IFC Conference on

Statistical Issues and Activities in a Changing Environment

Basel, 28-29 August 2012

Macro-mapping the euro area shadow banking system with financial sector balance sheet statistics

Clive Jackson and Jani Matilainen[1]

Abstract

The Financial Stability Board (FSB) has recently produced recommendations for the oversight and regulation of shadow banking – i.e. credit intermediation activities outside the traditional banking system. Step 1 of the FSB's proposed monitoring process is a "macro-mapping" of the shadow banking system's size and interconnections. This paper attempts this for the euro area with the European System of Central Banks' balance sheet statistics on bank and non-bank financial intermediaries – in particular, money market funds, investment funds, securitisation vehicles, insurance corporations and pension funds. Some key data gaps are identified and suggestions made on how they may be addressed.

---

[1] Division Monetary and Financial Statistics, European Central Bank; e-mail: clive.jackson@ecb.europa.eu and jani.matilainen@ecb.europa.eu. The views expressed in this paper are those of the authors and do not necessarily reflect those of the European Central Bank. The authors would like to thank colleagues for their comments and input, in particular: Barbara Zupancic, Henning Ahnert, Patrick Sandars, Anna Maria Agresti and Celestino Giron.

1. Introduction

In the period since the beginning of the financial crisis, the issue of "shadow banking" has received a lot of attention. Shadow banking may be defined as "the system of credit intermediation that involves entities and activities outside the regular banking system"[2]. Of particular importance from a financial stability perspective is where shadow banking intersects with regular banking – i.e. where banks are themselves using other financial intermediaries to carry out certain activities (because there are regulatory or other advantages in doing so), or where regular banks are exposed to the risks of the activities of shadow banking counterparties.

The prominence policy-makers have given to the issue of shadow banking is for two main reasons. First, shadow banking activities have played a distinct role in the crisis. Its genesis was in the US sub-prime mortgage market, whose risks were spread to various countries and sectors through the process of securitisation. The extent and complexity of financial intermediation which was happening outside of – but not entirely remote from – the traditional banking sector was an important element in the large credit growth during the boom period, and the loss of confidence between banks as the early stages of the crisis unfolded. Second, in a post-crisis environment of increasing oversight of the traditional banking sector, intermediation activities may instead move to lighter- or unregulated shadow banking entities. Hence, regulations which are intended to mitigate systemic risks may lead to circumvention of oversight and therefore increased risks. This may manifest itself in regulatory arbitrage, where activities are carried out in those jurisdictions where the regulatory burden is lower.

The euro area financial sector has grown considerably in the past two decades, and has become significantly more complex. Total assets of euro area Monetary Financial Institutions (MFIs) – i.e. central banks, credit institutions and money market funds (MMFs)[3] – more than doubled between the beginning of 1999 and the end of 2011, to over € 38 trillion. At the same time, the total assets of euro area other financial intermediaries (OFIs) – which includes *inter alia* investment funds, Financial Vehicle Corporations engaged in securitisation (FVCs)[4], non-securitisation financial vehicles, securities dealers, finance companies – almost tripled, from € 5.7 trillion in Q1 1999 to € 15.3 trillion in 2011 (one-quarter of the euro area financial sector).

The Financial Stability Board (FSB), the international body which monitors global financial stability and coordinates national authorities' policy responses to financial stability risks, published recommendations for the oversight and regulation of shadow banking activities in October 2011. The first step in the monitoring process is a so-called "macro-mapping" of the shadow banking system, its scale and its interactions with the regular banking system. It proposes that national authorities conduct an annual mapping exercise using data on non-bank financial intermediaries' balance sheets, as well as banking data and supervisory sources.

---

[2] "Shadow Banking: Strengthening Oversight and Regulation. Recommendations of the Financial Stability Board", Financial Stability Board, dated 27.11.2011, p.3.

[3] The MFI sector also includes Electronic Monetary institutions (ELMIs) and a few other institutions, although these are very small in number.

[4] Other common terms for financial vehicle corporations include Special Purpose Vehicles/Entities (SPVs or SPEs).

This paper attempts a macro-mapping of the euro area shadow banking system with balance sheet statistics on non-bank financial intermediaries in order to demonstrate the usefulness of the data for this purpose, to identify gaps in the data, and perhaps also to aid other users or national authorities who may be wishing to use the data in a national context[5]. **Section 2** provides the background to the FSB monitoring exercise. A macro-mapping exercise is carried out in **Section 3** from three angles: (i) the size of the system as a whole; (ii) an examination of credit institutions' assets and liabilities vis-à-vis other financial intermediary sub-sectors; and (iii) a snapshot of national distribution of intermediaries. **Section 4** discusses key data gaps and how these may be addressed. **Section 5** concludes with an assessment of the usefulness of a macro-mapping exercise at the euro area level.

2. Monitoring the shadow banking system – "macro-mapping"

There is no single commonly accepted definition of shadow banking[6]. Definitions usually make reference to the core activities of conventional banking. This may be with regard to the *funding* perspective i.e. taking liquid deposits or issuing deposit-like instruments; or it may be from the *lending* perspective, i.e. extending credit to the non-financial sector. Although entities may themselves be channelling funds between third parties with a surplus on one side and those with a lack of funds on the other, it is more common that non-bank financial intermediaries perform a specialised function within what may be regarded as a "credit intermediation chain"[7].

Among the functions that entities may provide to the shadow banking system include **maturity transformation –** the use of short-term liabilities to fund longer-term assets, and **liquidity transformation –** the use of liquid instruments to fund illiquid assets. Liquidity mismatches can interact with maturity mismatches to make entities vulnerable to "runs" – i.e. sudden withdrawals of funding. In addition, shadow banking entities often play a role in **credit risk transfer** – the process of moving credit risk to another entity through the transfer of assets (in a traditional securitisation), or through a synthetic securitisation, where the risk is transferred through derivatives, guarantees or a similar mechanism.

The G20 requested the FSB to establish a Task Force to clarify what is meant by shadow banking and the role that it plays, to establish approaches for monitoring of the shadow banking system, and to prepare measures to address the systemic risks, and to mitigate potential regulatory arbitrage between jurisdictions with differing regulation of shadow banking activities. In its recommendations published in October 2011, the FSB advocated national authorities to use a three-step approach for the monitoring of the shadow banking system:

---

5 With only a few exceptions, all of the data used in this note are published on the Statistical Data Warehouse (SDW) database of the ECB (http://sdw.ecb.europa.eu). Data on national contributions to the euro area data are also usually available.

6 For a collection and comparison of definitions, see the report "The Deloitte Shadow Banking Index – shedding light on banking's shadows" released by Deloitte Consulting LLP in May 2012.

7 How OFI entities interacted with each other (and the traditional banking sector) in credit intermediation chains is detailed by Zoltan Poznar, Tobias Adrian, Adam Ashcraft and Hayley Boesky in "Shadow banking", Federal Reserve Bank of New York Staff Report No. 458, July 2010 (revised February 2012).

- *Step 1*: macro-mapping of the overall shadow banking system, its scale and trends;
- *Step 2*: identification of the key systemic risks and regulatory arbitrage concerns within the shadow banking system; and
- *Step 3*: assessment of the key systemic risks and regulatory arbitrage concerns.

This monitoring procedure operates on the principle that initially a broad perspective on non-bank credit intermediation should be taken in order to include all shadow banking activities, including also financial innovation which may be taking place. Following this, the policy focus should be concentrated on developments related to systemic risk and regulatory arbitrage. This paper focusses primarily on the broad mapping of the shadow banking system – i.e. *Step 1* of the FSB recommendations – using balance sheet information collected by the European System of Central Banks (ESCB) from credit institutions, MMFs, investment funds, insurance corporations and pension funds (ICPFs) and FVCs.

The FSB recommendations provide a template for the macro-mapping exercise, which should be completed by national authorities on an annual basis and with a time series as far back as possible in order to capture trends. The template aims to establish the relative size of various components of the shadow banking system and also requires the assets and liabilities of the credit institutions with other financial intermediaries in aggregate. National authorities may supplement the listed subcategories of shadow banking entities with additional breakdowns on the basis of what may be available and relevant.

The requirements of the FSB template are summarised in ***Table 1***, with a comparison against the euro area terms and coverage. There are some key differences between the breakdowns of the FSB template and euro area statistics. For example, the term "other financial intermediaries" in the template may be regarded as equivalent to the euro area statistical OFI sector with the addition of MMFs (classified as MFIs in euro area statistics). Therefore, in this paper, the FSB "other financial intermediaries" will be termed "other non-bank financial intermediaries". The following section presents the results of the macro-mapping exercise, as amended to conform to euro area definitions.

Table 1: Summary of requirements of the FSB *Step 1* Template with euro area equivalents and sources

Items from Template	***Euro area nomenclature***	***Details***	***Source***	***Regulation***	***Availability***
Central Bank	National Central Banks and European Central Bank (part of the MFI sector)	Individual balance sheets as well as consolidated for Eurosystem as a whole. *Monthly*.	MFI statistics	ECB/2008/32	1999
Banks	Credit institutions (part of the MFI sector)	Credit institutions comprise primarily "banks", but also similar types of deposit-taking institutions, e.g. building societies or credit unions. Separate credit institution balance sheet available *Quarterly*.	MFI statistics	ECB/2008/32	1999
*(Other deposit taking institutions to be listed)**	-	No distinction between bank and non-bank credit institutions	MFI statistics	ECB/2008/33	-
Insurance corporations	Insurance corporations	*Quarterly*.	ICPF statistics	Forthcoming	Q1 2008
Pension funds	Pension funds	*Quarterly*.	ICPF statistics	Forthcoming	Q1 2008
Public financial institutions	Public financial corporations	Publicly-owned financial intermediaries are classified in other financial sub-sectors without separate distinction	None	-	-
Money Market Funds (with constant NAV)	Money Market Funds (part of the MFI sector)	Separate aggregated balance sheet for all MMFs *Quarterly*. No distinction for MMFs with constant NAVs, or "other".	MFI statistics	ECB/2008/32	1999
Other Money Market Funds	Money Market Funds (part of the MFI sector)	Separate aggregated balance sheet for all MMFs *Quarterly*. No distinction for MMFs with constant NAVs, or "other".	MFI statistics	ECB/2008/32	1999
Finance companies	Finance companies	No data – included in residual below	-	-	-
Structured finance vehicles	Financial Vehicle Corporations engaged in securitisation (FVCs)	National and euro area aggregated balance sheet data, ISIN identifiers for debt securities issued. *Quarterly*.	FVC statistics	ECB/2008/30	Q4 2009
Hedge Funds	Hedge Funds	Separately identified within investment fund statistics. Includes funds of hedge funds. *Monthly and Quarterly*.	Investment fund statistics	ECB/2007/9	Q4 2008
Other investment funds	Investment funds	*Monthly and Quarterly*.	Investment fund statistics	ECB/2007/9	Q4 2008
*(Other intermediaries to be listed)**	-	Other substantial groups of financial intermediaries which could be listed at the euro area level include: non-securitising SPEs, CCPs, securities lending corporations. Limited data is available Aggregates only are available, from euro area accounts. *Quarterly*.	Euro area accounts	Various sources	1999

Note: The FSB template requests annual data from 1999 to 2008 and quarterly data from 2009 onwards. For the items marked with an asterisk (*), national authorities are to include further subcategories as appropriate. Data availability refers to the starting point of data published by the ECB. In some cases, MFI series go back further than 1999, but more detailed balance sheet information on instruments and counterparties commences only in 2003.

3. Macro-mapping the euro area shadow banking system

For the purposes of a macro-mapping approach to the financial sectors, the ESCB balance sheet data on financial institutions have a number of advantages. Reporting concepts and definitions of financial sub-sectors are harmonised across countries, aiding comparability. In the case of MFIs, investment funds and FVCs, the ECB maintains lists of resident entities for convenient identification of counterparties in the reporting of transactions.

As well as a national focus, the euro area counterparties may generally be split between domestic residents and residents in another euro area country. In some cases a country-by-country breakdown of counterparty residency is possible. As a great deal of the balance sheet data are published, this facilitates information exchange between relevant national authorities. However, a key limitation is that data on interactions with banks and other counterparties not resident in the euro area are often not available. It should also be borne in mind that the balance sheet data are recorded in so-called solo basis, whereby each institution is considered a separate unit, resident in the country where it is established. This means that financial institutions belonging to multinational groups are recorded individually in one country, whereas the ultimate risks may lie with the parent company resident elsewhere.

Data are compiled for the euro area on the basis of the *Step 1* template, amended as necessary. There were two primary sources for the data. First, **monetary data** on the financial sector balance sheets of MFIs (available from 1999), investment funds and FVCs (published from Q4 2008 and Q4 2009 respectively). Monetary data provide monthly or quarterly balance sheet stocks and transactions, including some detail on euro area counterparty sectors. In terms of euro area aggregates, monetary data usually operate with a "changing composition" concept – i.e. new countries are included in the euro area aggregate when they join Monetary Union. For OFIs other than investment funds and FVCs, only limited, unpublished information on securities and derivatives dealers and financial corporations engaged in lending is available.

Second, **euro area financial accounts (EAA) data**, which provide a "flow of funds" for the euro area, give the total financial assets of OFIs. EAA data use the available monetary data as building blocks for the financial sector accounts where available, as well as alternative sources and estimations where monetary data are not available. EAA data for the euro area are generally compiled on a "fixed composition" – i.e. compiled data refer to the 17 Monetary Union Member States for all back data, even if some states were not yet members in those periods[8].

The results of the macro-mapping exercise are presented below: first, the structure and trends in the financial sector as whole from 1999 to 2011, and the components of the other non-bank financial intermediaries (referred to as "OFIs" in the FSB template). Then the interactions between credit institutions will be examined – although the template covers only the "assets to OFIs" and "liabilities to OFIs", the monetary data also allow further breakdowns by type of intermediary and also by instrument: deposits, loans and debt securities. Finally, a snapshot of

[8] As the financial sectors of the joining states have been relatively small, the difference between a "fixed composition" (of 17 members) and "changing composition" (of 12 to 17 members over the period) is quite small.

the geographical distribution of the other non-bank financial intermediaries will be provided in Section 3.3. The underlying data tables are presented in the Appendix.

3.1 Overall structure and trends in the euro area financial sector

The total assets of credit institutions more than doubled between the beginning of 1999 and the end of 2011 – from € 15.1 trillion to € 32.5 trillion – with a particularly rapid growth from the middle of the last decade to the outbreak of the crisis (***Chart 1***). In the period from 2008, the rate of growth of credit institutions total assets has levelled out somewhat, but has been quite volatile, primarily the result of large shifts in remaining assets (which includes financial derivative positions) and, to a much lesser degree, the result of securitisations.

Part of the increase in lending by banks was facilitated by financial innovation, e.g. the use of securitisation in order to transfer credit risk off-balance sheets using FVCs. The transfer of credit risk enabled banks to gain regulatory capital relief which was freed for further lending. Securitisation seemed to allow banks to manage their exposures to certain counterparties or sectors and it was thought that the spreading of credit risk across investors increased the resilience of the financial system.

Total assets of other non-bank financial intermediaries have grown at a faster rate than the total assets of credit institutions since 1999. This growth continued through the crisis, with only a short interruption in early-2009 due to a sharp downwards revaluation in the equity holdings of investment funds, which was subsequently reversed. Overall, the annualised growth rate between the end-2004 and end-2011 for the total assets of these intermediaries averaged 8.7% per annum, compared with 6.9% per annum for credit institutions.

The largest constituent of the other non-bank financial intermediaries, 37% of total assets, are **investment funds excluding hedge funds** at € 6.2 trillion in Q4 2011 (***Chart 2***). **Hedge funds** account for only 1% of other non-bank financial intermediaries' assets in the euro area financial sector, with total assets of €140 billion.

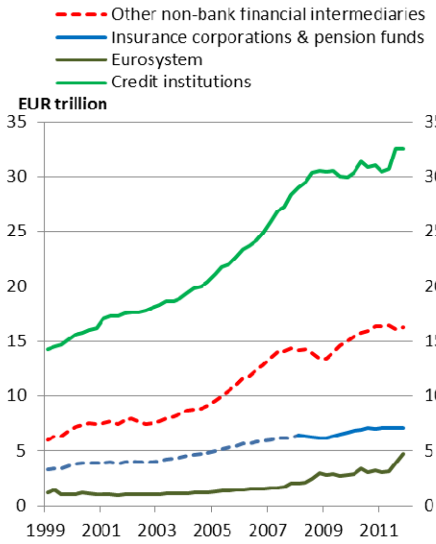
To what extent the operations of investment funds are linked to shadow banking can be debated. Many investment funds are involved in credit intermediation, as they receive funds from investors through issuance of shares or units and use these funds for extending credit, through the purchase of debt securities issued by public or private sector or placing deposits at credit institutions. Such investment funds are engaged in one of the two core activities of the conventional banking sector. Debt securities, deposits and loans made up 47% of investment funds' assets at end-2011. Investment funds may also be vulnerable to "runs", i.e. investors' sudden withdrawal of their investments, as the shares or units can usually be redeemed at a short notice. This forces the investment funds to liquidate their assets on a large scale, thereby potentially contributing to the instability of certain markets. Finally, some investment funds may apply leverage, amplifying any underlying risks.[9] On the other hand, investment funds are often considered by some as not engaging in shadow banking activities, mainly due to the fact that they are generally well regulated and do not seem likely to pose a systemic risk[10].

---

[9] See e.g. European Commission Green Paper on Shadow Banking, dated 19.3.2012.

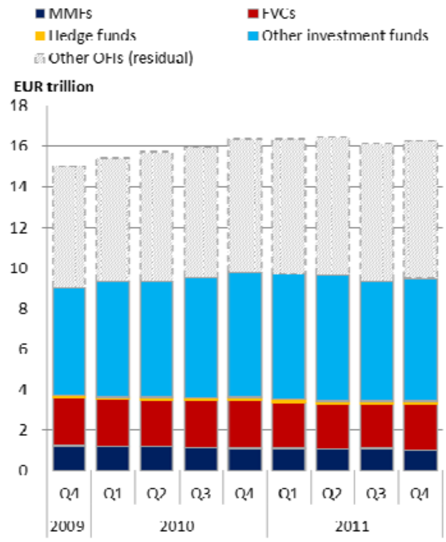
[10] E.g. "Shadow Banking in the Euro Area", ECB Occasional Paper No 133, dated April 2012 and "Shadow banking: a forward-looking framework for effective policy", Institute of International Finance, dated June 2012.

Chart 1: Overview of developments in the euro area financial sector total assets



Note: Data in Chart 1 is based on monetary data, except for dashed lines which indicate data source as EAA data.

Chart 2: Developments in main non-bank financial intermediary sub-sectors



Note: The category "other non-bank financial intermediaries" combines EAA data on total financial assets with monetary data breakdowns of subsectors.

FVCs constitute 14% of euro area other non-bank financial intermediaries, and are a very heterogeneous set of entities. They are generally set up for the purpose of issuing securities which are backed by credit-related assets, such as mortgages, consumer credit, auto loans, trade receivables, or even asset-backed securities issued by other FVCs ("re-securitisations"). FVCs may transfer credit risk through the purchase of a portfolio of assets – i.e. "traditional" securitisation. Of FVC total assets of €2.3 trillion in Q4 2011, two-thirds are loans (€ 1.5 trillion), and a further 10% are debt securities holdings.

Alternatively, credit risk may be transferred through derivatives, guarantees or similar mechanisms ("synthetic" securitisation). This is a particularly difficult to measure from a balance sheet perspective. In general, these FVCs issue securities and place the proceeds on deposit with the originating credit institution, while it enters in a credit default swap with the originator to covers losses on a reference portfolio of loans. Total debt securities issued by synthetic FVCs in the euro area amounted to € 77 billion in Q4 2011 – half of the Q4 2009 amount – but off-balance sheet guarantees are not included. In cases where a guarantee is not fully backed by issued securities, the balance sheet data do not reflect the total extent of the credit risk transferred.

Other shadow banking activities which are evident in the FVC sector relate to **asset-backed commercial paper (ABCP) conduits** and **structured investment vehicles (SIVs)** which hold longer-term asset-backed or other securities and issued short-term paper. These are not only engaged in credit risk transfer, but also play an important role in maturity and liquidity transformation – holding longer-term asset-backed or other securities and issuing short-term paper to investors. These types of activities were early causalities of the freezing in the markets in the first stages of the financial crisis, which in many cases forced them to call on liquidity lines (usually from the traditional banking sector) and/or to be brought onto credit institution balance sheets. The different roles which the FVC sector may play within the shadow banking system and the risks that they may pose indicates some of the shortcomings of aggregated data on the sector, and highlights the usefulness of granular information on their activities.

MMFs in the euro area amount to approximately € 1 trillion in assets (***Chart 2***), or 6% of euro area other non-bank financial intermediaries total assets. MMFs are commonly considered to form part of the shadow banking system. This follows from the fact that their shares/units issued are close substitutes for bank deposits. As such, they are also equally susceptible to "runs" if the quality of the underlying assets is perceived as questionable, with a potential to further depress the asset prices following the sell-off in such a situation. In addition, MMFs extend credit through the purchase of debt securities and placing deposits – the two instruments make around 94% of euro area MMF assets.

Despite recent advances in collecting data from OFIs, a **large part of the other non-bank financial intermediaries remains a "residual"** – over 40% in Q4 2011. The main part of this residual consists of special purpose entities not related to securitisation, such as financing vehicles of non-resident parent companies. These types of entities are relevant in a small number of euro area jurisdictions (Section 3.3). In addition, the residual includes central clearing counterparties (CCPs)[11], holding companies, securities and derivatives dealers and companies engaged in factoring, leasing and mortgage lending. Although information on the balance sheets of these entities is limited, there is at least some information available on their interactions with credit institutions.

3.2 Interactions between credit institutions and other non-bank financial intermediaries

The main relevant asset positions of credit institutions are **debt securities issued by other non-bank financial intermediaries**, which increased from € 0.5 trillion to € 1.3 trillion between the beginning of the sub-prime crisis in Q3 2007 and end-2011 (***Chart 3***). A large part of this increase was in holdings of FVC securities, € 1.1 trillion in Q4 2011, which are retained by credit institutions for the purposes of central bank refinancing. Retained securitisations account for 57% of euro area FVC debt securities issued in Q4 2011. Although the purpose is to transform illiquid loan assets to a form which may be used to access refinancing operations, i.e. they are engaging in liquidity transformation, these may arguably be excluded from the shadow banking system, as they involve interactions purely within the (consolidated) banking sector.

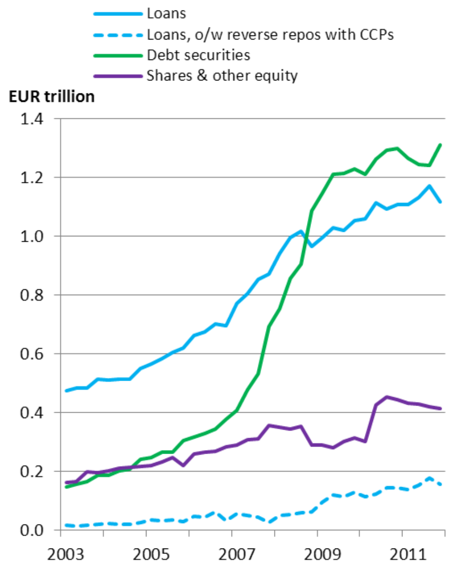
Loans to other non-bank financial intermediaries have increased from 6.9% of total lending to the non-MFI private sector in January 2003 to 10% at end-2011. Of the € 1.1 trillion outstanding loans in Q4 2011, € 156 billion were to CCPs – i.e. were related to inter-MFI borrowing which was routed through a clearing party in the OFI sector. Some of the loan counterparty data are not collected, including loans to FVCs. Lending to FVCs could include support from sponsoring banks to vehicles which they set up, through drawn-down credit lines for example.

---

[11] CCPs act as intermediaries in interbank lending, with corresponding loans from and deposits to the MFI sector. (In some cases the CCPs are themselves licensed banks, in which case they are classified as MFIs.)

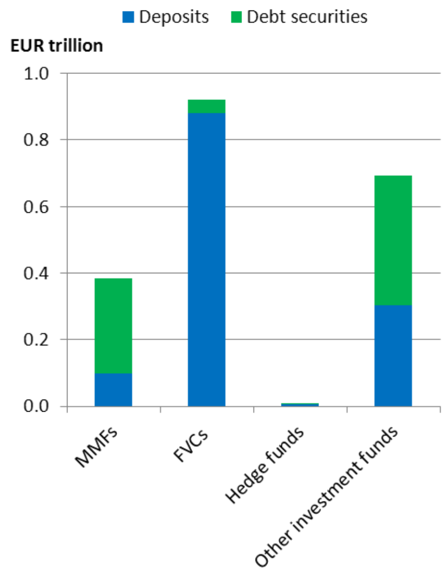
Credit institutions' holdings of **shares and other equity issued by other non-bank financial intermediaries** amounted to € 414 billion at Q4 2011. The majority of this seems to be investment fund shares, with around 3% in shares/units issued by MMFs.

Chart 3: Credit institution asset holdings vis-à-vis other non-bank financial intermediaries



Note: Data on reverse repos of MFIs with CCPs are published from June 2010. Earlier data are estimates.

Chart 4: Holdings of deposits with and holdings of debt securities issued by euro area credit institutions, Q4 2011



On the liabilities side of credit institutions' balance sheets, **deposits from other non-bank financial intermediaries** increased from € 0.6 trillion at the beginning of 2003 to € 2.3 trillion at end-2011[12]. Much of this increase is due to deposits from FVCs, € 880 billion in Q4 2011 (***Chart 4***), and relates mostly to securitisations without derecognition of loans from the banks' balance sheets. In these cases the credit institution records a deposit liability to the FVC, which is the counterpart of the non-derecognised loans. A small portion of FVC deposits, € 16 billion, are from synthetic securitisation vehicles, discussed Section 3.2. 13% of deposits from other non-bank financial intermediaries are from investment funds, of which hedge fund deposits are negligible. 11% of other non-bank financial intermediaries' deposits are from CCPs – again, related to inter-MFI repo transactions which are cleared using CCPs.

As well as holding significant amounts of deposits with euro area credit institutions, MMFs and investment funds also hold **debt securities issued by euro area credit institutions** (***Chart 4***). MMF holdings of debt securities issued by euro area credit institutions amounted to 38% of the total MMF balance sheet, and a further 31% of MMFs' total assets consist of deposits and debt securities of banks outside the euro area. This demonstrates the extent to which the euro area MMF sector can be seen as a funding source of the traditional banking sector.

[12] See the article "The Interplay of Financial Intermediaries and Its Impact on Monetary Analysis" in the ECB Monthly Bulletin of January 2012.

3.3 Geographical distribution of euro area non-bank financial intermediaries

There is an uneven geographical distribution of non-bank financial intermediaries in the euro area for historical, regulatory and other reasons. Of the € 16.3 trillion total assets of other non-bank financial intermediaries in the euro area, almost half is concentrated in Luxembourg and Netherlands (***Chart 5***), with France, Ireland and Germany making up a further 36% between them.

Chart 5: Relative shares of other non-bank financial intermediaries in the total financial sector, Q4 2011

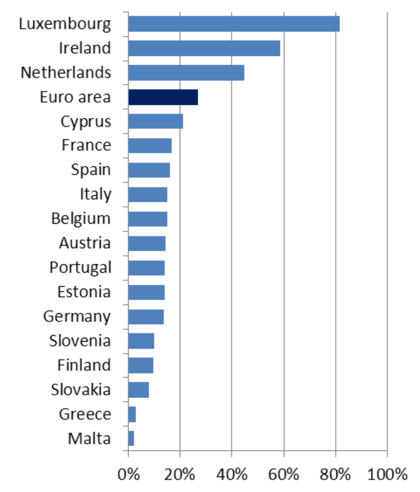
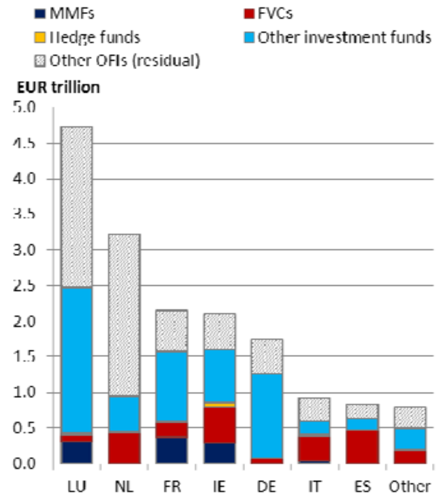


Chart 6: Geographical distribution of other non-bank financial intermediaries, by total assets, Q4 2011



For a large proportion of the non-bank financial intermediaries, the monetary data do not provide much information on activities – almost half of the total balance sheet in Luxembourg and over half in the Netherlands (***Chart 6***), where non-securitisation related special purpose entities are significant. National authorities may have more granular information on these activities than is available or published on a euro area level – of course, a macro-mapping exercise using monetary data at a euro area regional level may only be a complement to similar exercises carried out at the national level. However, the monetary data can help shed light on cross-border activities of the sector, particularly between securitisations which are carried out by banks resident in one country using FVCs resident in another – with Ireland and the Netherlands being the most common jurisdictions for such activity. In addition, some securitisations may use a number of vehicles which may be resident in different countries.

Part of the macro-mapping exercise is to monitor how these patterns may change in response to regulatory developments. The monetary data provide a good basis for the monitoring of developments within the euro area, although a key weakness is that data on activities outside the euro area (the UK being the most relevant) are limited. Data gaps on geographic coverage, as well as other gaps, are assessed in the following section.

4. Identifying and addressing data gaps

The lack of information on this sector was quickly identified after the crisis as an important data gap and urgent attention turned to how this could be addressed. Recent advances in euro area statistics on the non-MFI financial sector have contributed greatly to the understanding of the activities of MFIs, securitisation, non-bank credit intermediation and developments in the money-holding sector[13]. Further amendments of the existing statistical regulations on MFIs, FVCs and investment funds (which are currently underway in response to the necessary changes for ESA 2010) aim to ensure that the euro area statistical requirements remain fit for purpose. Some relevant data gaps remain, however.

The **institutional coverage within the euro area** potentially overlooks parts of the financial sector (among them, non-securitising SPEs, securities dealers, factoring and leasing companies). This "residual" part of the OFI sector may include entities or activities which are systemically important in themselves, or are "missing" links in credit intermediation chains. However, as the residual intermediaries may be more nationally-specific and specialised, there are diminishing marginal returns in trying to capture them with harmonised euro area reporting requirements. In those jurisdictions where these types of OFIs are significant, the national authorities and compilers of statistics may already collect some data and are best placed to detect emerging trends.

In terms of **geographic coverage of counterparties located outside the euro area**, these are usually not allocated to sectors in monetary statistics. Increasing data requirements for counterparty breakdowns of all rest of world counterparties would of course be an unacceptable increase in statistical reporting requirements, however security-by security information can alleviate the burden of reporting agents to allocate counterparties to geographic and counterparty classifications. The ECB has set up a Centralised Securities Database (CSDB) which can be used in conjunction with security-level data by national central banks to identify issuing sectors. (Loan-by-loan level data, through credit registers, for example, may provide similar benefits.) In other cases, it may be better to try to cover key counterparts in terms of risk, for example large exposures of credit institutions to FVCs which they have set up outside the euro area.

The data are not complete with regards to **counterparties and instruments** which would allow the full macro-mapping of the interactions between the financial sub-sectors. In particular, there is a lack of information on holdings of securities issued by MFIs and OFIs. Security-by security reporting is a very rich source of information when assessing risks, given that it could reveal exposures to particular institutions and by rating. Gaps in holding sector data may be addressed by the on-going development of securities holdings statistics in the euro area, aided by the CSDB to allocate securities to sectors.

Balance sheet data at the aggregate level often do not take into account **close links between entities**, or the composition of groups and intra-group positions, which may act as a route for contagion. This may be addressed by improved registers of institutions which better account for relationships between entities.

---

[13] The ECB began publishing data on FVCs, investment funds and ICPFs in June 2011. For an overview, see the article "Keeping the ECB's Monetary and Financial Statistics Fit for Use" in the ECB Monthly Bulletin of August 2011.

Crucially, balance sheet data alone are not sufficient for a proper analysis of the **off-balance sheet risks** which may be accumulating in the system. These risks are often in the form of contingent claims or guarantees, and hence the usefulness of balance sheet data is constrained. These gaps may be addressed by supervisory requirements – pursued, for example, via the FSB workstreams to develop recommendations on regulatory policy.

5. Conclusion

A large part of the necessary data for a macro-mapping exercise can be sourced from financial sector balance sheet statistics. The regular banking sector, MMF sector, investment fund sector (including hedge funds) and FVC sector are covered by relatively detailed data collected under ECB regulations in the euro area. Furthermore, non-euro area EU countries in many cases produce the same or very similar statistics, ensuring a high coverage of the EU according to harmonised statistical definitions.

Macro-mapping at the euro area level will naturally only be a complement to the national exercises. National compilers of these statistics may have access to micro-level statistical and supervisory data which would allow risks to be assessed at a more granular level, and they may have more detailed breakdowns of assets and liabilities of entities involved in shadow banking activities which are not covered by ECB regulations. There are, however, potential benefits of carrying out the exercise at the euro area level in addition to national approaches:

- it can help identify data gaps which may be appropriately filled with harmonised, euro area wide reporting requirements;
- it may better leverage the usefulness of available cross-border data;
- it can identify opportunities for sharing of data between national authorities, for example with relation to holdings of securities; and
- it can make regional trends more apparent, due to the cross-border nature of many shadow banking activities.

Finally, as noted in the FSB recommendations, macro-mapping is useful as a starting point for monitoring developments in the financial sector. However, it is not suitable on its own for determining which entities are engaged in shadow banking activities and are potentially posing systemic risks. An attempted measurement of the “size” of the shadow banking system should not become a distraction. Rather than the scale of balance sheets, the relevant risks may be off-balance sheet, or arise through the nature of the complex interactions between other financial intermediaries and banks.

Appendix: Macro-map tables for the euro area using financial sector balance sheet statistics

Table A1: Euro area financial sector by total assets (€ billions)

		Financial institutions													
			Central Bank (Eurosystem)	Credit institutions			ICPFS			Other financial intermediaries and MMFs					
					Assets to OFIs & MMFs	*Liabilities to OFIs & MMFs(*)*		Insurance corporations	Pension funds		MMFs	FVCs	Hedge funds	Other investment funds	Other OFIs (residual)
1999		*26,718*	1,014	15,167	382	556	*3,658*	na	na	*6,879*	331	na	na	na	*6,548*
2000		*28,540*	1,005	16,241	469	597	*3,870*	na	na	*7,424*	421	na	na	na	*7,003*
2001		*30,298*	997	17,561	542	687	*3,971*	na	na	*7,769*	605	na	na	na	*7,164*
2002		*30,633*	1,042	18,069	623	764	*4,008*	na	na	*7,514*	742	na	na	na	*6,772*
2003		*32,772*	1,087	18,890	897	911	*4,399*	na	na	*8,396*	912	na	na	na	*7,484*
2004		*35,541*	1,197	20,430	1,006	989	*4,811*	na	na	*9,103*	926	na	na	na	*8,177*
2005		*40,409*	1,405	22,645	1,143	1,245	*5,427*	na	na	*10,932*	991	na	na	na	*9,941*
2006		*45,230*	1,558	24,907	1,356	1,504	*5,906*	na	na	*12,859*	1,047	na	na	na	*11,812*
2007		*50,907*	2,047	28,340	1,920	1,932	*6,177*	na	na	*14,343*	1,155	na	na	na	*13,188*
2008		*53,092*	2,983	30,556	2,343	2,698	6,160	4,903	1,257	*13,393*	1,274	na	118	4,345	*7,656*
2009	**Q1**	*52,834*	2,784	30,418	2,429	2,777	6,191	4,956	1,235	*13,441*	1,323	na	99	4,224	*7,795*
	Q2	*53,703*	2,893	30,513	2,522	2,868	6,325	5,080	1,246	*13,972*	1,291	na	96	4,608	*7,977*
	Q3	*53,829*	2,747	29,997	2,535	2,869	6,517	5,207	1,310	*14,568*	1,272	na	94	5,093	*8,109*
	Q4	*54,406*	2,830	29,911	2,597	2,912	6,642	5,296	1,346	*15,023*	1,233	2,367	104	5,331	*5,988*
2010	**Q1**	*55,521*	2,881	30,349	2,569	2,932	6,871	5,483	1,389	*15,420*	1,208	2,293	129	5,735	*6,056*
	Q2	*57,402*	3,390	31,381	2,801	3,074	6,890	5,489	1,400	*15,741*	1,197	2,287	137	5,739	*6,381*
	Q3	*56,984*	3,024	30,912	2,841	3,110	7,064	5,603	1,462	*15,984*	1,174	2,286	127	5,950	*6,446*
	Q4	*57,643*	3,212	31,067	2,850	3,129	6,997	5,569	1,428	*16,367*	1,133	2,352	132	6,156	*6,594*
2011	**Q1**	*56,978*	3,039	30,455	2,806	3,126	7,091	5,663	1,429	*16,393*	1,105	2,255	136	6,208	*6,688*
	Q2	*57,352*	3,138	30,665	2,805	3,142	7,103	5,667	1,436	*16,446*	1,071	2,218	137	6,223	*6,797*
	Q3	*59,731*	3,929	32,557	2,831	3,204	7,099	5,625	1,474	*16,146*	1,101	2,202	146	5,935	*6,762*
	Q4	*60,595*	4,700	32,518	2,841	3,088	7,084	5,573	1,511	*16,293*	1,021	2,273	142	6,070	*6,787*

Note: Data comes from the financial balance sheet data on total assets of MFIs, investment funds and FVCs, except *italicised* data which is based (wholly or in part) on euro area accounts estimates of total financial assets. Data which is not available (or not published by the ECB) is denoted “na”, data points which are assumed to be nil for conceptual reasons are denoted “..”.
(*) Liabilities of credit institutions to OFIs are based on complete data on deposits, plus the holdings reported by MMFs, FVCs and investment funds of credit institutions’ debt securities and shares and other equity (see table A3). Therefore, it should be regarded as an indicative lower bound of OFI holdings of credit institution liabilities, rather than a comprehensive total.

Table A2: Assets of euro area credit institutions vis-à-vis Other Financial Intermediaries and Money Market Funds (€ billions)

		Assets to OFIs and MMFs															
			Loans from credit institutions to OFIs and MMFs borrowing sectors							Debt securities held by credit institutions by OFIs and MMFs issuing sector							Shares and other equity
				MMFs	CCPs	FVCs	Hedge funds	Other investment funds	Other OFIs (residual)		MMFs	CCPs	FVCs	Hedge funds	Other investment funds	Other OFIs (residual)	
1999		**382**	**324**	6	na	na	na	na	318	**41**	..	..	na	..	..	41	**18**
2000		**469**	**399**	4	na	na	na	na	395	**55**	..	..	na	..	..	55	**16**
2001		**542**	**440**	5	na	na	na	na	435	**78**	..	..	na	..	..	78	**24**
2002		**623**	**459**	4	na	na	na	na	455	**116**	..	..	na	..	..	116	**48**
2003		**897**	**515**	4	na	na	na	na	511	**186**	..	..	na	..	..	186	**197**
2004		**1,006**	**551**	5	na	na	na	na	546	**240**	..	..	na	..	..	240	**215**
2005		**1,143**	**619**	5	na	na	na	na	614	**305**	..	..	na	..	..	305	**219**
2006		**1,356**	**695**	6	na	na	na	na	689	**378**	..	..	na	..	..	378	**283**
2007		**1,920**	**871**	9	na	na	na	na	862	**692**	..	..	na	..	..	692	**357**
2008		**2,343**	**966**	5	na	na	8	107	846	**1,087**	..	..	na	..	..	1,087	**290**
2009	**Q1**	**2,429**	**995**	4	na	na	5	101	885	**1,146**	..	..	na	..	..	1,146	**288**
	Q2	**2,522**	**1,029**	3	na	na	4	106	916	**1,212**	..	..	na	..	..	1,212	**281**
	Q3	**2,535**	**1,020**	5	na	na	4	118	893	**1,214**	..	..	na	..	..	1,214	**302**
	Q4	**2,597**	**1,054**	2	na	na	6	120	926	**1,230**	..	..	na	..	..	1,230	**313**
2010	**Q1**	**2,569**	**1,059**	4	na	na	11	115	929	**1,210**	..	..	na	..	..	1,210	**301**
	Q2	**2,801**	**1,113**	4	122	na	11	125	851	**1,263**	..	..	912	..	..	351	**425**
	Q3	**2,841**	**1,093**	7	143	na	9	123	811	**1,294**	..	..	905	..	..	389	**454**
	Q4	**2,850**	**1,108**	2	143	na	7	111	845	**1,298**	..	..	954	..	..	344	**444**
2011	**Q1**	**2,806**	**1,109**	2	138	na	8	122	839	**1,264**	..	..	900	..	..	364	**433**
	Q2	**2,805**	**1,132**	2	153	na	10	113	854	**1,246**	..	..	938	..	..	308	**427**
	Q3	**2,831**	**1,171**	3	178	na	9	117	864	**1,240**	..	..	969	..	..	271	**421**
	Q4	**2,841**	**1,117**	2	156	na	8	109	842	**1,309**	..	..	1,065	..	..	244	**414**

Note: Data come from the financial balance sheet data on total assets of MFIs, investment funds and FVCs. Data which is not available (or not published by the ECB) is denoted “na”, data points which are assumed to be nil are denoted “..”.

Table A3: Liabilities of euro area credit institutions held by Other Financial Intermediaries and Money Market Funds (€ billions)

		Liabilities to OFIs and MMFs														
			Deposits of OFIs and MMFs with credit institutions							**Credit institution debt securities by OFIs and MMFs holding sector**						**Shares and other equity**
				MMFs	CCPs	FVCs	Hedge funds	Other investment funds	Other OFIs (residual)		MMFs	CCPs	FVCs	Hedge funds	Other investment funds	
1999		**556**	**445**	46	na	na	na	na	399	**111**	111	na	na	na	na	**na**
2000		**597**	**485**	55	na	na	na	na	430	**112**	112	na	na	na	na	**na**
2001		**687**	**529**	62	na	na	na	na	467	**158**	158	na	na	na	na	**na**
2002		**764**	**560**	66	na	na	na	na	494	**204**	204	na	na	na	na	**na**
2003		**911**	**660**	93	na	na	na	na	567	**251**	251	na	na	na	na	**na**
2004		**989**	**716**	80	na	na	na	na	636	**273**	273	na	na	na	na	**na**
2005		**1,245**	**951**	70	na	na	na	na	881	**294**	294	na	na	na	na	**na**
2006		**1,504**	**1,202**	56	na	na	na	na	1,146	**302**	302	na	na	na	na	**na**
2007		**1,932**	**1,618**	94	na	na	na	na	1,524	**314**	314	na	na	na	na	**na**
2008		**2,698**	**1,954**	152	na	na	9	298	1,496	**676**	335	na	na	2	339	**68**
2009	**Q1**	**2,777**	**1,986**	147	na	na	7	296	1,536	**742**	394	na	na	2	346	**50**
	Q2	**2,868**	**2,039**	142	na	na	6	281	1,610	**759**	396	na	na	2	361	**71**
	Q3	**2,869**	**1,989**	123	na	na	6	274	1,587	**781**	397	na	na	2	383	**98**
	Q4	**2,912**	**1,985**	113	na	na	5	271	1,596	**830**	390	na	52	2	386	**98**
2010	**Q1**	**2,932**	**1,995**	108	na	na	8	290	1,589	**842**	401	na	48	3	390	**95**
	Q2	**3,074**	**2,179**	103	214	758	5	278	821	**821**	390	na	50	3	378	**74**
	Q3	**3,110**	**2,215**	109	226	790	4	268	818	**815**	382	na	47	3	383	**80**
	Q4	**3,129**	**2,262**	94	255	849	4	277	783	**789**	367	na	46	2	373	**78**
2011	**Q1**	**3,126**	**2,253**	87	241	831	5	283	806	**783**	358	na	42	3	381	**89**
	Q2	**3,142**	**2,319**	103	291	832	4	304	785	**738**	311	na	41	3	384	**85**
	Q3	**3,204**	**2,426**	114	339	841	4	284	843	**725**	302	na	42	3	378	**53**
	Q4	**3,088**	**2,320**	99	260	880	5	304	772	**717**	286	na	40	2	389	**51**

Note: Data come from the financial balance sheet data on total assets of MFIs, investment funds and FVCs. Data which is not available (or not published by the ECB) is denoted “na”, data points which are assumed to be nil for conceptual reasons are denoted “..”. Liabilities of credit institutions to OFIs are based on complete data on deposits, plus the holdings reported by MMFs, FVCs and investment funds of credit institutions’ debt securities and shares and other equity. No information is available on the holdings of the residual OFI sub-sectors of credit institutions’ debt securities and shares and other equity issued.