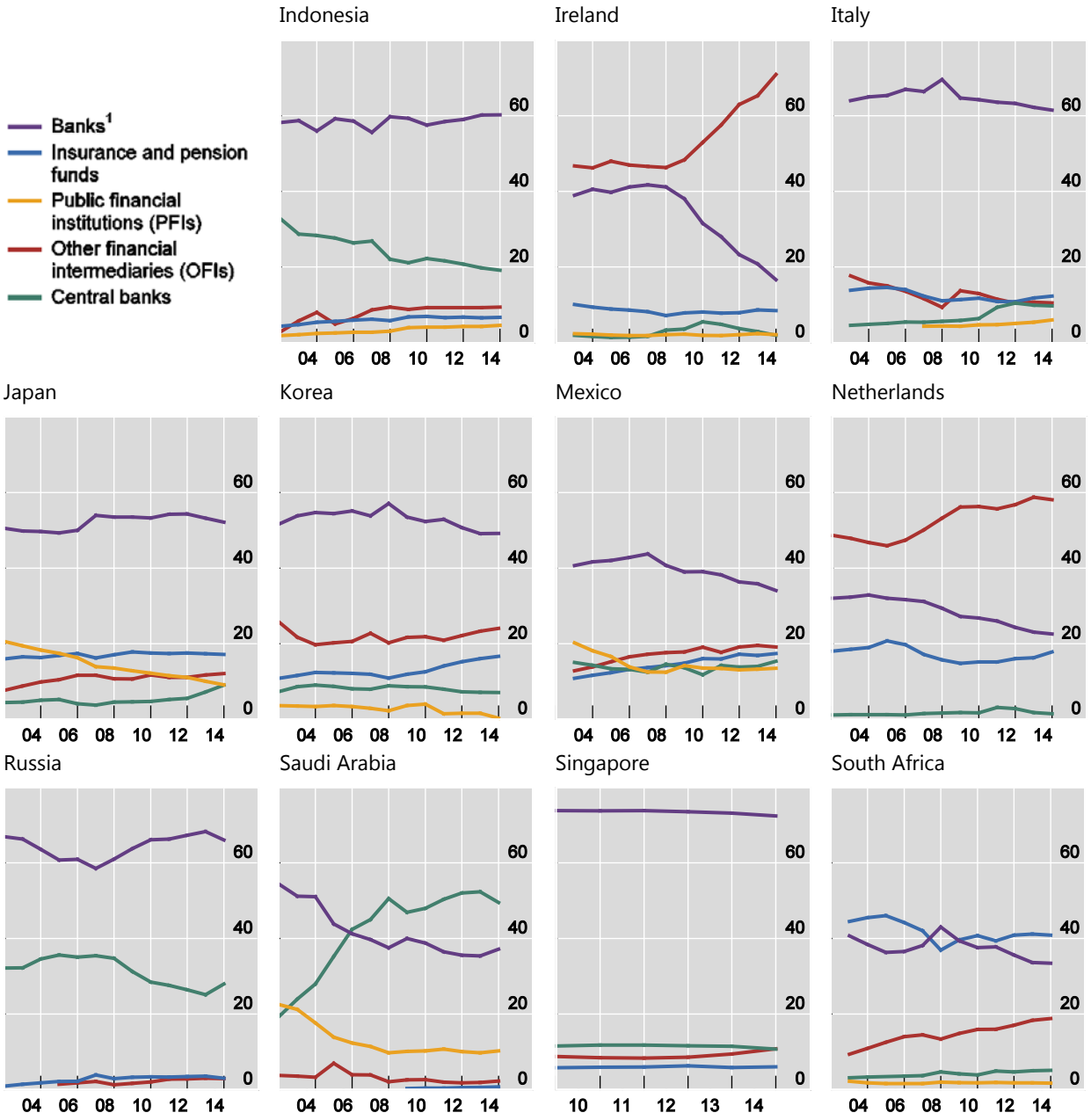
Percent Exhibit A4



Note: [1] Banks' = refers to the broader category of 'deposit-taking institutions'.
Sources: National financial accounts data; other national sources; FSB calculations.

Share of total financial assets by jurisdiction *(continued)*

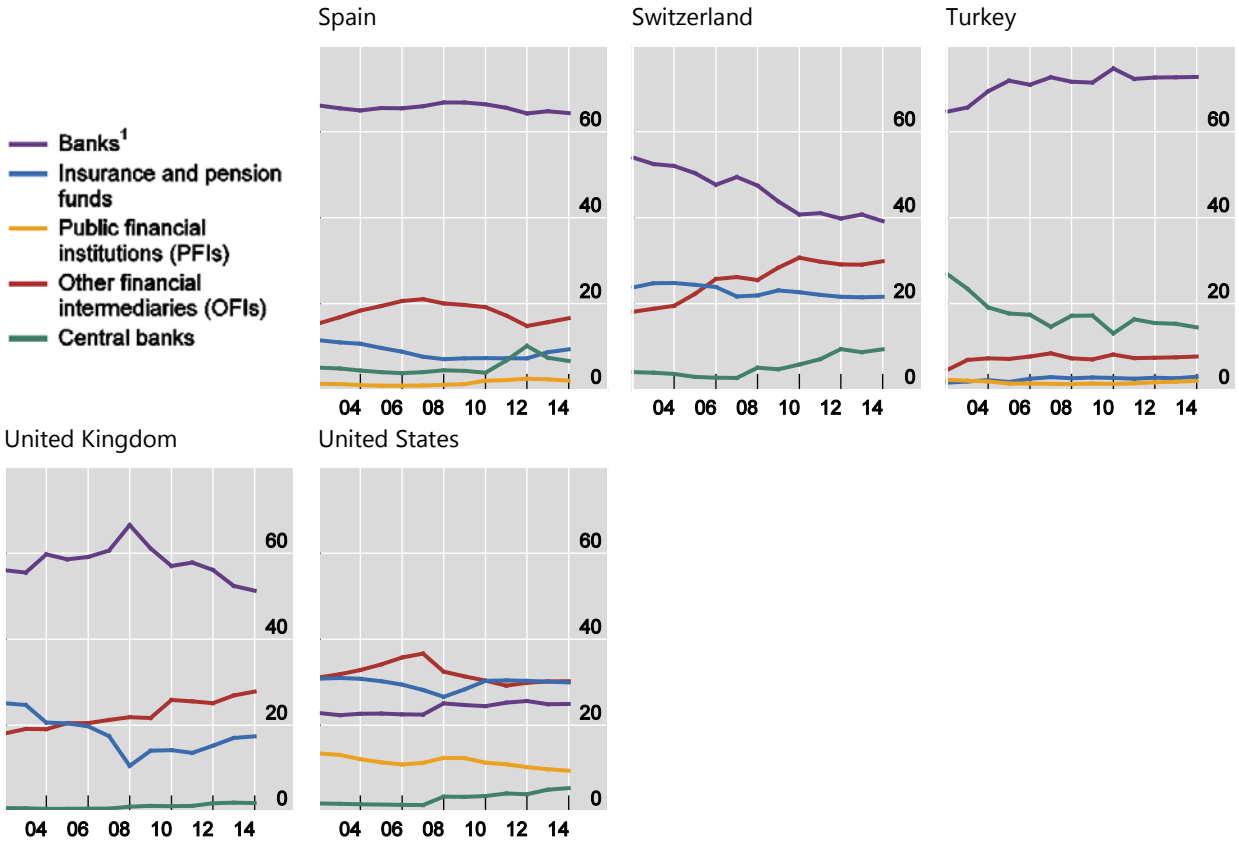
Percent Exhibit A4



Note: [1] 'Banks' = refers to the broader category of 'deposit-taking institutions'.
Sources: National financial accounts data; other national sources; FSB calculations.

Share of total financial assets by jurisdiction *(continued)*

Percent Exhibit A4



Note: [1] 'Banks' = refers to the broader category of 'deposit-taking institutions'.
Sources: National financial accounts data; other national sources; FSB calculations.