



EUROPEAN CENTRAL BANK

EUROSYSTEM

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NO 133 / APRIL 2012

**SHADOW BANKING  
IN THE EURO AREA  
AN OVERVIEW**

by Klára Bakk-Simon,  
Stefano Borgioli,  
Celestino Giron,  
Hannah Hempell,  
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## ABSTRACT

Shadow banking, as one of the main sources of financial stability concerns, is the subject of much international debate. In broad terms, shadow banking refers to activities related to credit intermediation and liquidity and maturity transformation that take place outside the regulated banking system.

This paper presents a first investigation of the size and the structure of shadow banking within the euro area, using the statistical data sources available to the ECB/Eurosystem.

Although overall shadow banking activity in the euro area is smaller than in the United States, it is significant, at least in some euro area countries. This is also broadly true for some of the components of shadow banking, particularly securitisation activity, money market funds and the repo markets.

This paper also addresses the interconnection between the regulated and the non-bank-regulated segments of the financial sector. Over the recent past, this interconnection has increased, likely resulting in a higher risk of contagion across sectors and countries. Euro area banks now rely more on funding from the financial sector than in the past, in particular from other financial intermediaries (OFIs), which cover shadow banking entities, including securitisation vehicles. This source of funding is mainly short-term and therefore more susceptible to runs and to the drying-up of liquidity. This finding confirms that macro-prudential authorities and supervisors should carefully monitor the growing interlinkages between the regulated banking sector and the shadow banking system. However, an in-depth assessment of the activities of shadow banking and of the interconnection with the regulated banking system would require further improvements in the availability of data and other sources of information.

**JEL code:** G01, G15, G21, G28.

**Keywords:** Shadow banking, bank regulation, repo markets, securitisation.

## NON-TECHNICAL SUMMARY

This paper presents a preliminary investigation of the size and the structure of shadow banking in the euro area, as a contribution to the international and European debate on this issue. In broad terms, shadow banking refers to activities related to credit intermediation, liquidity and maturity transformation that take place outside the regulated banking system.

There is widespread international agreement on the need to better understand the activities of shadow banking and the related financial stability risks. Moreover, the forthcoming implementation of Basel III, with the introduction of more stringent capital and liquidity requirements for credit institutions, and the provisions to be applied to insurers may provide further incentives for banks to shift part of their activities outside of the regulated environment and therefore increase shadow banking activities.

Evaluating the size of the shadow banking system in the euro area is not straightforward. A quantitative assessment of the activities of the shadow banking sector can only be based on data sources that unfortunately were not designed specifically for this purpose (i.e. flow-of-funds data and monetary and financial statistics). Moreover, for some activities and markets there are no official data available.

The analysis shows that shadow banking activity in the euro area is smaller than in the United States. In the United States the size of the shadow banking system, measured as the total amount of its assets, was comparable to the size of the banking system in the second quarter of 2011, while in the euro area it represented less than half of the total assets of banking sector. However, the size of assets held by financial intermediaries that are not regulated as banks is still important in the euro area, especially in some countries.

A proxy for the activities of shadow banking in the euro area can be derived from the analysis

of the balance sheets of OFIs, a sector which excludes insurance corporations and pension funds but covers most of the agents engaging in shadow banking. Regarding the dynamics of shadow-banking activities, assets of OFIs grew rapidly in the run-up to the crisis, in the period 2005-07. Starting at the end of 2007, OFI intermediation declined sharply in the context of the general deleveraging triggered by the financial crisis.

The paper investigates some key components of shadow banking. In particular, it looks at financial entities other than banks involved in credit intermediation, such as securitisation vehicles, and at the financial intermediaries and markets providing funding to the banks, such as money market funds (MMFs) and the repo market. The data suggests the following.

- (i) Securitisation issuance was smaller in volume in the euro area than in the United States before the crisis (around 5% and 12% of GDP respectively) and remains less developed.
- (ii) Assets under management by MMFs amounted to €1.83 trillion and €1.1 trillion in the United States and in the euro area respectively by the second quarter of 2011. However, it should be pointed out that in the euro area MMFs are a somewhat heterogeneous group (even if the CESR, i.e. the predecessor of the European Securities and Markets Authority, published in 2010 guidelines on a Common Definition of European Money Market Funds).<sup>2</sup>
- (iii) The repo market is a key source of funding in both the United States and the euro area.

The paper also addresses the interconnection between regulated and non-regulated segments of the financial sector undertaking banking activities. Over the recent past this interconnection has been increasing, likely resulting in higher risk of contagion across

<sup>2</sup> <http://www.esma.europa.eu/system/files/2012-113.pdf>

sectors and countries. Euro area banks rely more than in the past on funding from the financial sector and in particular from the OFI sector, which covers shadow banking entities including securitisation vehicles. This source of funding is mainly short-term and therefore more susceptible to runs and to the drying-up of liquidity. The relative size and relevance of shadow banking intermediation differs significantly across euro area countries.

A more in-depth assessment of the activities of shadow banking and of the interconnection with the regulated banking system would require an improvement in the availability of data and other related information. More than 60% of the assets that are considered part of shadow banking activities in the euro area are linked to financial institutions for which high frequency statistical information is not available. Similarly, very scarce and non-standardised information is available on repo markets. Moreover, the aggregate data collected for the euro area are not detailed enough to allow a full understanding of key elements such as the presence of maturity transformation and leverage and the possible channels for contagion, which are of particular importance when evaluating possible regulatory measures. The paper concludes with some preliminary considerations regarding possible measures to address data gaps and regulatory options.

## I INTRODUCTION

Shadow banking has been widely identified as one of the main sources of financial stability concerns.<sup>3</sup> In broad terms, shadow banking refers to activities related to credit intermediation, liquidity and maturity transformation that take place outside the regulated banking system.

The widespread concerns about shadow banking triggered a request by the G20 Leaders at the November 2010 Seoul Summit that the Financial Stability Board (FSB), in cooperation with other international standard setting bodies, develop recommendations to strengthen the oversight and regulation of the shadow banking system. The FSB published on 27 October 2011 a first set of recommendations for intensifying monitoring and enhancing regulation, entrusting further work to international standard setters and dedicated FSB-led work streams.

Whereas in the United States there is a growing analytical literature about the subject, no specific study or data set is yet available for Europe or the euro area. This paper represents a first attempt to fill this gap, based on an analysis of shadow banking in the euro area, using the information available at the ECB/Eurosystem. The paper is organised as follows: Section 2 provides a working definition of shadow banking; Section 3 describes the main components of shadow banking in the euro area; Section 4 gives a snapshot of shadow banking in the euro area on the basis of the aggregated data available to the ECB/Eurosystem; finally, Section 5 draws some preliminary policy conclusions.

3 IMF (2011), UK FSA (2011), Weber (2011) and Tarullo (2011).



## 2 DEFINING SHADOW BANKING

A definition of shadow banking is not straightforward. One approach is to concentrate on the financial stability and regulatory concerns underpinning the regulation setters' interest in the topic. Firstly, the possible financial stability implications stemming from activities undertaken in the unregulated segment of the financial system and, secondly, possible regulatory arbitrage. The second concern may have been heightened by the stricter regulation implied by the forthcoming implementation of the Basel III rules on capital and liquidity.

First, from a financial stability perspective, maturity and/or liquidity transformation by the shadow banking system, which tends to rely on short-term uninsured funds, makes it susceptible to modern-type 'bank runs' and the related liquidity risks without the safety nets available to regulated banking systems. Such runs may have systemic risk implications since they may spill over to the regulated segment of the system:

- a) via contagion effects due to market dynamics (i.e. liquidity squeeze, sudden fall in specific asset prices possibly due to fire sales);
- b) via interlinkages to the extent that regulated banks or their subsidiaries take part in the process chain of shadow banking, or are interconnected in different ways.<sup>4</sup>

Shadow banking activities can also amplify procyclicality in the financial system by exacerbating the build-up of leverage and asset price bubbles due to the interconnectedness between the shadow banking system and the regulated banking system or via regulated banks' investment in financial products issued by shadow banking.

These various forms of interplay between the regulated banking system and the shadow banking system may result in substantial amplification of systemic risks in the regulated banking system. They entail contagion as well as catalyst effects for liquidity risks and solvency risks.

Second, regulatory arbitrage (i.e. the exploitation of differences in regulation, between sectors or countries or both) can endanger financial stability because of skewed incentives and the subsequent unlevel playing field. Furthermore, since the financial sector is internationally interlinked, imbalances can be transmitted across countries, sometimes very rapidly as the latest financial crisis has shown. The lack of a level playing field may give rise to arguments for less regulation that lead to a policymakers' race to the bottom (a kind of regulatory beggar-thy-neighbour policy), as was evident in some of the countries practising "hands-off" regulation before the crisis. For instance, under the Basel II framework, regulatory arbitrage was the main motive behind the setting-up of conduits, since the related guarantees were structured so as to reduce regulatory capital requirements for the parent bank.<sup>5</sup>

The new Basel III framework may create further incentives for banks to try to avoid higher risk weights and capital requirements through securitisation, or to avoid limitations to leverage by investing in non-bank financial institutions with high leverage to obtain a higher return on equity.

In view of these considerations, shadow banking in this paper refers to activities related to credit intermediation, liquidity and maturity transformation that take place outside the regulated banking system. This is also the working definition agreed by the FSB in its current work on this subject.<sup>6</sup>

4 Identified interconnections between shadow banks and the banking system include: (i) originating loans to be packaged into ABS; (ii) providing liquidity facilities to conduits; (iii) providing repo financing; (iv) issuing short-term paper for MMFs; (v) marketing their own MMFs to customers. See for instance UK FSA, 2011.

5 Acharya et al. (2012).

6 The FSB (2011) takes a two-step approach in defining the shadow banking system: a wider definition for "casting the net wide" ("the system of credit intermediation that involves entities and activities outside the regular banking system") and a narrower definition for evaluating regulatory options (focusing on those entities and activities raising systemic concerns owing to maturity/liquidity transformation and/or leverage and/or showing indications of regulatory arbitrage).

Credit intermediation can be defined broadly as any kind of lending activity where the saver does not lend directly to the borrower, but at least one intermediary is involved. This is usually a bank's core business. However, financial innovation has made it possible to break down credit intermediation into several steps that can be separated and carried out by different entities. Additionally, credit transformation can be achieved by dividing a portfolio of assets – like securitised loans – into tranches (subordination) with a different risk profile than the underlying individual portfolio assets. Securitisation facilitated the large-scale use of this process, which was instrumental to the growth of the shadow banking system.

Maturity transformation broadly relates to the use of short-term liabilities to fund investment in long-term assets. This often, but not necessarily, goes hand-in-hand with liquidity

transformation, i.e. investing in illiquid assets while acquiring funding through more liquid liabilities. For example, a financial institution may raise funding by issuing exchange-traded securities while investing in over-the-counter (OTC) derivatives of the same duration. Both liquidity and maturity transformation take place during the process of credit intermediation.

The quite broad definition proposed, which defines shadow banking by function/activities rather than entities, allows the monitoring of developments over time and may help in decreasing the scope for regulatory arbitrage. The financial institutions and segments of the financial sector included in this broad definition are finance companies, money market funds, some hedge funds, special-purpose vehicles and other vehicles that are involved in various activities related to securitisation.

#### Box 1

##### STATISTICAL SOURCES ON SHADOW BANKING

Macroeconomic and financial statistics can be used to derive information on shadow banking. This is not without difficulties as those statistics were in general not designed with the specific need of identifying shadow banking activities in mind. The classification of activities and aggregates of entities, for instance, is in such statistics generally based on economic criteria that do not always have enough granularity to identify different kinds of financial intermediation and risk exposures. Despite such drawbacks, they provide a methodologically sound and reliable way to approach the quantification of shadow banking.

Two sets of statistics, which are in part compiled by the ECB/Eurosystem, deserve particular attention.

Most of the shadow banking activities are covered indistinguishably in the quarterly euro area accounts (EAA) under the grouping other financial intermediaries (OFIs). The OFI sector comprises all financial institutions other than those included in the sectors monetary financial institutions (MFIs) and the insurance corporations and pension funds (ICPFs). The MFI<sup>1</sup> sector covers the regulated banking system and includes the central banks, credit institutions and MMFs. The definition of the OFI sector is therefore residual and not only covers institutions

<sup>1</sup> The MFI sector covers institutions that are entered on the MFI list maintained by the ECB, i.e. entities whose business is to receive deposits and/or close substitutes for deposits from entities other than MFIs and, for their own account (at least in economic terms), to grant credits and/or make investments in securities.

that may be regarded as being engaged in shadow banking, but also intermediaries for which such a view would be questionable, such as regulated investment funds. Conversely, it excludes intermediaries like MMFs, which are included in other sectors, but engage in activities that can be considered as shadow banking.

The monetary statistics is another relevant source of information. They offer comprehensive, high frequency data on money market funds as well as on balance sheets and flows of some institutions that are part of the OFI sector: investment funds (harmonised statistics available since end-2008) and financial vehicles engaged in securitisation (financial vehicle corporations (FVCs), statistics available since end-2009). Moreover, monetary statistics provide details on deposit and loans positions and flows of the MFI vis-à-vis the OFI sector. Monetary statistics are not entirely comparable to EAA data because they pursue different valuation criteria and methodological guidelines.

A number of initiatives are under way in both statistical areas that will improve the analysis of shadow banking activities, in particular to allow for (i) additional granularity in the sector breakdown within non-bank financial institutions to better pinpoint leverage and maturity transformation activities, (ii) more granular counterpart sector information to monitor relationships between banks and shadow banking, and (iii) more detailed maturity breakdowns, in particular on a residual maturity basis (in contrast to standard macro-economic statistics, including flow-of-funds data, that focus on original maturity).

The Eurosystem is heavily involved in these initiatives, which include the amendment of ECB legal acts in the statistical field such as the FVC regulation (ECB/2008/30)<sup>2</sup>, the MFS Guideline (ECB/2007/9)<sup>3</sup> or the MUFA Guideline (ECB/2002/7)<sup>4</sup> governing the transmissions of flow-of-funds data. The amended legal acts will cover a more granular breakdown by instrument and by financial institutions sector. The Eurosystem is also far advanced in developing a security-by-security database, the Centralised Securities Database (CSDB), which will endow statistics with further serviceability. In particular, this approach will facilitate the provision of details on residual maturity and of a whom-to-whom (w-t-w) breakdown of securities by combining CSDB data with security-by-security reporting in statistics on financial portfolios, which will be included in a separate securities holding statistics (SHS) database currently under development.

Finally, initiatives are under way to improve the granularity of relevant information related to OTC credit derivatives and international banking statistics from the Bank of International Settlements (BIS) that may help in disentangling shadow banking activities.

2 Regulation (EC) No 24/2009 of the ECB of 19 December 2008 concerning statistics on the assets and liabilities of financial vehicle corporations engaged in securitisation transactions, OJ L 15.

3 Guideline of the ECB of 1 August 2007 on monetary, financial institutions and markets statistics (recast), OJ L 341.

4 Guideline of the ECB of 21 November 2002 on the statistical reporting requirements of the ECB in the field of quarterly financial accounts, OJ L 334.

### 3 MAIN COMPONENTS OF SHADOW BANKING

The first step in assessing the importance of shadow banking in the euro area is to more precisely identify its main components. As stated above, the definition of shadow banking refers to activities related to credit intermediation and liquidity and maturity transformation. However, this definition relating to activities must be translated into the identification of specific entities or market segments for the purpose of assessing the statistical data available.

According to the relevant literature (mostly related to the United States), shadow banking mainly includes entities involved in securitisation, such as special vehicles and financial intermediaries, and, on the funding side, the repo markets and MMFs. Against this background, the following summarises some key findings on the main components of the shadow banking system in the euro-area including (i) securitisation activities; (ii) money market funds; (iii) the repo market and (iv) hedge funds.

#### 3.1 SECURITISATION IN THE EURO AREA

##### 3.1.1 SECURITISATION ACTIVITIES

Securitisation allows the credit intermediation process to be broken down and enhances maturity transformation (long-term assets

funded with short-term liabilities) and liquidity transformation (illiquid assets acquired through more liquid liabilities).

Several segments of the shadow banking system are involved in securitisation activities, from loan origination to wholesale funding. As regards the United States, in particular, such activities (see Table 1) may be described as follows. The pooling and structuring of loans into term asset-backed securities (ABSs) is conducted by broker-dealers' ABS syndicate desks. ABS warehousing is facilitated through trading books and is often funded through repurchase agreements (repo). The pooling and structuring of ABSs into collateralised debt obligations (CDOs) is also conducted by broker-dealers' ABS syndicate desks. ABS intermediation is performed by limited purpose finance companies, structured investment vehicles (SIVs), conduits and credit hedge funds, which are funded in a variety of ways including repo, asset backed commercial paper (ABCP), multi-term notes (MTNs), bonds. The funding of these activities and entities is raised in wholesale funding markets by funding providers such as regulated and unregulated money market intermediaries (e.g. MMFs).

In continental Europe, lending activity is rarely moved outside the regulated financial system, while this applies only to a lesser extent in the

Table 1 Securitisation: main features

(Features especially important for EU banks in bold yellow)

Activity	Funding	Entity
Asset Backed Security origination/ Asset Backed Security warehousing	<b>Asset Backed Commercial Paper (ABCP)</b> Asset Backed Securities (ABS) Repo	<b>Conduits</b> Special Purpose Vehicles (SPV) Broker-dealers
Asset Backed Security issuance/ Collateralised Debt Obligation (CDO) issuance	Commercial Paper (CP) Collateralised Debt Obligation (CDO) CDO <sup>2</sup>	Special Purpose Vehicles (SPV) Broker-dealers
Asset Backed Security Intermediation	<b>Asset Backed Commercial Paper (ABCP)</b> <b>Medium Term Note (MTN)</b> <b>Capital notes</b> Repo	<b>Structured Investment Vehicles</b> <b>Conduits</b> Hedge funds
Wholesale Funding	Repo Asset Backed Commercial Paper (ABCP)	Securities lenders Cash funds Money Market Funds (MMF)

Source: Pozsar et al., (2010), see pages 12 and 30.

United States and the United Kingdom. However, the original lender can sell his claims to another entity which may not be a regulated bank. Also, the bank itself or the acquirer of a portfolio of loans can use them to issue securities backed by the underlying assets, asset-backed commercial paper (ABCP) or ABSs. These securities are usually rated by credit rating agencies (CRAs) to make them more marketable to a wider pool of potential investors. This action represents a liquidity transformation if the underlying asset is less liquid than the securitised product, which is usually the case. Chart 1 describes some of these aspects in detail.

Depending on the underlying assets, a maturity transformation may be implied too. If, for example, a portfolio of mortgages (long term) is used to back an ABCP (short term), maturity transformation has taken place.

In a further step, ABSs – themselves a securitised product – were often used, in particular before the financial crisis, as underlying assets for CDOs. This made it possible to add tranches to a portfolio and create subordinated debt. In this credit transformation, different credit ratings were assigned to the tranches, and it was even possible for the senior tranches to have a higher rating than any of the underlying assets.

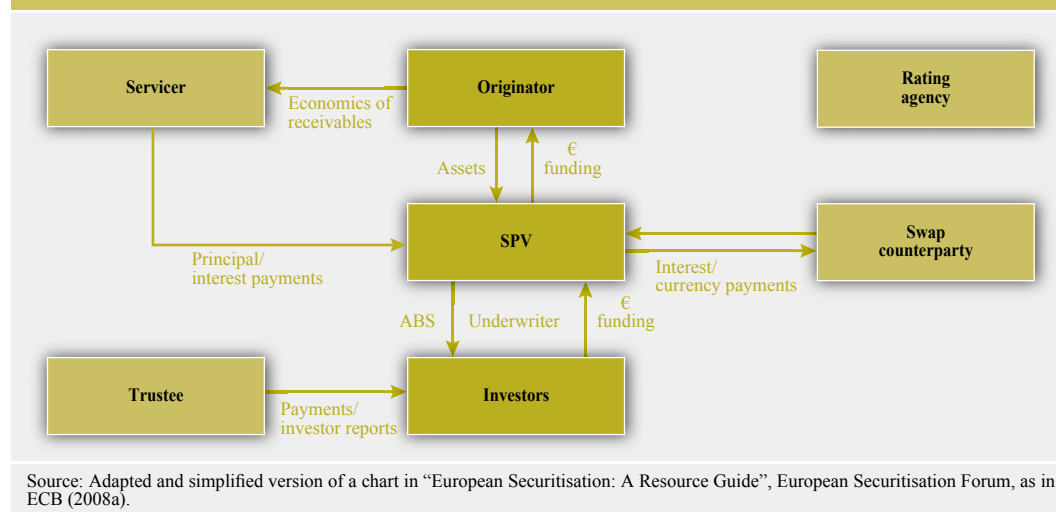
This subordination could take place several times in succession. The financial vehicle companies that worked with CDOs technically did not run a maturity or liquidity mismatch if their underlying assets were ABSs, but as soon as the ABS and ABCP markets seized up during the crisis, they faced the same problems as the entities directly involved in securitisation.

ABCP and ABSs are the most important forms of securitisation in Europe (over half of all securitised products are residential mortgage backed securities (RMBS)). ABSs also account for a large share of the assets held at the Eurosystem as collateral for the repo operations of liquidity provision.

A recent report by the Banking Supervision Committee (BSC) describes European securitisation markets.<sup>7</sup> Securitisation picked up significantly in Europe and in the euro area over recent years, spurred by positive developments in house prices and mortgage activity in several euro area countries. Chart 2 shows that overall issuance has continued in the euro area despite the crisis, albeit at lower levels. Originators in Europe are able to use eligible securitised products as collateral for Eurosystem credit

7 ECB (2011b).

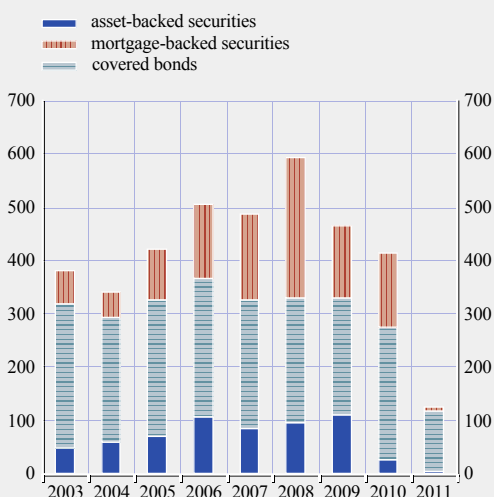
Chart 1 Transaction participants and functions in the creation of an ABS



Source: Adapted and simplified version of a chart in “European Securitisation: A Resource Guide”, European Securitisation Forum, as in ECB (2008a).

**Chart 2 Securitisation issuance in the euro area**

(EUR billions)



Source: Dealogic.

operations and indeed available evidence suggests that European banks have retained the majority of securitised products originated

by them in recent years on their balance sheets.<sup>8</sup> The data also suggest that securitisation issuance was smaller in volume in the euro area than in the United States before the crisis (e.g. € 462 billion compared with USD 1.7 trillion in the United States, around 5% and 12% of GDP respectively) and remains less developed.

Chart 3 depicts the developments in the US securitisation markets. Issuance in the United States had already fallen sharply in 2008, and in 2011 it remained at significantly lower levels compared to the average of the last few years.

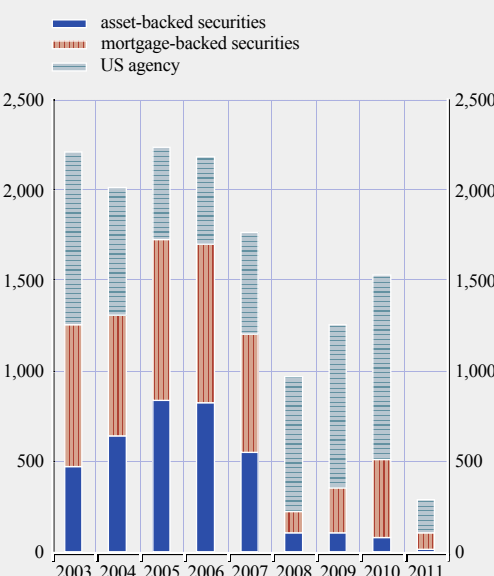
**3.1.2 FINANCIAL VEHICLES CORPORATIONS (FVCs) FOR SECURITISATION**

The new data on FVCs collected by the Eurosystem provide a detailed description of the securitisation activity in euro area countries. Chart 4 suggests that the large majority of assets

<sup>8</sup> See Altunbas et al. (2010) and ECB (2011b).

**Chart 3 Securitisation issuance in the United States**

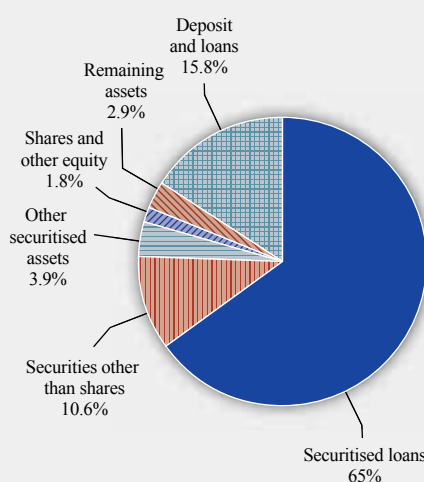
(EUR billions)



Source: Dealogic.  
Note: US agency includes government sponsored agencies.

**Chart 4 Assets of euro area FVCs**

(data for end-2010; percentage shares)



Source: ECB.

underlying ABSs are constituted by loans (65%), followed by deposits (16%) and securities other than shares (11%). Most of these assets are financed by issuing debt securities that are sold to investors (see Chart 5).

Loans are originated mainly by banks and are granted mostly to the household sector (72% of the total) while only 24% of the securitised loans represent borrowing by the corporate sector. Given that consumer loans account for only around 10% of the total loans outstanding in the euro area, the bulk of securitised loans are home mortgages. This evidence is consistent with the argument that securitisation supported credit growth, especially for mortgage loans, before the financial crisis and ultimately contributed to enhancing systemic risk.<sup>9</sup>

There is no harmonised oversight of FVCs in Europe. According to the 2007 report by the European Financial Markets Lawyers Group (EFMLG), the majority of the 15 EU countries surveyed did not count them as credit institutions. Supervisory rules differ widely across EU countries, with four countries

(Finland, Italy, Portugal, Sweden) having a supervisory authority for FVCs, five countries (Belgium, Ireland, Luxembourg, Spain, United Kingdom) supervising them only if securities were issued to the public and five (Austria, Denmark, France, Germany, Greece) not having any supervisory authority for FVCs.<sup>10</sup>

The distribution of FVCs assets by country is consistent with the picture arising from flow-of-funds data and in particular from information on OFIs. Ireland and the Netherlands are relatively small countries where the FVCs hold large values of securitised assets. Spain is the second largest holder (see Chart 6), resulting from the highly dynamic housing markets in Spain over the last few years and the related securitisation of loans.

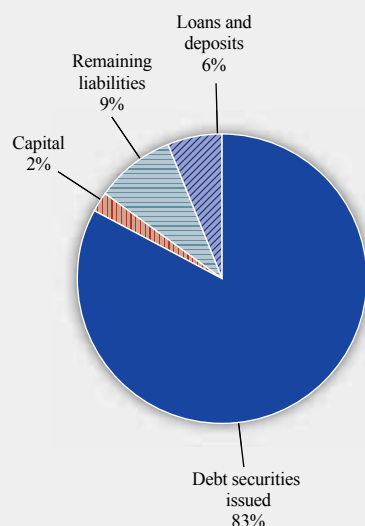
Finally, Chart 7 shows that derecognition of loans (i.e. the process by which banks can effectively remove securitised loans from their balance sheets and ultimately decrease the

<sup>9</sup> Empirical evidence is provided in Maddaloni and Peydró (2011) and in Altunbas et al. (2009).

<sup>10</sup> EFMLG Working group on securitisation (2007).

**Chart 5 Liabilities of euro area FVCs**

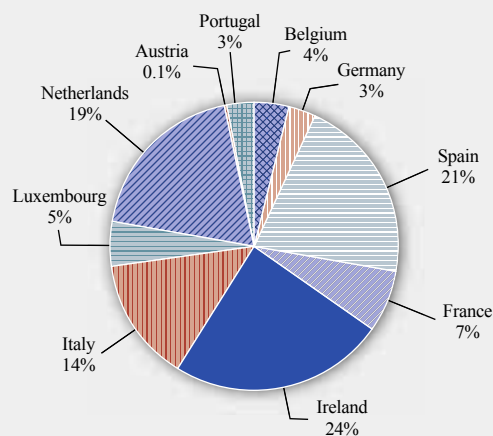
(data for end-2010; percentage shares)



Source: ECB.

**Chart 6 Total assets of euro area FVCs by country**

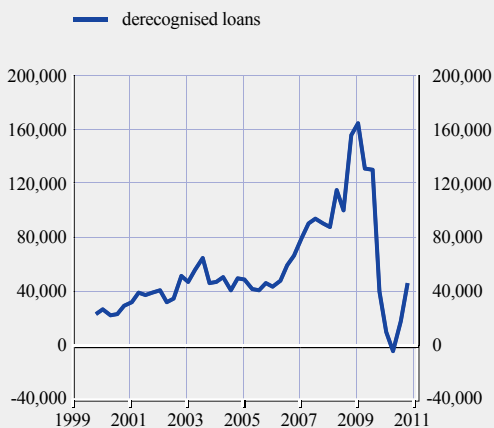
(data for end-2010; percentage shares)



Source: ECB.

Chart 7 Derecognised loans

(EUR millions; four-quarter sum)

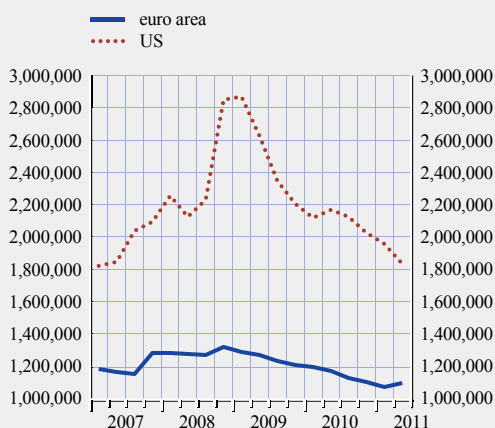


Source: ECB.

Note: Includes loan portfolio shifts in the course of bank restructuring.

Chart 8 Euro area and US MMFs total balance sheets

(EUR millions)



Sources: ECB, Federal Reserve Board.

capital that they are required to hold against these assets) was relatively high before the financial crisis and afterwards dropped to zero, reflecting the fact that most of the securitised assets that were originated in 2009 were retained on banks' balance sheets and/or used as collateral in Eurosystem liquidity operations.

### 3.2 MONEY MARKET FUNDS

MMFs flourished in the United States as an alternative to bank deposits to circumvent regulatory caps on bank interest rates. At end-2008, assets under management by MMFs amounted to USD 3.8 trillion, USD 2.5 trillion of which was accounted for by institutional investors and the remainder by retail funds.<sup>11</sup> As MMFs invest in short-term debt, they were an important source of funding for the shadow banking sector through purchases of certificates of deposits (CDs) and commercial paper (CP) and through repo transactions. How deeply MMFs were involved with the shadow banking sector and how interconnected with the rest of the financial sector became apparent when a US MMF, the Reserve Primary Fund, "broke the buck" on 16 September 2008 (i.e. its net asset value dropped below USD 1) after writing down assets following the Lehman

Brothers bankruptcy, triggering an investor run on MMFs. The US MMFs are structured so as to maintain a stable net asset value (NAV) of USD 1 through the support of fund sponsors.<sup>12</sup> Although this rule does not exist in many EU countries, doubts about the quality of the assets caused the crisis to spread to funds outside the United States, which were presumably less exposed to ABSs.

The importance of MMFs in the euro area can be derived from monetary statistics. By the second quarter of 2011, the total balance sheet of euro area MMFs was around €1.1 trillion. Investments managed by euro area MMFs have been rather constant across time, with a slight decline as from the start of 2009 (see Chart 8). While in the United States the size of MMFs continues to be larger, the total value of assets declined significantly from the peaks reached in 2008. In addition, MMFs in the euro area are a somewhat heterogeneous group, as regulations defining the investment strategy, such as whether the funds can invest in certain kinds of commercial paper or floating rate notes, has varied from country to country.<sup>13</sup>

11 BIS (2009), p. 68.

12 BIS (2009), p. 68.

13 In 2010 CESR published guidelines on Common Definition of European Money Market Funds (see also footnote 2).



MMFs' balance sheets represent only 4% of the balance sheets of Monetary Financial Institutions (MFIs) in the euro area, with credit institutions (banks) accounting for the remaining 96%. Accordingly, MMFs do not seem to play a sizeable role at aggregated level in the euro area, at least compared with the United States. However, the relevance of their intermediation activity varies across countries. MMFs represent 27% of the total balance sheet of Luxembourg's MFIs and 24% of Ireland's.

The main investor group are institutional investors. The regulations governing the investment strategy of MMFs, such as whether they may invest in certain kinds of commercial paper or floating rate notes, vary from country to country. The European MMFs seem to be more closely tied to banks, therefore providing a powerful link between the shadow and the regulated banking sector.<sup>14</sup> There is also some evidence that US MMFs provide sizeable funding to European banks, which may affect the resilience of the EU banking system to external funding shocks.<sup>15</sup>

### 3.3 THE REPO MARKET

Repos (i.e. sale and repurchase agreements<sup>16</sup>), are similar to secured loans, albeit with the important difference that the underlying assets formally do not just serve as collateral but legally change ownership. This implies better protection for the cash lender in case of the cash borrower's default. Repos are thus important fund-raising instruments complementing alternative market tools such as unsecured loans or the issuance of short-term securities. Given the dominance of very short maturities, with around 48% of outstanding repos having a maturity of up to one month,<sup>17</sup> repos are an important part of the European money market.

There are two general types of repo contracts, distinguished by their underlying asset. In general collateral (GC) repos, the collateral is a security chosen among a basket of securities, e.g. bonds issued by euro area central governments or corporates. These contracts are

typically cash-driven, hence they are motivated by the funding or liquidity needs of the cash lender in the repo transaction. By contrast, special repos focus on a specific asset demanded as collateral. They are securities-driven and may be part of short-selling strategies. Unlike GC repos, they do not primarily serve funding or liquidity purposes. In the context of shadow banking and systemic stability, the focus should be on funding and liquidity-related repos as they particularly reflect the maturity and liquidity transformation functions. Indeed, during the financial crisis, the share of GC repos increased relative to special repos, indicating some replacements of funding activities in the unsecured money markets.<sup>18</sup>

The repo market is a key source of financing for the US shadow banking sector.<sup>19</sup> Data available, collected by the Federal Reserve System for primary dealer banks, reported repo financing for USD 4.5 trillion (€ 2.9 trillion) in March 2008, but its overall size was estimated to be more than USD 10 trillion (€ 6.4 trillion)<sup>20</sup>. According to more recent estimates, the repo market amounted to at least USD 12 trillion (USD 8.8 trillion) in early 2010.<sup>21</sup> There are no official data on the overall size of the repo market in the euro area; nonetheless, according to market information, the total value of outstanding repos in the EU in December 2011 was €6.2 trillion (referring to lending plus borrowing positions).<sup>22</sup>

14 Bengtsson (2010).

15 See Bank of England, (2011). The dependence of the EU banking sector on US dollar-denominated funding from MMFs was also emphasised by the public recommendation published in January 2012 by the European Systemic Risk Board (ESRB).

16 Repos involve an agreement between a cash borrower and a cash lender on the temporary sale of assets for a specified period of time and a certain amount of cash, with interest (repo rate) paid over the duration of the cash holding by the cash borrower ("repo seller") to the cash lender ("repo buyer").

17 See ICMA (2012).

18 See ECB (2010), p. 74.

19 Note that MMFs are usually on the cash lending side in the repo market, as they use repo as a (safer) investment alternative to term deposits with credit institutions.

20 BIS (2008), p. 37.

21 Gorton (2010a). For further details on the approximations of US repo market volumes see Gorton (2010b).

22 See ICMA (2012).

In mid-2011, average daily repo turnover on euro area money markets was around €480 billion (referring to both secured lending and borrowing transactions). Having decreased substantially in 2008 and 2009, overall average daily turnover in mid-2011 was above pre-crisis levels as reported in mid-2007, albeit with a somewhat stronger overnight segment, an increasing turnover in maturities longer than one month and up to three months, and less turnover for maturities longer than one year,<sup>23</sup> reflecting in part a shift from unsecured to secured money markets.

As regards the counterparties, most of the repo transactions in the euro area take place in the interbank markets, albeit precise data on the counterparty structure are difficult to obtain. The euro area repo market may therefore differ from that in the United States, where, before the crisis, investment banks were among the most active players (in part because they did not have access to central banking liquidity).

An increasing share of repos is cleared via central counterparty clearing houses (CCPs) with a share of 32% of outstanding amounts in December 2011, up from 22% in June 2010,<sup>24</sup> though this amount varies greatly between European Member States. CCPs thus increasingly interpose themselves between the original counterparties in repo market transactions.

In Europe, government bonds accounted for 79% of the EU-originated collateral used in repo transactions (December 2011).<sup>25</sup> Indeed, typically very highly-rated and liquid collateral is preferred for repos, increasingly so in the course of the financial crisis. This is supported by evidence from the tri-party repo market, which generally involves a significantly higher share of more illiquid assets due to the (operational) role of the tri-party agent, which greatly facilitates collateral management and optimisation of collateral selection and administration. In this market segment too, the share of government bonds in pledged collateral increased markedly.

The share of structured products used as collateral, which are of particular interest in the context of shadow banking, decreased substantially due to the flight to quality during the financial crisis.<sup>26</sup>

### 3.4 HEDGE FUNDS

The term “hedge fund” describes a wide variety of entities and business models. According to data available at the ECB/Eurosystem, euro area hedge funds in general appear to have quite a limited role (at the end of 2010, assets held by euro area hedge funds slightly exceeded €100 billion<sup>27</sup>). Whether hedge funds are part of the shadow banking system is debatable. However, hedge funds were part of the complex network of financial intermediaries that was instrumental to the growth of shadow banking, either through their involvement in securitisation activities or in the repo market.<sup>28</sup> What are known as credit hedge funds were at least partially involved, since their strategies included, for example, investing in tranching OTC-traded securities and exploiting possible arbitrage opportunities in the mispricing of (synthetic) CDOs. More granular data<sup>29</sup> as well as more qualitative information on the precise activities conducted by hedge funds would be needed for a more in-depth analysis.

23 The comparison over time is based on a sub-sample of surveyed banks, which have contributed to the survey every year since 2002.

24 See ICMA (2012, 2011).

25 See ICMA (2012).

26 The shift to highly liquid and top-rated collateral is likewise reflected in the differences in haircuts on collateral.

27 These data exclude hedge funds located in non-euro area countries (primarily in the UK) that presumably carry out a large share of their activities in the euro area.

28 UK FSA (2011), pp. 48-50.

29 The Alternative Investment Fund Manager Directive (AIFMD), when implemented, will improve data reporting requirements (see Annex I).

## 4 ASSESSING “SHADOW BANKING” IN THE EURO AREA: A SNAPSHOT

Evaluating the size and relevance of the shadow banking system and its interlinkages with the wider economy is not a straightforward exercise. Unfortunately, a quantitative assessment of shadow banking in its various dimensions can only be based on data sources that have not been designed for that specific purpose and (see Box 1 above). In spite of that difficulty, in this section we make use of the information available to provide an answer, if only partial and preliminary, to a number of relevant questions:

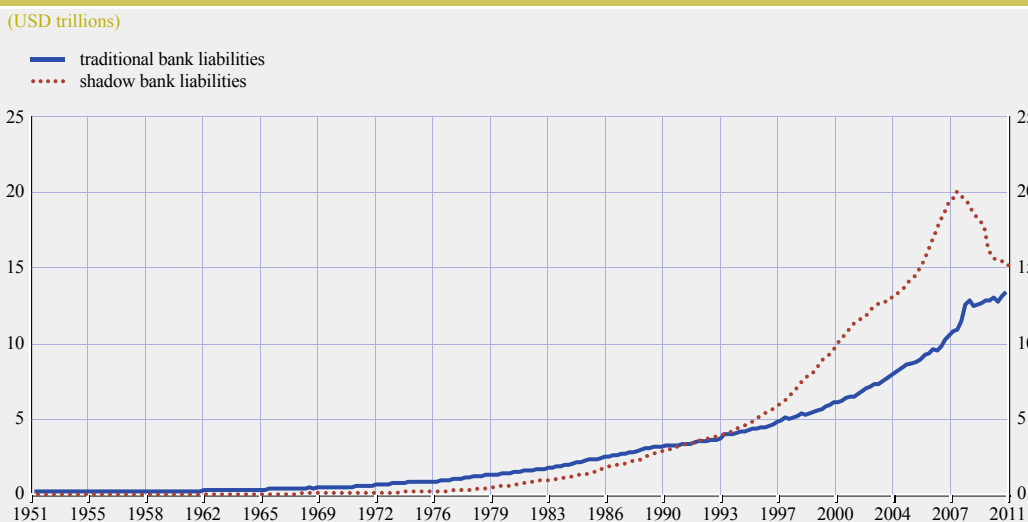
- (i) What is the size of shadow banking in the euro area?
- (ii) What are its interlinkages with the regulated banking system?
- (iii) What is its distribution across countries?
- (iv) What characterises shadow banking in the euro area regarding the key elements of maturity transformation and leverage behaviour?

### 4.1 EVALUATING THE SIZE OF SHADOW BANKING IN THE EURO AREA

Before analysing the euro area, it is worth looking at the United States, where rich flow-of-funds data enable a better identification of shadow banking activities. This can also serve as a yardstick for judging the importance of shadow banking in the euro area.

According to the definition of shadow banking in the United States followed by Pozsar et al. (2010), the size of the financial assets/liabilities of the US shadow banking system was nearly USD 20 trillion in March 2008 and USD 15 trillion in the second quarter of 2011, larger than the traditional banking system. Since 1995, the assets/liabilities of the shadow banking sector have surpassed the liabilities of the traditional banking sector, and they continued to increase significantly up until the financial crisis, when they dropped remarkably (see Chart 9). It should be noted that a significant contribution to shadow banking in the US arises from the activities of the government-sponsored enterprises (GSEs), primarily involved in the primary and secondary mortgage market, which have stepped up their activities significantly since 1995.

Chart 9 Shadow bank liabilities versus traditional bank liabilities in the US



Source: Flow of Funds Accounts of the United States compiled on the basis of the definitions from Pozsar et al., (2010).

Chart 10 Assets of banks and other intermediaries in the euro area



Sources: EAA (ECB and Eurostat) and monetary statistics (ECB).  
 Notes: Assets of “banks” are estimated as the assets of the MFI sector (EAA) minus Eurosystem assets (monetary statistics) and money market fund shares issued by MFIs (EAA). Assets of “other intermediaries” are equal to EAA OFIs assets plus money market fund shares issued by MFIs minus mutual fund shares issued by investment funds other than MMFs (EAA).

In the euro area, the combination of the data sources mentioned in Box 1 enables us to construct a proxy for shadow banking activities, although not one that is fully comparable with the measure provided by Pozsar et al. (2010) for the United States.<sup>30</sup> Chart 10 shows the assets of the groupings “banks” and “other intermediaries”, our shadow banking aggregate. “Banks” correspond to credit institutions as defined in monetary statistics, while “other intermediaries” is a sector comprising the OFI sector plus MMFs minus investment funds other than MMFs.

Assets of “other intermediaries” grew at sustained rates in the run-up to the crisis, in the period 2005-07 (at an annual growth rate of up to 20%), suggesting that a process of substitution of bank intermediation (otherwise also growing robustly, by up to close to 13%) by non-bank intermediation was taking place. Starting at the end of 2007, intermediation by other intermediaries declined sharply in the context of general deleveraging triggered by the financial crisis, which particularly affected many highly

leveraged institutions in the OFI sector. Bank intermediation, albeit also declining sharply and even reaching negative growth rates (i.e. a net annual decrease in assets intermediated), presented, in relative terms, a lower decline.

Table 2 presents a more detailed structural view of the assets of financial institutions in the euro area, following a sector taxonomy that covers the aggregates “banks” and “other intermediaries” presented in Chart 10. The table also shows the

<sup>30</sup> This is due to data availability differences. One important difference is that the information from the US Flow of Funds allows for a more granular breakdown of the liabilities of the various institutional sectors, enabling the construction of a shadow banking aggregate covering only those liabilities that are closer substitutes for traditional bank liabilities (in particular open market paper, repo and securities loaned). Irrespective of the appropriateness of those specific liabilities for the euro area, the data at the disposal of the ECB/Eurosystem do not allow for such kind of detailed breakdowns (see box 1). Therefore, for the euro area, the shadow banking aggregate proposed here, referred to as “other intermediaries”, is constructed from the total assets/liabilities of the institutional sector that cover most of, *but not only and not all*, the institutions engaged in shadow banking activities. As a result, certain activities and institutions not directly related to shadow banking might also be included in the aggregate. Conversely, other activities that could be considered as shadow banking might be excluded.

**Table 2 Share in total financial institutions assets in the euro area**

(EUR trillions and percentages)

	2007Q2		2011Q2	
	EUR trillions	% total	EUR trillions	% total
<b>Banks</b>	<b>25.6</b>	<b>54.0</b>	<b>28.0</b>	<b>51.5</b>
<b>Other intermediaries</b>	<b>8.5</b>	<b>17.9</b>	<b>10.8</b>	<b>19.9</b>
<i>Money market funds (MMFs)</i>	<i>1.2</i>	<i>2.5</i>	<i>1.1</i>	<i>2.0</i>
<i>Financial vehicle corporations</i>	<i>-</i>	<i>-</i>	<i>2.2</i>	<i>4.1</i>
<i>Other miscellaneous intermediaries<sup>1)</sup></i>	<i>7.3</i>	<i>15.4</i>	<i>7.6</i>	<i>13.9</i>
Eurosystem	1.6	3.5	3.1	5.8
Investment funds other than MMFs	5.5	11.6	5.6	10.3
<i>of which, hedge funds</i>	<i>-</i>	<i>-</i>	<i>0.1</i>	<i>0.2</i>
Insurance corporations and pension funds	6.1	13.0	6.8	12.6
<b>TOTAL ASSETS OF FINANCIAL INSTITUTIONS</b>	<b>47.3</b>	<b>100.0</b>	<b>54.4</b>	<b>100.0</b>
<i>Memo: Repo market outstanding value (lending and borrowing) in the EU</i>	<i>6.8</i>		<i>6.1</i>	

Source: EAA (ECB and Eurostat) and monetary statistics (ECB). For memorandum item on repos, ICMA European repo market survey (numbers 13 – conducted in June 2007, published in September 2007 – and 22 – conducted in December 2011 and published in January 2012).

1) Venture capital companies, leasing and factoring corporations, securities dealers, financial holding companies, financial auxiliaries and other miscellaneous financial corporation.

financial institutions that are not included in either of those two groupings but anyway carry out intermediation activities that can substitute or complement banking activities, like Insurance Corporations and Pension Funds (ICPF), for which data are available via EAA. As indicated, the large majority of assets are held by banks. The most important institutions in the OFI sector are investment funds, which, except for hedge funds, are regulated entities which should not be considered part of the shadow banking system and are therefore excluded from “other intermediaries”.

Due to the lack of a sufficiently long time series, hedge funds are excluded from the non-banking aggregate “other intermediaries”. However, the available data are sufficient to provide a structural view of the importance of such institutions. In the second quarter of 2011, assets held by euro area hedge funds amounted to €0.1 trillion, 2% of total assets of investment funds (their inclusion in the “other intermediaries” aggregate would therefore increase its share in the total assets of financial institutions only by 0.2 percentage points). However, it must be taken into account that many hedge funds engaging in business with euro area residents are actually located outside the euro area, and are therefore not covered by EAA or monetary statistics.<sup>31</sup>

Therefore, as a preliminary figure, assets held by shadow banking-related sectors in the euro area amounted to €10.8 trillion in the second quarter of 2011. In comparison to the United States, where the size of the shadow banking system was 53% of the total of banks and shadow banks in the second quarter of 2011,<sup>32</sup> the overall size of shadow banking in the euro area was only 28% of the total. Its key components seem to be relatively stable over time. In contrast to the United States, banks continue to be the main financial intermediaries in the euro area, where they intermediate more than three times the assets intermediated by the shadow banking sector.

It is worth noting that, in the second quarter of 2011, almost 70% of the assets of the “other intermediaries” grouping (€7.6 trillion) were held by miscellaneous financial institutions for which high frequency information is not available (in monetary statistics). A stock-taking exercise carried out by the European System of Central Banks (ESCB) in 2009 revealed that

31 Hedge funds located outside the euro area are not covered in the EAA or the monetary and financial statistics even if they belong to a group having its headquarters in the euro area, as the national accounts “residency criteria” is strictly applied in such statistics.

32 The peak was reached at the end of 2008 when shadow banking represented 68% of the total banking system (regulated and shadow).

around 19% of the residual “other miscellaneous intermediaries” correspond to financial holding companies, captive institutions (i.e. those providing financial services to a limited group of companies) and money lenders. Moreover, 15% is constituted by non-deposit taking institutions engaging in lending (factoring, leasing and other forms) and 10% by securities and derivatives dealers. A remaining 52% is made up of unidentified miscellaneous financial institutions. An important part of the euro area financial sector remains therefore relatively unexplored by official statistics.

#### 4.2 INTERCONNECTIONS OF OFIS WITH THE REGULATED BANKING SYSTEM

In order to identify the possible systemic relevance of shadow banking, it is important to understand the interconnections with the regulated banking system. To this end, Chart 11 presents intra-financial institutions’ deposits and loans.<sup>33</sup> It should be noted that Charts 11(a) and 11(b) provide only a partial, downward-

biased estimate of intra-financial institutions linkages as they display only deposits and loans whereas debt securities and equity links are not covered.<sup>34</sup>

Intra-financial institutions’ deposits and loans increased from around 12% of the total deposits and loans of MFIs (including banks and MMFs) and OFIs at the beginning of 2000 to more than 23% in the second quarter of 2011 (see Chart 11(a)). Intra-financial institutions’ activities grew robustly between 2005 and 2008,

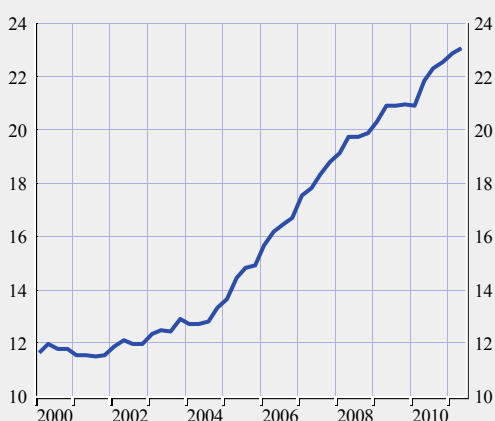
<sup>33</sup> See Turner (2011), p. 11.

<sup>34</sup> The chart reports deposits and loans, for which ECB/Eurosystem data provide the necessary whom-to-whom (w-t-w) detail, i.e. counterpart sector information. Intra-bank positions are not included as developments in the interbank market would heavily distort the picture (which in principle intends to portray non-intra-bank intermediation only). Therefore, only positions of MFIs vis-à-vis OFIs and intra-OFIs positions are covered. Contrarily to previous charts investment funds other than money market funds are included within the OFI sector (due to statistical difficulties to singling them out to w-t-w data for the whole period depicted). Note that MMFs are included together with banks in the MFI sector. Again, lack of a sufficiently long time series prevents a rearrangement of the classification of these institutions with the OFI sector.

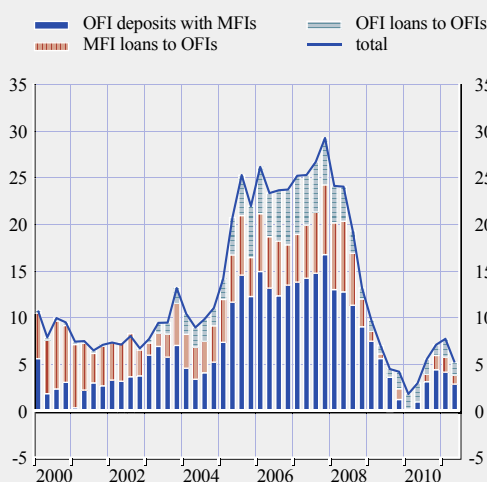
Chart 11 Intra-financial institutions’ assets/liabilities: deposits and loans between MFIs (banks MMFs) and OFIs

(percentages)

a) Share of total intra financial institutions deposits and loans in the total deposits and loans of MFIs and OFIs



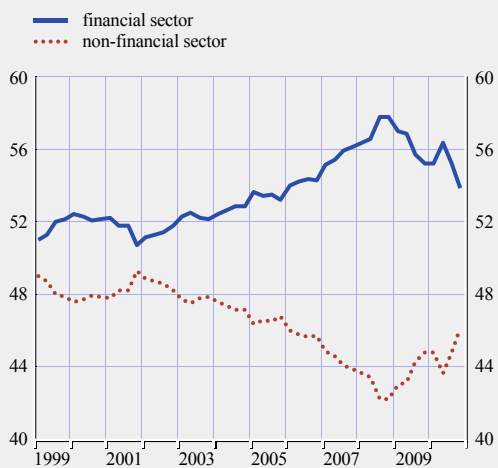
b) Annual growth rate and contributions to annual growth rates



Source: EAA (ECB and Eurostat).  
 Note: Excluding interbank deposits.

**Chart 12 Bank deposits from other euro area residents**

(percentages of total deposits of residents excluding general government)



Source: ECB monetary statistics.

when growth rates began to slide sharply until the end of 2009 and recovered slightly during 2010. Securitisation activity that translated into OFI deposits with MFIs was the main contributor to this dynamic (see Chart 11(b)).

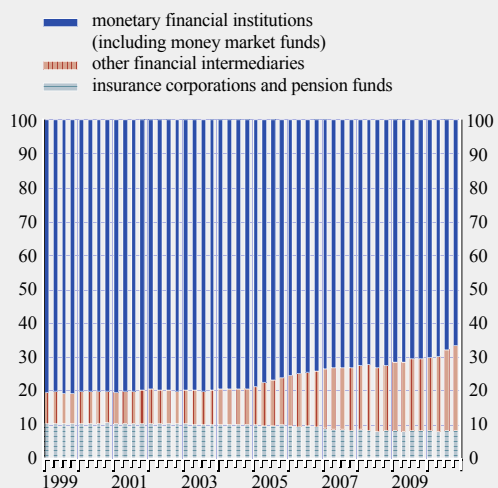
This also indicates that significant share of financing of banks comes from parts of the financial sector that are not regulated as banks and/or are entirely unregulated. Since the beginning of the Monetary Union in 1992, deposits in euro area banks from the financial sector have increased relative to the deposits from the non-financial sector. In particular, deposits from the household sector have declined steadily (see Chart 12<sup>35</sup>).

While deposits from MFIs constitute the bulk of deposits from the financial sector (around 40%), the OFIs' share has been increasing steadily since 2005 (see Chart 13). Moreover, short-term financing is prominent in OFI financing. Around 30% of the deposits from OFIs are overnight and with maturities of less than one year; around 16% is constituted by repos (collateralised but typically short-term), see Chart 14. Presumably these figures are also downward biased, because a significant amount of repo transactions is not included in OFIs statistics.

<sup>35</sup> Chart 12 and 13 include also deposits of ICPFs at credit institutions.

**Chart 13 Bank deposits vis-à-vis euro area financial intermediaries**

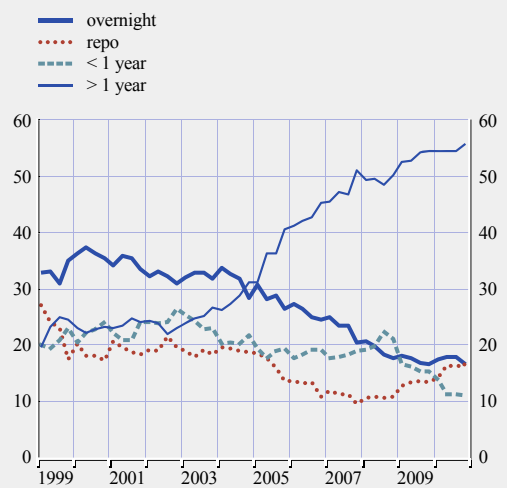
(percentages of total deposits of euro area financial intermediaries)



Source: ECB monetary statistics.

**Chart 14 OFI deposits in banks by instrument**

(percentage)

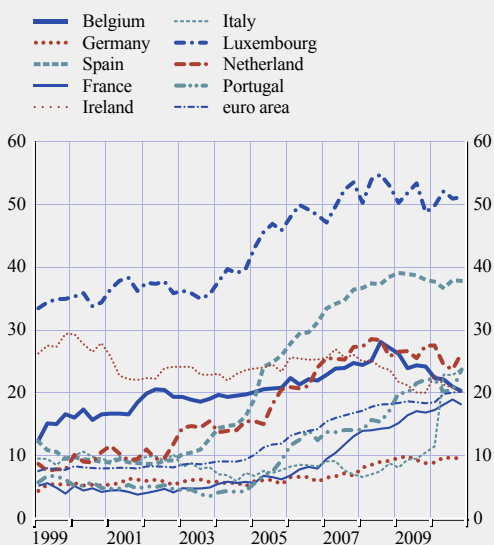


Source: ECB monetary statistics.

Note: OFIs here include CCPs and thus also interbank repos transacted via CCPs.

Chart 15 Deposits from OFIs

(as percentage of deposits from non-MFIs)



Source: ECB monetary statistics.

Note: OFIs here include CCPs and thus also interbank repos transacted via CCPs.

The importance of OFI financing is different across countries. Around half of the deposits from non-MFIs in banks resident in Luxembourg are from OFIs (not including money market funds and non-euro area intermediaries). In Ireland and in Belgium this percentage is between 20% and 30%, but did not change much over the years. Notably in the Netherlands and in Spain, by contrast, there was a significant increase, most likely due to securitisation activity (see Chart 15).

In conclusion, as regards the interconnection between the shadow banking system and the regulated banking system, the indicators used show that the interlinkages between the financial sector, and in particular between the “bank regulated” institutions and other financial intermediaries, have increased considerably over the last decade, presumably increasing the risk of contagion through transmission of shocks across institutions. Euro area banks rely more on funding from the financial sector (including other banks) than in the past. The increase is

due to financing from the OFI sector, which includes shadow banking entities. This funding is mainly short-term and therefore more susceptible to runs and to the drying-up of liquidity. Finally, important differences exist across euro area countries. While some of these features are structural, others were particularly heightened during the years before the crisis, resulting from an increase in activities related to shadow banking (primarily securitisation).

#### 4.3 SIZE OF SHADOW BANKING IN EURO AREA COUNTRIES

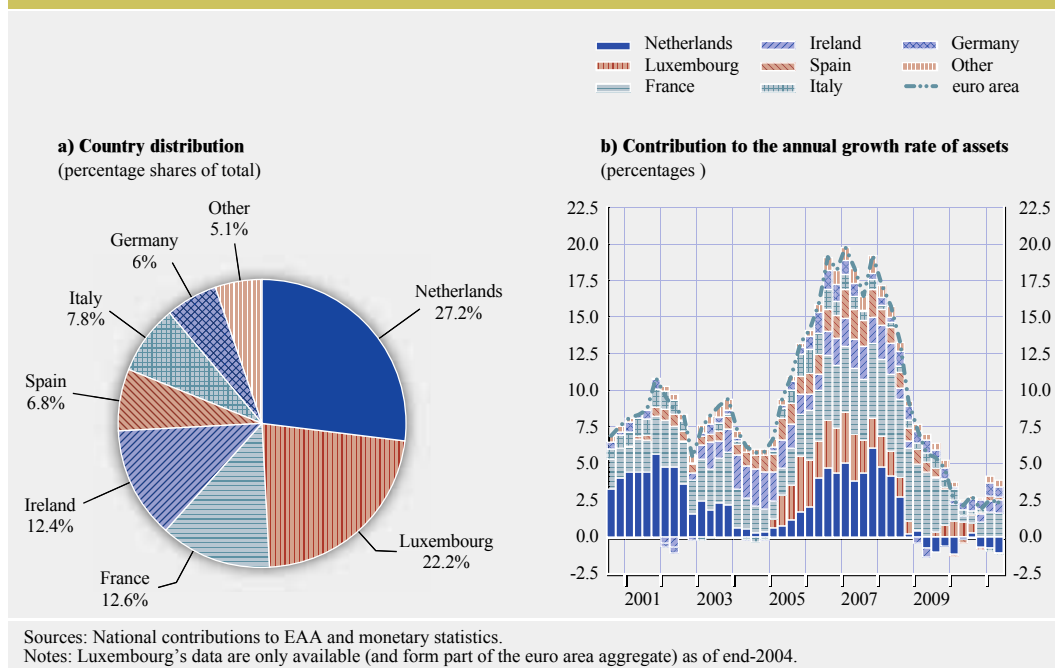
Euro area aggregates hide important differences across countries. Chart 16 presents the distribution across countries of the aggregate assets of the “other intermediaries” grouping (as defined for Chart 10 above). In relation to the size of the economy, the grouping is very important in Luxembourg, Ireland and the Netherlands. In France, its relatively high weight in the aggregate is due to the importance of securities and derivative dealers in that country (see Chart 16(a)). It must be noted, however, that the data for a given country may include financial vehicles that are used to channel financial instruments issued by financial institutions with headquarters in other euro area countries.

Chart 16(b) presents a view of the contributions to the dynamics of non-bank intermediation by country. No large shift in the residency composition has taken place since the turn of the century, with the big players, Ireland, Luxembourg and the Netherlands alike, driving the dynamics of the two credit cycles present in the data. Similarly, the activity of the French institutions is roughly stable relative to the cycle.

In the recent quarters, however, a certain substitution towards residency in Luxembourg and Ireland seems to be taking place, with entities resident in those countries having supported most of the still subdued growth since mid-2009. This might be due to the growing



Chart 16 Total assets of other intermediaries by country



relative weight of retained securitisations, i.e. securitisations through financial vehicles located in Luxembourg fully subscribed by the originator aimed at serving as collateral in ECB refinancing operations.

#### 4.4 BANKING ACTIVITY OF THE SHADOW BANKING SYSTEM

As mentioned above, shadow banking refers to activities related to credit intermediation and liquidity and maturity transformation that take place outside the regulated banking system. This section looks in detail into these elements.

##### 4.4.1 MATURITY TRANSFORMATION

Maturity transformation is one of the defining features of the banking industry. Excessive maturity mismatches can act as a major amplification mechanism in situations of stress and thereby foster systemic risks. This can be particularly the case if maturity transformation takes place outside the regulated system, in institutions that are not subject to the same stringent capital and liquidity requirements as those in the regulated system.

Unfortunately, the EAA, and to a great extent the monetary statistics, are not designed to provide an accurate picture on maturity mismatches. First, available breakdowns from these sources refer to maturity at inception, rather than to residual maturity, and so do not properly show current balance-sheet maturity vulnerabilities. Second, not all financial instruments are broken down by maturities, so that implying that the analysis must either be incomplete or based on assumptions on the maturity structure of sizeable parts of the balance sheet. Particularly relevant is the lack of a maturity breakdown of deposits in the EAA, which at least can be partially fixed by using monetary statistics data for MFIs (but not for OFIs). Finally, maturity breakdowns are not always of the best quality in the underlying primary statistics used for the EAA, and they are often subject to inconsistencies across them.

Despite these difficulties, Chart 17 provides a picture of the maturity mismatches in the MFI and OFI sectors (on the basis of original maturity only, and using certain assumptions on the maturity of those instruments for which no

Chart 17 MFI and OFI balance sheet. Maturity structure



Source: ECB.  
 Notes: Blue signifies long-term assets/liabilities and reddish brown signifies short-term assets/liabilities. Maturity mismatch is present if the blue/reddish brown ratio for assets is different from liabilities. Flow-of-funds data only captures initial maturity, and not residual maturity. Short-term assets/liabilities include currency, all deposits, short-term debt securities, short-term loans, financial derivatives, quoted shares, mutual fund shares and other accounts receivable/payable; all other financial instruments are included in long-term assets/liabilities.

maturity breakdowns are available, notably the deposits of OFIs)<sup>36</sup>.

MFIs run a large maturity mismatch, as is to be expected given their function in credit intermediation. Most of their assets are long-term debt securities and loans. Unsurprisingly, their largest liabilities are M3 components, including short-term and liquid deposits.

When comparing the maturity mismatches both before the crisis (in the third quarter of 2006) and the cut-off date for this paper (in the second quarter of 2011) it emerges that the sizeable maturity mismatch run by MFIs has increased, while in the case of the OFIs, the maturity mismatch has decreased compared to the pre-crisis period, suggesting a decline in bank-like activities carried out by that sector (analogous to that seen in the US).

#### 4.4.2 LEVERAGE

A second trait of financial intermediation activities is high levels of leverage. As for

maturity transformation, high leverage is a powerful amplification mechanism in stress situations and therefore a potential source of systemic risk that needs to be monitored. Its presence outside the regulated banking sector is of concern to policymakers and regulators.

Chart 18 shows the leverage ratio of the two groupings, banks and other intermediaries. Leverage is defined here as the ratio of debt (liabilities other than equity, and including money market fund shares) to financial assets.<sup>37</sup> The level of the ratio so defined is affected by changes in debt relative to assets, driven by “active” accumulation of liabilities by the agents, but also by mere changes in the value of assets via asset prices. For some analytical purposes, however, it is of interest to distinguish between the two sources of leverage. The headline leverage ratio (including price effects), is presented in Chart 18(a), whereas, the “active” leverage ratio, or “notional” leverage ratio, which excludes price effects (compiled as the simple accumulation of transactions on an initial stock – at the first quarter of 1999 – excluding price effects) is shown in Chart 18(b).

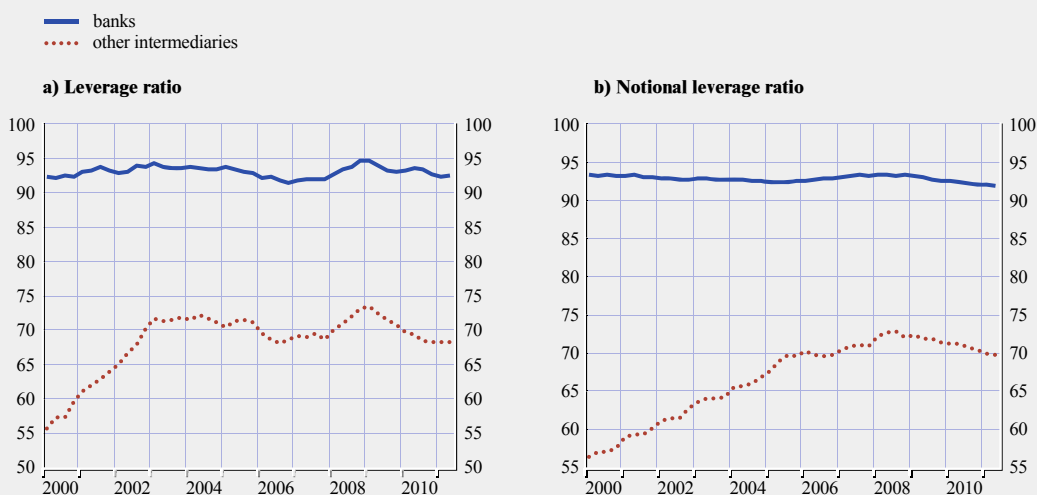
The headline leverage ratio (as opposed to the notional leverage ratio) is probably more appropriate for financial stability analysis as it measures the capability of economic agents to meet their debt obligations with the value of their assets. The notional ratio measures how agents react to the economic conditions, by accumulating or de-cumulating debt. Changes in the two ratios are closely related. For instance, it has been argued that certain agents may try to “defend” their headline leverage ratio if asset prices increase (causing the ratio to move downwards), increasing their acquisition of assets financed with debt (causing the notional

<sup>36</sup> The inability to further break down the OFIs sector into its different types of entities makes the analysis even more challenging. OFIs also include investment funds, which usually do not run maturity mismatches and can hardly be classified as part of the shadow banking system. Maturity mismatches in actual shadow banking is therefore likely to be larger than suggested by this analysis.

<sup>37</sup> Alternatively, the ratio can be defined as asset to equity, which is often referred to as the leverage multiplier. At the same time, debt can be defined in different other ways, in particular by excluding liabilities other than loans and debt securities.

**Chart 18 Leverage of banks and other intermediaries**

(percentages of financial assets)



Source: EAA (ECB and Eurostat).

Notes: The leverage ratio is defined as “liabilities other than equity to financial assets”. The “notional” leverage ratio is calculated from notional assets and liabilities. Notional assets/liabilities are calculated by accumulating transactions relating to the stock of assets/liabilities as of the end of the first quarter of 1999. The notional ratio is therefore not affected by changes in asset prices.

ratio to move upwards). This mechanism is seen as contributing to asset price bubbles.

The leverage ratio is of course higher for banks, as engaging in leverage – accepting deposits and granting loans – is their basic business activity. However, since the turn of the century other intermediaries have been catching up, their ratio increasing from 58% at the beginning of 2000 to almost 70% by the second quarter of 2011. During the whole period, the other intermediaries sector was actually the driver of the overall increase in leverage.

The developments in leverage show three distinct phases. Up to end-2004, the leverage ratio of banks remained fairly unchanged, with other intermediaries heavily increasing their ratio. This development is better seen in the notional ratio (Chart 18(b)), as asset price increases mask the development for the headline ratio which show a stagnated or even decreasing path in 2003 and 2004 (Chart 18(a)). The effect of asset prices is even more pronounced in the period from 2005 to mid-2008 when, although it was a period of high increase in notional leverage, in banks too, the headline ratio shows a flat profile for other

intermediaries and a decreasing one for banks. The headline ratios for both sectors increased only since the end of 2007, when asset prices started to slow down (Chart 18(a)). The notional ratio profile, however, unveils the true nature of leverage developments before the crisis, with other intermediaries showing a steady increase and banks also slightly increasing their ratio.

The aftermath of the financial crisis is characterised by sustained deleveraging in both sectors, more pronounced for other intermediaries, while banks seem to have reached a stable level, similar to the one prevailing before the crisis. Chart 18(b) (notional leverage) gives again a better picture of this development, while the headline ratios in Chart 18(a) are affected by the swings in asset prices that took place over the last quarters.

In conclusion, since the turn of the century, the shadow banking sector has been the driver of the overall increase in financial leverage. However, the aftermath of the financial crisis is characterised by sustained deleveraging in both the regular and, to a more pronounced extent, the shadow banking sector.

## 5 CONCLUSIONS

Shadow banking activity in the euro area is notably smaller than in the US and banks retain the main share in financial intermediation. Assets held by non-bank financial intermediaries undertaking banking activities (shadow banking) are nonetheless sizeable. However, an in-depth assessment of the activities of the shadow banking in the euro area (and in Europe) would require an improvement in the availability of data and other related qualitative information.

The economic and financial statistics collected for the euro area are not detailed enough nor have sufficient coverage to allow for a full understanding of key elements such as the presence of maturity transformation and leverage and the possible channels for systemic contagion, which are of particular importance when evaluating possible regulatory measures.

More in general, the current data reporting requirements and statistical data available to the ECB/Eurosystem could be further developed in order to allow for a better understanding of the key features of shadow banking. The paper highlights some areas where data improvements that will further support the analysis are already being made.<sup>38</sup>

Over the recent past, the interconnection between regulated and non-bank-regulated segments of the financial sector has increased, likely resulting in a higher risk of contagion across sectors and countries. This interconnection is underestimated by the available data because of the difficulties in gathering information on financial intermediaries that are, for legal and statistical purposes, resident outside the euro area, but are carrying out financial activities in the euro area. Indeed, a full understanding of the channels for the transmission of systemic risk to the banking sector would require the availability of data on the links between euro area banks and the key components of shadow banking in other EU countries, in the US and in other relevant jurisdictions.

The importance of shadow banking institutions and activities also varies significantly across countries in the euro area, reflecting differences in legal and regulatory structures. These differences likely reflect a search to carry out certain activities in locations with more favourable regulatory and fiscal regimes.

The activities of the repo markets are closely related to shadow banking. Information on this market is partially available in the annual Euro money market survey, which may be conducted more frequently in the future, but it is still far from being detailed and regular enough, at least from a financial stability point of view.

European regulation has already addressed a number of aspects that have a bearing on shadow banking (see Annex I). The FSB is currently working on possible regulatory options, which may either concern the key components of shadow banking, addressing relevant activities and/or entities (direct regulation), or the interaction of the regulated banking sector with shadow banking (indirect regulation).

Notwithstanding the difficulties in collecting relevant information, the analysis carried out in this paper allows us to draw some tentative conclusions to contribute to the regulatory debate.

First, as regards direct regulation, it would be important to undertake a preliminary assessment of the specific entities or activities within the shadow banking sector that have large leverage or maturity mismatches. On the basis of the available data, this paper attempts to assess maturity mismatch and leverage in the euro area OFIs on an aggregated basis. Although the available data have not enough granularity, it seems that OFIs had a larger maturity mismatch before the financial crisis, suggesting a decline in bank-like activities due to the crisis (analogous to that seen in the US). Moreover, on the liabilities side, the proportion of money market fund shares has fallen significantly.

<sup>38</sup> See box on data availability.

At the same time, the OFIs have been the main contributors to the increase in leverage before the crisis, and also the institutions that have undertaken a more acute deleveraging process after it. However, more microdata (in data collected by statisticians and supervisors or market information) and qualitative information at sector level or entity level would be needed, as has been also highlighted by the FSB,<sup>39</sup> to further identify maturity and liquidity transformation, provide a more detailed assessment of the entities, activities and markets pertaining to shadow banking and subsequently assess the case for specific regulatory intervention.

Specific attention may be required for those components of shadow banking, such as MMFs, to which central banks had to provide emergency liquidity during the financial crisis. These interventions may raise problems of moral hazard. Structural problems that may cause bank run-like phenomena (such as in the design of MMFs) should be identified and addressed by appropriate changes in the regulatory and supervisory framework. Any initiative concerning the scope of the safety net should be coordinated at international level, to avoid arbitrage among jurisdictions.

Second, as regards possible indirect regulation, a key finding of this paper concerns the growing interlinkages between the euro area regulated banking sector and the shadow banking system. This finding confirms that regulators and supervisors should carefully monitor this crucial area. Additional micro-prudential information would help to identify the need for specific rules to limit the possible spillover of risks from shadow banking to credit institutions. In this context, macro-prudential supervisors should consider the improvements that need to be made to monitoring and analytical tools and appropriate arrangements for the sharing of information across financial sectors on an international basis.

Finally, the data seem to suggest that the importance of shadow banking entities differs

across euro area countries. More investigation would be needed to ascertain whether such differences may be partly motivated by a certain degree of regulatory arbitrage and, if that is the case, whether key elements of the regulatory framework need further harmonisation.

<sup>39</sup> FSB (2011).

## REFERENCES

- Association for Financial Markets in Europe/European Securitisation Forum (2011), *Securitisation Data Report Q4:2010*, 4 March.
- Acharya, V.V., Schnabl, P. and Suarez, G. (2012), “Securitization Without Risk Transfer”, *Journal of Financial Economics*, forthcoming.
- Altunbas, Y., Gambacorta, L. and Marques-Ibanez, D. (2009), “Securitisation and the bank lending channel”, *European Economic Review*, Vol. 8, No 53, pp. 996-1009.
- Altunbas, Y., Gambacorta, L. and Marques-Ibanez, D. (2010), “Does monetary policy affect bank risk-taking?”, *Bank for International Settlements Working Papers*, No 298, and *Working Paper Series*, No 1166, ECB, Frankfurt am Main, March.
- Bank of England (2010), *Financial Stability Report*, December.
- Bank of England (2011), *Financial Stability Report*, December
- Bengtsson, E. (2010), *Shadow banking and Financial Stability: European Money Market Funds in the Global Financial Crisis*, mimeo, Sveriges Riksbank.
- Bank for International Settlements (2008), *Quarterly Review*, December.
- Bank for International Settlements (2009), *Quarterly Review*, March.
- European Central Bank (2008a), “Securitisation in the Euro Area”, *Monthly Bulletin*, February.
- European Central Bank (2008b), “Securitisation in the Euro Area”, *Financial Stability Review*, December.
- European Central Bank (2010), “Euro repo markets and the financial turmoil”, *Monthly Bulletin*, February.
- European Central Bank (2011a), *Euro Money Market Survey*, September.
- European Central Bank (2011b), *Recent Developments in Securitisation*, February.
- European Financial Markets Lawyers Group Working Group on securitisation (2007), *Legal obstacles to cross-border securitisation in the EU*, May.
- European Systemic Risk Board (2011), “Recommendation of the ESRB of 22 December 2011 on US dollar-denominated funding of credit institutions (ESRB/2011/2)”, available at <http://www.esrb.europa.eu>.
- Financial Stability Board (2011), *Shadow Banking: Strengthening Oversight and Regulation. Recommendations of the Financial Stability Board*, October.

- Gorton, G. (2010), *Slapped by the Invisible Hand: Banking: the Panic of 2007*, Oxford University Press.
- Gorton, G. (2010a), “Questions and Answers about the Financial Crisis”, paper prepared for the U.S. Financial Crisis Inquiry Commission, February.
- Gorton, G. (2010b), “E-coli, Repo Madness, and the Financial Crisis”, *Business Economics*, Vol. 45, No 3, pp. 164-173.
- Gorton, G. and Metrick, A. (2010), “Regulating the Shadow Banking System”, *Brookings Papers on Economic Activity*, Fall 2010, pp. 261-297.
- Gorton, G. and Metrick, A. (2012), “Securitized Banking and the Run on Repo”, *Journal of Financial Economics*, forthcoming.
- International Capital Market Association (2011), *European repo market survey*, No 20, March.
- International Capital Market Association (2012), *European repo market survey*, No 22, September.
- International Monetary Fund (2009), “Restarting securitization markets: Policy proposals and pitfalls”, *Global Financial Stability Report*, October.
- International Monetary Fund (2011), “Global Economic Prospects and Policy Challenges”, prepared for the meeting of G20 Finance Ministers and Central Bank Governors on 15 April.
- Maddaloni, A. and Peydró, J.-L. (2011), “Bank risk-taking, securitization, supervision and low interest rates: evidence from the euro area and the US lending standards” *Review of Financial Studies*, Vol. 24, pp. 2121-2165.
- Pozsar, Z., Adrian, T., Ashcraft, A. and Boesky, H. (2010), “Shadow Banking”, *Federal Reserve Bank of New York Staff Report*, Federal Reserve, July.
- Tarullo, D. K. (2011), *Regulating Systemic Risk*, speech at the 2011 Credit Markets Symposium, Charlotte, North Carolina, March.
- Turner, A. (2011), *Leverage, Maturity transformation and Financial Stability: Challenges beyond Basel III*, speech at Cass Business School, March.
- UK Financial Services Authority (2011), *Prudential Risk Outlook*.
- Weber, A. (2011), *Lessons learnt: the reform of financial regulation and its implications*, speech at the University College London (UCL) Economics and Finance Society, London, March.

## ANNEX

## EU REGULATORY ACTIVITIES HAVING A BEARING ON SHADOW BANKING

This Annex briefly describes the main regulatory developments in the EU that have a bearing on shadow banking.

## (i) Prudential rules concerning securitisation

Securitisation was a driving force in the exponential growth of the shadow banking sector ahead of the crisis, facilitating the subdivision of credit intermediation and the transferral of parts of the credit intermediation chain outside the banking sector. According to a recent ECB report<sup>40</sup>, the implementation of the Basel III agreement through amendments to the Capital Requirements Directive (CRD) and the implementation of Solvency II are likely to affect securitisation markets directly and indirectly, through the costs for originators and investor demand.

With regard to originators, a recent amendment of the CRD by Directive 2009/111/EC (commonly referred to as “CRD II”) stipulates a retention rule that requires originators to hold a minimum of 5% of a portfolio.<sup>41</sup> It is not clear how this rule will impact on originators, but some observers suggest that retention requirements will deter sponsors who have acquired a portfolio of assets, such as collateralised debt/loan obligation managers, from fully distributing the tranches. However, innovative structures may emerge to comply with the rule, such as an originator special-purpose vehicle (SPV) structure. In other cases, originators may have already held a portion of the portfolio in the past, in which case the impact may be immaterial.

Banks and investment advisors are currently the most important investors in securitised products. As investors, EU banks must comply with the new provisions of CRD II, which impose ongoing due diligence requirements on banks investing in securitised products and require both originator and investor to disclose information.

In particular, credit institutions shall be able to demonstrate to the competent authorities, for each of their individual securitisation positions, that they have a comprehensive and thorough understanding of their investments in securitised positions. To this end, credit institutions should analyse, inter alia, the risk characteristics of the individual securitisation position as well as the exposures underlying the securitisation position and the reputation and loss experience in earlier securitisations of the originators or sponsors. Furthermore, credit institutions should analyse the statements and disclosures made by the originators or sponsors about their due diligence on the securitised exposures and on the quality of the collateral supporting the securitised exposures (alongside the methodologies and concepts on which the valuation of collateral is based) as well as all the structural features of the securitisation that could materially impact the performance of the credit institution’s securitisation position. Finally, credit institutions shall regularly perform their own stress tests appropriate to their securitisation positions.

In addition to the CRD II provisions, further amendments to the CRD by Directive 2010/76/EU (commonly referred to as “CRD III”) introduced a new requirement relating to “re-securitisation”<sup>42</sup> by setting out a new risk-weighting framework for these exposures, which results in significantly higher capital requirements for a re-securitisation than for a securitisation. It is therefore important for banks to have clear internal policies and procedures to identify whether particular positions should be considered as “securitisation” or “re-securitisation” positions for the purposes of calculating capital requirements.

40 See ECB (2011b), pp 26-27.

41 Specifically, Article 122a of CRD II states: “A credit institution, other than when acting as an originator, a sponsor or original lender, shall be exposed to the credit risk of a securitisation position in its trading book or non-trading book only if the originator, sponsor or original lender has explicitly disclosed to the credit institution that it will retain, on an ongoing basis, a material net economic interest which, in any event, shall not be less than 5 %.”

42 Re-securitisation is defined by the CRD as “a securitisation where the risk associated with an underlying pool of exposures is tranching and at least one of the underlying exposures is a securitisation position”.



Finally, specific rules for securitised products held in the trading book also stipulate higher capital charges (CRD III). Future liquidity ratio regulation may also shift some demand from securitisation markets to covered bond markets, as the latter receive a more favourable treatment for liquidity purposes than the former.

### **(ii) Credit Rating Agencies (CRAs) regulation and reducing reliance on CRAs**

CRAs are considered “legitimisers” of the shadow banking system: by providing ratings for securitised products, they made them more widely tradeable. Before the crisis, there were also cases of collusion between issuers and CRAs, when the CRAs would both consult the issuer on how to structure the product to achieve the best rating, as well as rate the final product. Another issue was the overreliance on ratings which was evident both in the reluctance of buyers of securitised products to do their own due diligence, preferring to trust in the CRAs’ ratings, and the hard-wiring of ratings into Basel II regulation, which led to cliff effects.

In the EU, the Commission issued a public consultation on CRAs in November 2010, which highlighted overreliance on ratings, sovereign debt ratings, and the enhancement of competition between CRAs and discussed payment models and liability of CRAs. The ECB published a Eurosystem reply on 23 February 2011, which was broadly welcoming. The European Parliament’s Economic and Monetary Affairs Committee (ECON) discussed an own-initiative draft report on 16 March. There was agreement on the necessity to reduce reliance on ratings (through more competition and the use of internal ratings where possible, and the restriction of investment in structured products to those who are able to carry out in-house assessments). The resolution also called on the Commission to identify ways to hold CRAs civilly liable for their ratings and to improve transparency by further looking into the possibility of requiring two ratings for investment instruments. In line with those indications, Regulation 1060/2009 on CRAs was first amended by Regulation 513/2011 and

further modified by Directive 2011/61/EU. As a number of issues related to credit rating activities and the use of ratings were not addressed in the resulting Regulation, on 11 November 2011 the Commission also adopted new proposals on CRAs, by means of a Regulation and a Directive which are now under discussion by the Parliament. The new framework will directly address the lack of transparency and investors’ over-reliance on ratings, as well as conflicts of interest and the high market concentration which threaten the independence of CRAs. In the meantime, the European Securities and Market Authorities (ESMA) has already started to provide the Commission with its technical advice on implementing technical standards to be adopted in compliance with the new regulatory framework.

### **(iii) Alternative Investment Fund Manager Directive (AIFMD)**

The AIFMD 2011/61/EU entered into force on 21 July 2011. It introduced authorisation requirements, rules of conduct, improved transparency and a European passport for Alternative Investment Fund Managers (AIFMs). Previously, hedge funds were only supervised at the national level, if at all. Four years after implementation, a Commission review of this Directive is foreseen. On 15 November 2011, the Commission also adopted a proposal for a directive amending AIFMD in respect of risk management which is now under discussion by the Parliament.

According to the Directive, AIFMs above a certain threshold (with assets amounting to more than €500 million for unleveraged funds with long “lock-in” periods or €100 million for other types) are required to register with national authorities and to comply with harmonised transparency requirements. The transparency requirements also include use of leverage. AIFMs will have to set a limit for their leverage use and comply with this limit on an ongoing basis. The extent of leverage will also have to be communicated to national supervisors and the ESMA and shared with the ESRB.

To ensure financial stability, the Directive creates powers for competent authorities to intervene by imposing limits on leverage when deemed necessary. ESMA will advise competent authorities in this regard and will coordinate their action in order to ensure a consistent approach. In response to a Commission request, on 16 November 2011 ESMA published its technical advice on possible implementing measures of the AIFMD. On such basis, the Commission will adopt a Delegated Regulation.







