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## Using granular security holdings data to enhance investment fund statistics<sup>1</sup>

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<sup>1</sup> This paper was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

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## Abstract

While the banking sector was forced to deleverage during the financial crisis, the role of non-bank financial institutions in the financial intermediation process grew considerably in recent years. Among those, the largest institutions are non-money market fund investment funds, which made up almost 30% of the total balance sheet of the non-bank sector in the euro area at the end of 2015. Due to their high importance, investment funds are at the centre of macro prudential supervision. Comprehensive and reliable statistics are thus needed to analyse, inter alia, how the current low interest rate environment influences portfolio decisions or the role these funds play in the provision of funding to the economy.

This paper presents information available from the ECB's investment fund statistics, for which the National Central bank collect securities information on a granular basis and report aggregated balance sheet information to the ECB. The data are compared to a dataset on granular Securities Holdings Statistics by Sector (SHS Sector) that was recently made available. It is shown how these granular data facilitate the analysis of investment funds statistics for macro prudential purposes and what benefits arise when such micro databases are available.

Keywords: Investment fund statistics, security holdings statistics, granular data

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## 1. Introduction

Investment funds play an important role in the financial intermediation process: they are relevant for interpreting money and credit developments in the euro area and they influence the stability of the financial system. Consequently, the ECB needs timely, accurate and comprehensive data on this institutional sector. Together with other monetary and financial statistics, the information gathered gives valuable indications on the behaviour of investors and their risk appetite. Moreover, the data are used to measure portfolio reallocations between monetary assets and longer-term asset classes. Investment fund statistics are also a crucial component in the surveillance of financial stability of the euro area, as investment funds provide non-bank based financing for the economy (often also referred to as “shadow banking”). In this context, the monitoring of investment fund behaviour is crucial for the analysis of investor behaviour, its implications for financial sector development and the identification of risks in the financial system.

Since 2008 the Eurosystem, i.e. the ECB together with the National Central Banks (NCBs), has compiled harmonised data on the assets and liabilities of investment funds resident in the euro area. While the NCBs collect information on the holdings of securities by investment funds on a security-by-security basis, the ECB receives the country data – as a secondary reporting – only at an aggregated level. The data collection was set up to enable the ECB to monitor the behaviour of investment funds for the purposes of monetary policy and financial stability analysis. Investment fund statistics serve these types of analysis very well. However, due to the setup that the ECB receives the statistical data only on an aggregated basis, it is less flexible when information for ad-hoc queries are need which were not foreseen when the statistics were developed. Recently, however, the Eurosystem started the collection of granular information on the holdings of securities by euro area residents. These detailed information on individual securities and their holders are made available to users in the securities holdings statistics database (SHSDB) and it allows them to analyse the data in very flexible ways.

Securities represent the largest part of the balance sheet of investment funds. Thanks to the SHSDB, granular data on securities can be used to break down aggregated developments and analyse them in greater detail. Additionally, new indicators can be derived which were beyond the scope of the aggregated data collection. In this respect the granular information does not only complement the existing data but it expand the possibilities how investment funds data can be analysed. Additionally, the granular securities data allow for the calculation of indicators, for example to monitor the level of systemic risk in fund sector.

However, prior to using new granular securities data to enhance existing investment fund statistics, it is important to assess the compatibility of the two data sets and to investigate whether any differences which might hamper validity of such a comparison. Therefore, this paper compares available information on the security holdings of investment funds from both the aggregated and the granular statistics. Afterwards it is described how the granular information can be used to enhance the information available on aggregated investment fund statistics. To do so, the next section gives an overview of the importance of investment funds in the euro area financial system. Section 3 goes on to describe the aggregated investment fund statistics while section 4 gives an overview of the newly available data on security holdings statistics by sector (SHS Sector). In section 5 both statistics are compared to

each other to assess their compatibility. Afterwards, section 6 shows how the granular information can be used to calculate new indicators based on micro data. The final section concludes.

## 2. The role of investment funds as financial intermediaries

To better understand the importance of investment funds in the financial system, it is useful to analyse the services they provide to the economy. Investment funds are financial intermediaries that raise funds from private and institutional investors by issuing shares and/or units, and that invest these proceedings in financial and non-financial assets. By doing so, they offer two main services to the general public: on the one hand, they provide investors with the opportunity to buy shares of a diversified pool of assets with a professional risk management; on the other hand investment funds make available funding to other sectors such as monetary financial institutions, non-financial corporations and the general government. They conduct their funding activities by purchasing financial assets such as debt and equity securities, but they also invest in real estate, commodities, bank deposits and financial derivatives.<sup>2</sup> This business model is reflected in the aggregated balance sheet of euro area investment funds as shown in Table 1. On the liability side it shows that 87 % of the funding received is generated by issuing investment fund shares/units. These funds are mainly used to invest in debt securities, in equity and in other investment fund and money market fund shares which together add up to 83 % of the total assets of this sector.

ASSETS		LIABILITIES	
	% of total assets		% of total assets
Deposits and loans claims	6%	Deposits and loans taken	3%
Debt securities	37%	Investment fund shares	87%
Equity	30%	Other liabilities	10%
Investment fund / MMF shares	16%		
Non-financial assets	3%		
Other assets	9%		

Source: ECB.

At the end of 2015, investment funds represented 16 % in assets of the financial system in the euro area, making it the second largest individual sector after the MFI sector (see also chart 1). Particularly in recent years, the size of the investment fund sector has increased substantially. Since 2009, the total assets of the funds resident in the euro area have almost doubled, reaching a total of more than €10.3 trillion at the end of 2015. Chart 2 shows the significantly different growth rates in selected financial sectors. It is especially striking how large the increase in the size of the investment fund sector was as compared to the MFI sector which stagnated during

<sup>2</sup> Some fund, however, use financial derivatives also for hedging purposes.

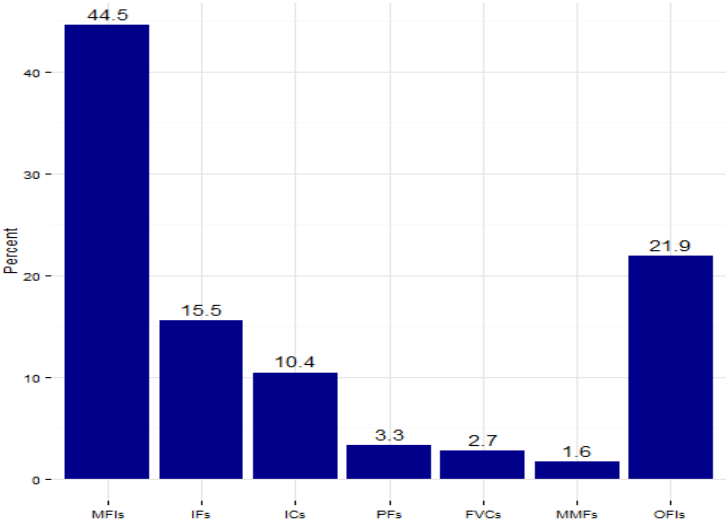
the past six years. While a large part of this increase can be attributed to rising assets prices, a second major reason is the inflow of cash into the sector in the wake of the financial crisis. Even when banks were distressed, investment funds could still buy debt and equity securities and thus provide financing to financial and non-financial corporations, making data on investment funds even more relevant for the ECB's assessment of the financial system of the euro area.

This section highlighted the important role that investment funds play in financial intermediation in the euro area, their relevance for interpreting money and credit developments and their growing share in non-bank based financing for financial and non-financial sectors. In order to obtain the information necessary for the analysis and make them available to the general public, the ECB collects data in its investment fund statistics which will be described in the next section.

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Size of the financial sectors in the euro area

Chart 1



Source: ECB.

Notes: The chart shows the percentage share of the institutional sector of the total financial sector in the euro area. The sector of monetary financial institutions (MFIs) is still the largest financial sector in the euro area. The investment fund (IF) sector is the second largest individual sector since the other financial intermediaries (OFI) sector is a collection of several sub-sectors. The insurance corporation (IC), pension fund (PF), financial vehicles corporations (FVC) and money market fund sectors complete the financial sector of the euro area.

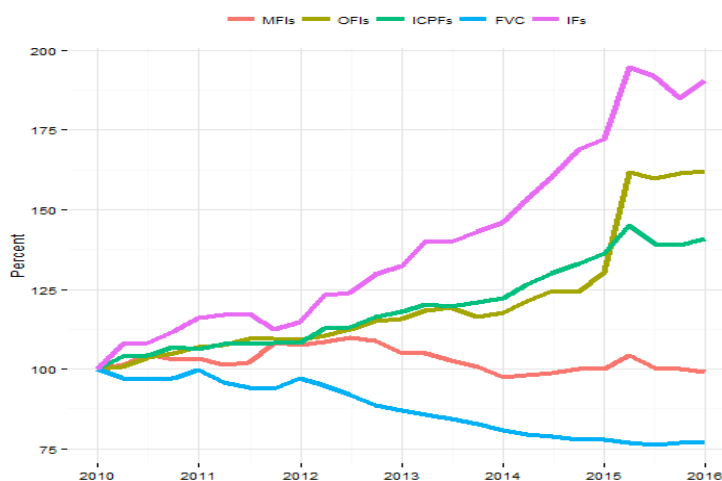
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## Cumulated growth rates of selected financial sectors

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Chart 2



Source: ECB.

Notes: The chart shows the percentage share of the institutional sector of the total financial sector in the euro area. The sector of monetary financial institutions (MFIs) is still the largest financial sector in the euro area. The investment fund (IF) sector is the second largest individual sector since the other financial intermediaries (OFI) sector is a collection of several sub-sectors. The insurance corporation (IC), pension fund (PF), financial vehicles corporations (FVC) and money market fund sectors complete the financial sector of the euro area.

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### 3. The ECB data collection on investment fund statistics

Since December 2008, the ECB has collected and published harmonised data on the assets and liabilities of investment funds on an aggregated basis.<sup>3</sup> These statistics are reported by individual investment funds which are resident in the euro area to the NCBs in accordance with Regulation ECB/2013/38 (hereafter *the investment fund regulation*).<sup>4</sup> This Regulation does not cover money market funds, which according to the European System of Accounts (ESA 2010) are a part of the sector of monetary financial institutions. Pension funds are also not part of the investment fund sector since they constitute a sector of their own. Subsequently to the data collection, the NCBs send their nationally aggregated data to the ECB in line with the Guideline ECB/2014/15 on monetary, financial institutions and markets statistics.

While the ECB receives and publishes the data from the NCBs aggregated by instrument and sector, it is important to stress that the NCBs have access to much more detailed data: they receive individual data for each investment fund. Moreover,

<sup>3</sup> See also: European Central Bank (2010c) and European Central Bank (2015a).

<sup>4</sup> The ECB maintains and publishes a list of all investment funds registered in the euro area, which can be found here <https://www.ecb.europa.eu/stats/money/mfi/html/index.en.html>.

it is mandatory for funds (since end-2014<sup>5</sup>) to report security-by-security information. This means that funds transmit lists of individual securities held for which publicly available identification codes exist.<sup>6</sup> For securities without such a publicly available identification code, the relevant NCB can decide to collect the data on an aggregated or a security-by-security basis, while all other balance sheet items are normally collected on an aggregated basis.

These input data are available at a very granular level for security positions and on an aggregated level for the other balance sheet items. Based on these, the NCBs compile various categories of assets held and liabilities incurred by investment funds and transmit the aggregated information to the ECB. As is common practice with regard to aggregated data collections, the compiler of the statistics is required to aggregate the holdings of securities by type of instrument (i.e. debt or equity security), maturity, currency, issuer, sector or geographical location. Aggregated positions usually serve a specific analytical purpose, for which they are very useful. However, when new questions arise, these statistics might not be fit for other purposes. In this case, the analyst might have to rely on information which was not targeted at the specific problem and might only work as a proxy for missing data. In addition, surveys might have to be conducted to fill the data gaps. These, however, can be very costly, cover only a small sample which might not be representative and do not allow for observing the phenomenon of interest over a longer period of time (especially backwards).

In the medium term, aggregated statistics can, of course, be adjusted to satisfy new data needs. Nevertheless, changing the reporting templates is a difficult and costly process not only for the compilers of the data but also for the reporting agents. Therefore, the Eurosystem has committed itself to keeping the reporting templates for statistical data collections fixed for at least five years, so that reporters do not have to adjust their systems every time a new data requirement comes up. In times of crisis, however, data users cannot wait for the next iteration when aggregated statistics are updated. They need prompt access to relevant data in order to conduct necessary analyses. This is one reason why there is a strong trend in the Eurosystem towards the collection of micro data. Because when granular data is already available, it is very simple to respond to new requests. It merely requires carrying out the appropriate aggregations. Thus, micro data allows for very flexible analyses that can even answer questions that might only arise in the future. How granular information on security holdings are collected in the Eurosystem is described in the next section.

## 4. SHS Sector Statistics

The financial crisis of 2008 to 2009 and the events surrounding the collapse of Lehman Brothers in particular have highlighted the need for a database with granular information on holdings of securities which needs to be readily available to

<sup>5</sup> There are backdata available for previous periods; however, these are not collected under the harmonised SHS regulation.

<sup>6</sup> In the euro area, the publically available identification code is normally the International Securities Identification Number (ISIN).

policymakers.<sup>7</sup> Following the establishment of a harmonised ECB Regulation on securities holdings statistics<sup>8</sup>, a new collection of security-by-security data has been started in early 2014. The first data available in that collection refer to holdings of securities as of end-December 2013.<sup>9</sup>

SHS Sector data include information on holdings of debt securities, listed shares and investment fund shares/units by main institutional sectors<sup>10</sup> in individual countries. The quarterly dataset covers (i) holdings by euro area investors and (ii) holdings of securities issued by euro area issuers held in custody with euro area custodians for clients resident outside the euro area.

Chart 3 shows the holdings of securities by euro area investors as covered by the SHS Sector data collection. The total holdings increased until 2015-Q1 and stabilised afterwards. The developments have to a large extent been driven by the increasing prices in the equity markets, which also impacted the holdings of investment fund shares/units.

The SHS Sector database, which is operated by the ECB together with Deutsche Bundesbank, includes granular data, on a security by security level, which allows analysts to merge the collected data with other available sources of reference and price data on securities. This feature enables users to slice and dice the data across multiple dimensions, with the main limitation being the availability of reference data on securities. In particular, such information is derived from the Centralised Securities Database, a multi-purpose platform jointly operated by the ESCB and currently containing reference information on over six million outstanding debt securities, equities and investment fund shares.<sup>11</sup>

The SHS Sector data may in particular be used to analyse the behaviour of a specific sector from two complementary perspectives – on the one hand from the perspective as a holder and on the other as issuer of securities. It makes the data particularly suitable for analyses that focus on investment funds, for which securities form a significant portion of asset as well as the liability side of the balance sheet. The next section compares data collected in both investment fund and SHS Sector statistics with each other in order to assess how well they are aligned.

<sup>7</sup> See: European Central Bank (2015b).

<sup>8</sup> Regulation of the European Central Bank of 17 October 2012 concerning statistics on holdings of securities (ECB/2012/24) and Guideline of the European Central Bank of 22 March 2013 concerning statistics on holdings of securities (ECB/2013/7), both with further amendments.

<sup>9</sup> SHS Sector holdings by domestic investors have been collected by the ESCB on a voluntary and “best-effort” basis since early 2009. Moreover, even prior to 2009, some euro area countries had national collection systems for securities holdings by domestic investors in place.

<sup>10</sup> Main holding sectors available are (i) deposit-taking corporations, (ii) money market funds, (iii) investment funds, (iv) financial vehicle corporations, (v) insurance corporations, (vi) pension funds, (vii) other financial corporations, (viii) general government, (ix) non-financial corporations, (x) households and (xi) non-profit institutions serving households. For holdings by non-euro area investors, the sector breakdown is restricted to (i) general government and central banks and (ii) other investors.

<sup>11</sup> For more information, see European Central Bank (2010b).



## 5. Comparison of investment fund and SHS Sector data

While micro data offer huge benefits for the analysis of macroeconomic developments, an important pre-requisite for the use of granular data sources is to check how well they are aligned with the macro aggregates which have been used so far. Only if the data match and potential differences between the data sets are identified, can the granular data be fully used to infer meaningful information on macro developments. This section will therefore compare asset data from the investment fund statistics with data from the SHS Sector statistics.

In general, data from investment fund and SHS Sector statistics should be relatively similar: as shown in Table 1, security holdings make up 87 % of the asset side of the balance sheet of euro area investment funds. For these holdings, granular data are available in the SHS database. There are, nonetheless, reasons why some discrepancies between the data sets are to be expected. Firstly, while it is mandatory in investment fund statistics to report all securities, regardless whether a publicly available identifier exists or not, in SHS Sector statistics only those securities with a publicly available identifier have to be reported. In practice, some NCBs report the securities without official identifiers on a voluntary basis. In other cases, these securities without identifiers make up for a relatively small amount of the total securities, so the discrepancies are negligible. For some countries, however, securities without a publicly available identification code make up for a large proportion of security holdings and the data are unavailable in the SHS Sector data, which gives rise for discrepancies between the two data collections. Secondly, both legal acts, i.e. the investment fund regulation and the SHS regulation, define different types of exemptions and thresholds for reporting agents, in order to minimise the reporting burden, especially for small institutions. In contrast, the investment fund regulation mandates direct reporting from the funds. This can lead to the situation in which the reporting population for both statistics is not identical. Thus, this can be a further source of possible differences for the data.

The result of the comparison of the holdings of securities on the asset side of euro area investment funds is shown in Table 2 for debt securities and Table 3 for equity securities and investment fund shares/units. For the purpose of this comparison the granular information of the SHS Sector statistics were summed up to match the available aggregated categories of investment fund statistics. The tables show the available data for the periods from 2013-Q4, which marks the first reporting of SHS Sector data under the regulation, until latest available period 2016-Q1. Based on these figures, the percentage coverage of SHS Sector statistics with regard to investment fund statistics was calculated. In the optimal case, the coverage is exactly 100 %, which means that the figures from both, investment fund statistics and SHS Sector statistics are the same. It is, however, often the case that summed-up SHS sector data is lower than the investment fund statistic figure. In this case, the coverage is below 100 % and the cell in the table is marked in a red colour, where a higher saturation of the cell indicates a lower coverage. If, on the other hand, the calculated SHS figure is higher than the number from the aggregated investment fund statistics, the coverage is higher than 100 % and the cell is shaded in blue.

Coverage of euro area investment funds' holdings of securities with SHS Sector data in percent

Table 2

Issuer:	Debt securities																		Total
	MFIs			General government			OFIs			ICPFs			NFCs			RoW			
	up to 1 year	over 1 year and up to 2 years	over 2 years	up to 1 year	over 1 year and up to 2 years	over 2 years	up to 1 year	over 1 year and up to 2 years	over 2 years	up to 1 year	over 1 year and up to 2 years	over 2 years	up to 1 year	over 1 year and up to 2 years	over 2 years	up to 1 year	over 1 year and up to 2 years	over 2 years	
2013-Q4	67%	108%	97%	100%	86%	98%				61%		62%	63%	63%	91%	65%	87%	90%	94%
2014-Q1	67%	101%	98%	101%	59%	99%				33%	0%	63%	71%	46%	87%	57%	76%	96%	95%
2014-Q2	69%	103%	95%	100%	61%	99%				6%	0%	78%	70%	39%	87%	55%	96%	96%	95%
2014-Q3	71%	107%	95%	98%	56%	99%				25%	0%	73%	74%	34%	88%	61%	97%	95%	94%
2014-Q4	71%	98%	96%	97%	43%	100%	28%	26%	46%	21%	0%	74%	67%	34%	88%	59%	97%	96%	91%
2015-Q1	75%	105%	94%	95%	36%	98%	25%	22%	42%	6%	0%	66%	59%	42%	86%	58%	99%	96%	89%
2015-Q2	59%	41%	98%	76%	46%	98%	22%	4%	30%	7%	0%	71%	63%	29%	87%	60%	38%	97%	88%
2015-Q3	74%	108%	93%	94%	60%	98%	15%	22%	32%	17%	0%	71%	64%	53%	86%	63%	97%	95%	89%
2015-Q4	81%	106%	93%	94%	31%	98%	20%	24%	37%	22%	0%	74%	60%	68%	86%	73%	91%	95%	89%
2016-Q1	77%	106%	93%	94%	24%	98%	17%	22%	37%	8%	0%	72%	62%	71%	86%	70%	90%	95%	89%
IF stocks in billion euro,																			
2016-Q1	26	16	329	46	7	896	10	4	322	0	0	14	10	3	293	110	37	1770	3897

Source: ECB.

Coverage of euro area investment funds' holdings of securities with SHS Sector data in percent

Table 2

<i>Issuer:</i>	Equity securities					<b>Total</b>	IF shares/units		
	<b>MFIs</b>	<b>OFIs</b>	<b>ICPFs</b>	<b>NFCs</b>	<b>RoW</b>		<b>MFIs</b>	<b>Non-MFIs</b>	<b>RoW</b>
	o/w listed shares	o/w listed shares	o/w listed shares	o/w listed shares	o/w listed shares				
2013-Q4	97%			101%	102%		107%	95%	65%
2014-Q1	95%			98%	102%		109%	94%	71%
2014-Q2	92%			99%	102%		108%	94%	72%
2014-Q3	95%			98%	101%		110%	94%	73%
2014-Q4	94%	94%	100%	98%	103%	100%	109%	95%	72%
2015-Q1	95%	95%	101%	97%	101%	98%	107%	96%	74%
2015-Q2	95%	95%	99%	97%	100%	92%	100%	98%	75%
2015-Q3	94%	94%	99%	97%	99%	96%	95%	99%	75%
2015-Q4	94%	94%	101%	97%	99%	96%	100%	97%	80%
2016-Q1	93%	93%	99%	97%	99%	96%	97%	98%	76%
IF stocks in billion euro, 2016-Q1	73	74	34	794	1781	2757	136	1223	231

Source: ECB.

Overall, the coverage of investment fund statistics data with SHS Sector data is high. As indicated in the totals in Table 2 and 3, the average coverage in the euro area for the periods under investigation is 91 % for debt securities and 93 % for equity securities. However, looking at the individual asset categories the picture is less favourable for some specific categories of securities. For the holdings of debt securities issued by the institutional sectors shown in Table 2, the coverage is especially low in the categories with shorter periods of original maturity. The main reason for this is that across several euro area countries the issuers of debt securities do not get official identification codes when the maturity of the securities is short. For example, if a firm issues a debt security with an original maturity of only one month, it is likely that this debt security will never be traded but it will rather be held until redemption by the initial holder. In this case, an issuer wants to avoid the fee to get a publicly available identification code for the security as this would be most useful when the debt security is traded on a secondary market. This contributes to a relatively lower average coverage of debt securities with an original maturity of less than two years in SHS Sector statistics, because information on debt securities without an official identification code is often missing from the database whereas they must be included in aggregated investment fund statistics. The impact on the total coverage, however, is limited, since the majority of debt securities have a maturity of over two years, for which the coverage between the two statistics is much higher.

The same is true for the coverage of debt securities issued by investment funds, other financial intermediaries (OFIs) and insurance corporations and pension funds (ICPFs). The amount of debt securities issued by these entities is very small. These small holdings are not fully covered as they might involve securities without official identification codes or some NCBs might apply derogations to their reporting agents. In a small number of cases there is a slight over-coverage where the volume of debt securities reported in SHS Sector statistics is higher than in investment fund statistics. These cases can mostly be attributed to differences in valuation of the securities in both data collections.

As regards equity securities shown in Table 3, the data covering the holdings of listed shares by investment funds were used for the comparison (where available in investment fund statistics), since these type of shares normally have an official identification code. Unlisted shares, on the other hand, often do not have such a code and are not included in SHS data. The table shows a very high coverage of equity securities, confirming that the two statistical data collections concur if one controls for the missing securities without publicly available identification codes in SHS Sector statistics. Also for investment fund shares/units the coverage is close to 100 % and the main differences arise from valuation differences.

Overall, the coverage of securities issued by euro area residents is relatively high with 91 % in the period under investigation. However, this paper only analyses the results from a euro area perspective. In fact there are also substantial differences between the countries in the euro area. Nevertheless, the granular information available from the SHS Sector statistics already covers the aggregated investment fund data to a large extent. Some applications how the micro data can be used to enhance the existing macro data collection are shown in the next section.

## 6. Using Micro Data to Enhance Investment Fund Statistics

As the comparison in the previous section has shown, the coverage of aggregated investment fund statistics data with the granular data available from the SHS Sector statistics is especially high for equity securities and to a somewhat lesser extent for debt securities. Overall, the granular data can already be very useful to gain further insights into developments at the macro level or to generate new indicators for policy advice.

In particular for the purpose of macro prudential policy analysis the granular data of the SHS Sector statistics can already be very useful: Due to the important role of investment funds in the analysis of the so-called shadow banking system, policy makers need indicators for the surveillance of these funds and their impact on the financial stability in the euro area. Before granular data on securities were available, these data needs could only be answered with an update of the investment fund statistics regulation. With the help of SHS Sector data, the available granular information can be used to create a number of indicators, without the need to address new data requirements to reporting agents. As an additional benefit, back-data for these indicators can be calculated as far back as granular information are available. This is especially useful when certain phenomena need to be monitored over time. To stress the usefulness of this approach, this section provides some examples for which the granular SHS Sector data can already be used to create indicators especially relevant for macro prudential supervision purposes.

Due to the high importance of investment funds for the financial intermediation process in the euro area, it is crucial for regulators to get a detailed overview of the risk that investment funds incur on an individual level but also, from a macro prudential point of view, analysts want to observe how high the systemic risk for the financial system is. For this, especially reliable indicators on the liquidity transformation and the leverage of investment funds are needed. With available granular data on securities, it is however possible to calculate the needed indicators.

In particular the question of liquidity is an important one for investment funds. In the case of open-ended investment funds, they allow for a daily redemption of shares/units issued. Thus, their liabilities are highly liquid. The assets they are holding, however, may not in all cases be as liquid as they cannot necessarily be redeemed on a daily basis or, for example, in the case real estate it takes longer to sell them. By using granular SHS Sector data, the remaining maturity of assets held by investment funds can be calculated. To make this very detailed information usable on a macro level, the individual assets could be allocated into "maturity brackets" which aggregate the securities with a similar residual maturity on the fund or country level. In this way the monitoring of liquidity mismatch could be analysed with a meaningful indicator that can be observed over time. The same holds true for indicators of leverage: The so-called "headline leverage ratio" can be calculated as ratio of debt (liabilities other than equity, and including money market fund shares) to financial assets.<sup>12</sup> This indicator could be particularly important for regulators who have the power to impose leverage limits on investment funds and thus restrict the vulnerability of the financial system.

<sup>12</sup> See also Bakk-Simon, et al. (2012).

Apart from the calculation of indicators for macro prudential supervision, the data collected in the SHS Sector statistics makes it possible to enhance the information available on the liability side of investment funds' balance sheet. Funds do not necessarily know who the final holders of their issued shares are. They sell these shares to investors or large custodian bank. However, these shares might be traded on the secondary market or re-sold by the custodians to their customers. With the help of the holdings data in the SHS Sector statistics, it is however possible to get reliable data on the final holder. In the context of financial stability analysis these data make it possible to measure the exposure of the institutional sectors to financial risks and for monetary and economic analysis the data allows for a detailed view on the wealth of the sectors due to the investment in securities.

Some of the calculations of the indicators described above require the access to individual security-by-security data. However, for investment fund statistics these data are only available to the NCBs and not to the ECB. To still provide the users and the general public with these indicators, the NCBs could calculate the needed indicators for their respective euro area country. Then, the investment fund statistics could be used to collect these aggregated indicators. In this way, the data needs from users can be fulfilled and no additional costs on the side of the reporting agents are incurred as the data used is already available at the national level.<sup>13</sup>

## 7. Conclusions

This paper describes how granular information can be used to enhance existing aggregated data collection. Using the recently made available data on SHS Sector statistics, it is possible to utilise the granular data to calculate new indicators which will enhance the information available for investment funds and thus improve financial stability and economic analysis for this sector. As an additional benefit, no additional information from reporting agents are required which reduces the costs significantly.

While the coverage of the granular SHS Sector data with respect to aggregated investment fund data is already quite high, there is still work to be done to improve the comparability of the statistics. Firstly, this study has focused on the euro area data. In a next step the data available for the individual countries need to be analysed to achieve greater harmonisation across euro area countries. Secondly, the comparison between the statistics has shown that, while the coverage is already high, it is not perfect. The main cause for the remaining difference is the limited availability of data on holdings of securities without an official identification code in the SHS Sector statistics. This however does not prevent the use of SHS to analyse in more detail the behaviour of investment funds, except for the analysis of specific categories like short term debt securities where the coverage of SHS is more limited.

<sup>13</sup> Cf. Doyle, N., Hermans, L, Molitor, P. and Weistroffer, C. (2016).

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Irving Fisher Committee on  
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## Using granular security holdings data to enhance investment fund statistics<sup>1</sup>

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<sup>1</sup> This presentation was prepared for the meeting. The views expressed are those of the authors and do not necessarily reflect the views of the BIS, the IFC or the central banks and other institutions represented at the meeting.

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# Using granular security holdings data to enhance investment fund statistics

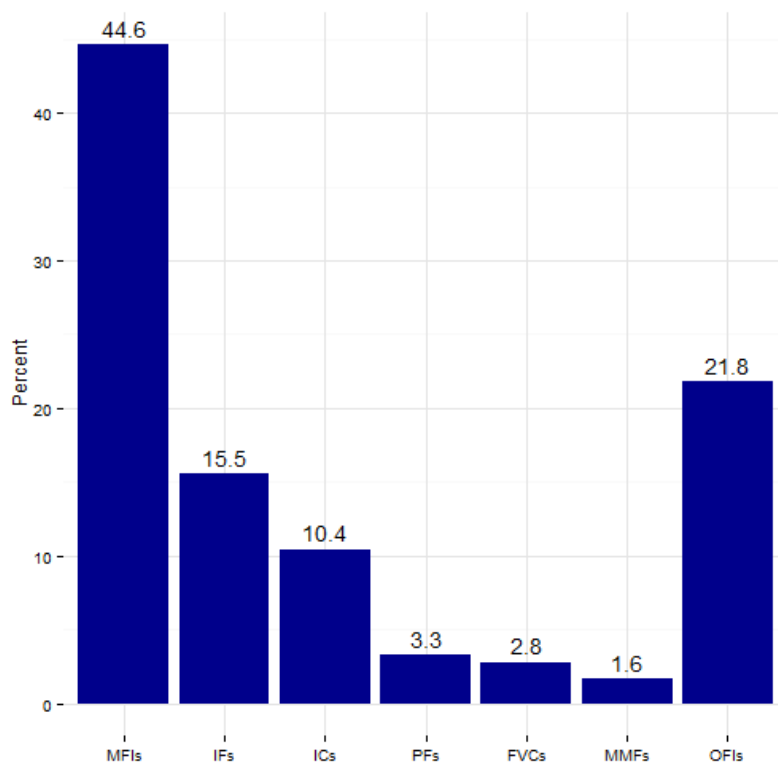
IFC Conference in Basel  
7-9 September 2016

## The role of investment funds for the financial sector

- **Investment funds** (IFs) play a major role in the financial intermediation process of the euro area
- Their **main activities** are to:
  - Provide instruments helping *investors* to diversify their portfolios
  - Raise funds from *the public* by issuing shares/units
  - Provide funding to sectors such as *banks* and *non-financial corporations*
- IFs are thus relevant for:
  - Interpreting *money and credit developments*
  - Assessing the *stability and soundness of the financial system*
- Hence, the ECB needs *timely, accurate and comprehensive data on IFs*

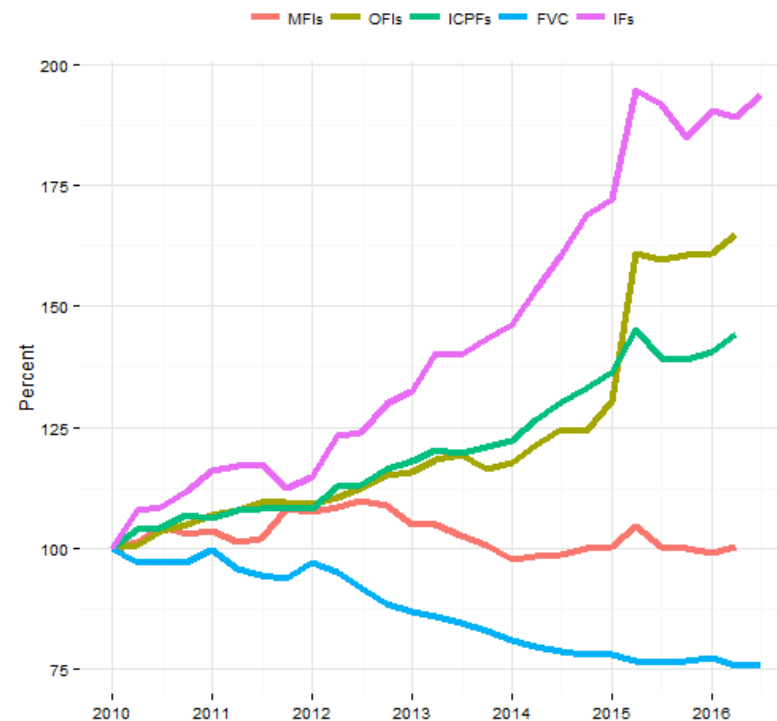
## Importance of IFs in the euro area financial system

Size of financial sectors in the euro area



Source: ECB.

Cumulated growth rates of selected financial sectors



Source: ECB; cumulated growth rates, baseline period 2009-Q4 = 100.

## Investment fund statistics

- Harmonised collection of assets and liabilities of IFs *since Dec. 2008*
- NCBs collect granular data on IFs' securities holdings on the asset side
- ECB receives NCBs data aggregated by country and balance sheet items

## SHS Sector Statistics

- Reporting to the ECB of granular data on holdings of securities mainly those with publicly available identifiers *since 2013 Q4*
- Detailed security-by-security data available, i.a. for holdings of securities by IFs and holdings of IF shares/units by other sectors

**Note:** reporting IFs (or their fund managers) report only once to NCBs

## Debt securities

Coverage of investment funds' holdings of securities with SHS Sector data in percent

Issuer:	MFIs			General government			OFIs			ICPFs			NFCs			RoW			Total
	up to 1 year	over 1 year and up to 2 years	over 2 years	up to 1 year	over 1 year and up to 2 years	over 2 years	up to 1 year	over 1 year and up to 2 years	over 2 years	up to 1 year	over 1 year and up to 2 years	over 2 years	up to 1 year	over 1 year and up to 2 years	over 2 years	up to 1 year	over 1 year and up to 2 years	over 2 years	
2013-Q4	67%	108%	97%	100%	86%	98%				61%		62%	63%	63%	91%	65%	87%	90%	94%
2014-Q1	67%	101%	98%	101%	59%	99%				33%	0%	63%	71%	46%	87%	57%	76%	96%	95%
2014-Q2	69%	103%	95%	100%	61%	99%				6%	0%	78%	70%	39%	87%	55%	96%	96%	95%
2014-Q3	71%	107%	95%	98%	56%	99%				25%	0%	73%	74%	34%	88%	61%	97%	95%	94%
2014-Q4	71%	98%	96%	97%	43%	100%	28%	26%	46%	21%	0%	74%	67%	34%	88%	59%	97%	96%	91%
2015-Q1	75%	105%	94%	95%	36%	98%	25%	22%	42%	6%	0%	66%	59%	42%	86%	58%	99%	96%	89%
2015-Q2	59%	41%	98%	76%	46%	98%	22%	4%	30%	7%	0%	71%	63%	29%	87%	60%	38%	97%	88%
2015-Q3	74%	108%	93%	94%	60%	98%	15%	22%	32%	17%	0%	71%	64%	53%	86%	63%	97%	95%	89%
2015-Q4	81%	106%	93%	94%	31%	98%	20%	24%	37%	22%	0%	74%	60%	68%	86%	73%	91%	95%	89%
2016-Q1	77%	106%	93%	94%	24%	98%	17%	22%	37%	8%	0%	72%	62%	71%	86%	70%	90%	95%	89%
IF stocks in billion euro,																			
2016-Q1	26	16	329	46	7	896	10	4	322	0	0	14	10	3	293	110	37	1770	3897

Source: ECB

## Equity securities and IF shares/units

Coverage of investment funds' holdings of securities with SHS Sector data in percent

Issuer:	Equity securities						IF shares/units		
	MFIs	OFIs	ICPFs	NFCs	RoW	Total	MFIs	Non-MFIs	RoW
	o/w listed shares	o/w listed shares	o/w listed shares	o/w listed shares	o/w listed shares				
2013-Q4	97%			101%	102%		107%	95%	65%
2014-Q1	95%			98%	102%		109%	94%	71%
2014-Q2	92%			99%	102%		108%	94%	72%
2014-Q3	95%			98%	101%		110%	94%	73%
2014-Q4	94%	94%	100%	98%	103%	100%	109%	95%	72%
2015-Q1	95%	95%	101%	97%	101%	98%	107%	96%	74%
2015-Q2	95%	95%	99%	97%	100%	92%	100%	98%	75%
2015-Q3	94%	94%	99%	97%	99%	96%	95%	99%	75%
2015-Q4	94%	94%	101%	97%	99%	96%	100%	97%	80%
2016-Q1	93%	93%	99%	97%	99%	96%	97%	98%	76%
IF stocks in billion euro, 2016-Q1	73	74	34	794	1781	2757	136	1223	231

Source: ECB

## Results of the comparison

- For micro data to be used for analysis of macroeconomic developments, data need to match and possible differences be identified
- Overall, *granular SHS Sector* data match *aggregated IF statistics data* very well:
  - 91% coverage for debt securities and 96% for equity securities
  - This is expected as the primary source is the same data collection
- Still, some differences are identified - in the reporting to the ECB:
  - *Group of reporters* may differ due to derogations
  - Lower coverage of *debt securities* for those without publicly available identification codes, especially for low maturities; also valuation differences
  - Mostly valuation differences for *equity securities*

## Enhancing IF statistics

- High coverage of SHS Sector /IF data allows to get *better information on aggregated developments* with granular data - as reported for SHS
- For example, granular data on IFs can be used to:
  - *Calculate indicators on risks* in the investment fund sector, e.g. on:
    - *Liquidity transformation*
    - *Leverage*
  - SHS additionally provides detailed information *on the liability side of IFs*:
    - Who (which euro area sectors) holds IF shares/units issued?
- Indicators derived from granular data are already reported: no new cost
- Additional benefit: *backdata are readily available*



# Questions?



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