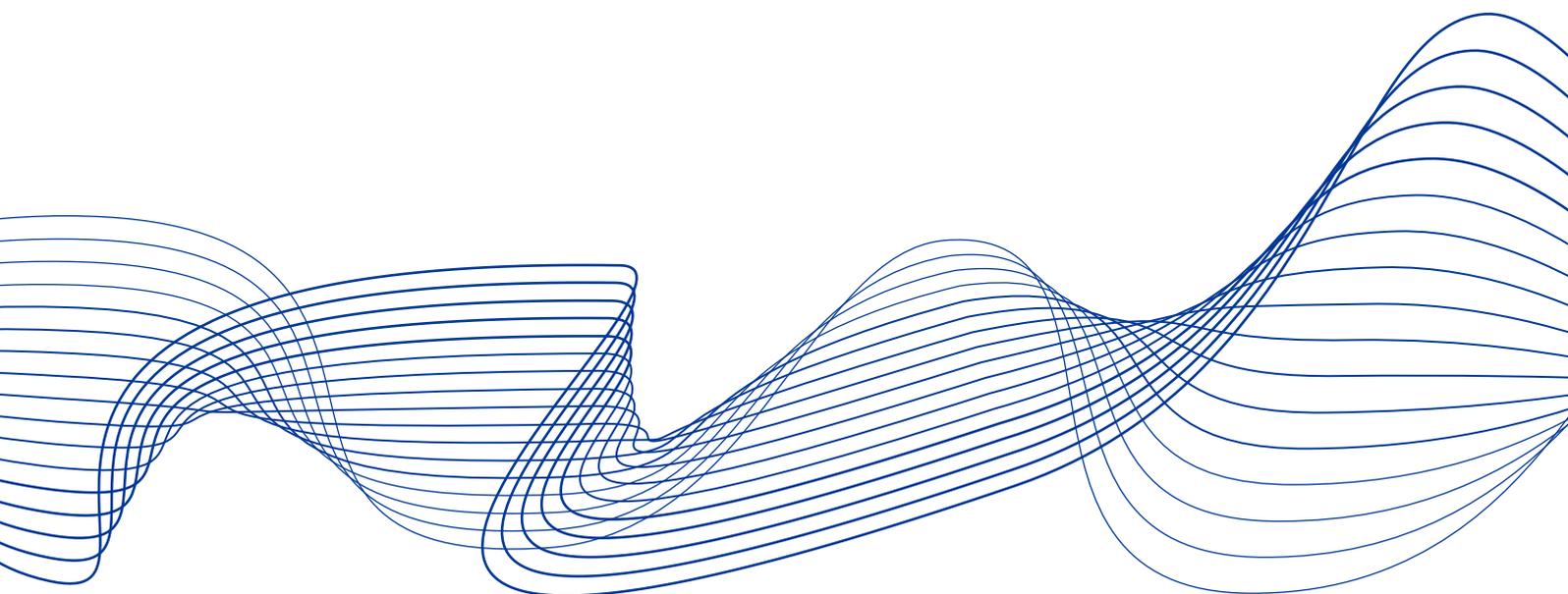


EU Shadow Banking Monitor

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European Systemic Risk Board
European System of Financial Supervision

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The EU Shadow Banking Monitor presents an overview of developments in the EU shadow banking system, with a focus on assessing potential risks to financial stability. It is intended to foster progress of the debate on related issues and targets accordingly a broad readership, including stakeholders of the shadow banking system, such as national and international financial authorities, market participants and academics. This first issue of an annual series is accompanied by a more detailed methodological publication in the form of an ESRB occasional paper.



Section 1

Overview and monitoring framework

EU shadow banking size and composition: The **size** of the broadly defined shadow banking system in the European Union (EU) was €37 trillion in total assets in the fourth quarter of 2015, or 36% of total EU financial sector assets. **Growth** in broad EU shadow banking assets since the end of 2012 stood at 22%. In the euro area, the size of the broad shadow banking system was €28 trillion in the fourth quarter of 2015, having grown by 27% since the end of 2012. By contrast, shadow banking-related wholesale funding of banks by non-banks amounted to €2.5 trillion in the euro area, having fallen since 2012 and having contracted by 2% in 2015. Entities such as financial vehicle corporations (FVCs), security and derivative dealers (SDDs) and hedge funds have the highest **engagement** in shadow banking activities in part owing to their significant maturity and liquidity transformation and leverage. By contrast, private equity funds and exchange-traded funds (ETFs) have a lower level of engagement in activities associated with shadow banking.

Key risks: Risks associated with shadow banking activities and relevant from a systemic perspective include **financial leverage**, which is particularly present in hedge funds, but also in real estate funds, as well as **systemic interconnectedness**, which is especially pronounced between money market funds (MMFs) and the banking system. **Maturity and liquidity transformation** are a concern, especially for some bond funds.

1.1 Market developments

A broad measure of the shadow banking system in the EU, comprising total assets of investment funds (including MMFs) and other financial institutions (OFIs), amounted to €37 trillion in the fourth quarter of 2015 (Chart 1). This figure represents around 36% of the EU financial sector and approximately 250% of 2015 EU GDP.

The broad measure has grown by around 5% since end-2014 (Chart 2)¹ and has also expanded relative to credit institutions (i.e. monetary financial institutions (MFIs) excluding central banks and MMFs). The broad measure of the shadow banking system in the EU was half the size of credit institutions' total assets at end-2008, but grew to 87% at end-2015.

In the euro area, the size of the broad shadow banking system was €28 trillion in the fourth quarter of 2015 (Chart 3). The sector grew at an annualised rate of 8% in the fourth quarter of 2015.² The euro area broad measure can be further broken down, due to the greater availability of detailed data which are not available for the EU as a whole. Within this broad measure, OFIs grew by €0.8 trillion since the fourth quarter of 2014, while non-MMF investment funds increased by €1.0 trillion

¹ Excluding the impact of non-transaction-related changes in stocks (i.e. price and FX revaluations and statistical reclassifications), the annual growth rate was lower, at 2%.

² Excluding the impact of non-transaction-related changes in stocks, the annual growth rate was 3%.



and MMFs by €0.1 trillion over the same period. On the other hand, FVCs registered negative growth, decreasing by 2% since the fourth quarter of 2014.³

Shadow banking-related wholesale funding of euro area banks provided by euro area MMFs, non-MMF investment funds and FVCs was around €2.5 trillion in the fourth quarter of 2015 (Chart 4), or 9% of the euro area broad measure. The focus of this measure is on credit intermediation activity that is financing credit institutions.⁴

In contrast to the increasing size of the broad measure of shadow banking, wholesale funding by non-banks has registered negative growth rates since the first quarter of 2012, reaching a negative annual growth rate of -2% in the fourth quarter of 2015. This is largely driven by the contraction of the FVC sub-sector, owing to the decline in securitisation activity since the financial crisis.

1.2 Risk overview

Systemic risk may emanate directly from credit intermediation activities of particular shadow banking entities. These activities may involve maturity and liquidity transformation, imperfect credit risk transfer and leverage. Issues may arise indirectly through the interconnectedness of the shadow banking sector with the regular banking system. The economic engagement of a broad range of entities in risk categories conventionally associated with shadow banking is reviewed below. Importantly, this review focuses on and is limited to engagement in typical shadow banking activities. A comprehensive risk assessment, however, requires an evaluation based on quantitative and methodological foundations and should also examine the suitability of existing policy measures. In the case of investment funds (including alternative investment funds) for example, such an assessment needs to take into account mitigating factors, especially the existence of regulatory requirements and controls at the EU and national level.⁵

Credit intermediation: Non-banks play a role in providing credit either through the direct provision of financing (e.g. as conduits for market-based financing, or by providing loans, leasing or trade credit) or by supporting the credit intermediation role of banks (e.g. through credit risk transfer and securitisation through FVCs). Euro area FVCs are used not only to securitise loans by euro area MFIs, for example, but also to securitise non-loan assets including trade and other receivables (Chart 5) and loans originated by other sectors (Chart 6).

Besides lending, credit intermediation also includes the holding of debt securities. With regard to euro area investment funds, MMFs and bond funds are most engaged in credit intermediation, with debt securities holdings and loans accounting for roughly 80% of total assets. Mixed funds (40%) and hedge funds (29%) also engage substantially in credit intermediation (Chart 16).

Complementary data and expert judgement also highlight the importance of loan funds and high-

³ The Financial Stability Board's (FSB's) broad measure of shadow banking – or “Monitoring Universe of Non-bank Financial Intermediation (MUNFI)” – for the euro area plus the United Kingdom was €45 trillion at end-2014. This higher figure is mainly due to the FSB's inclusion of insurance companies and pension funds in their broad measure. The US shadow banking sector was estimated at €42 trillion at end-2014 – around three times larger than US GDP. See “Global Shadow Banking Monitoring Report 2015”, Financial Stability Board, 12 November 2015.

⁴ “Measuring the shadow banking system – a focused approach”, ESMA Report on Trends, Risks and Vulnerabilities, No 2, 2015.

⁵ Investment funds and their asset-management activities are regulated and supervised in the EU through the UCITS (Undertakings for Collective Investment in Transferable Securities) Directive. Similarly, private equity and hedge funds are subject to extensive conduct-of-business and reporting requirements under the EU's AIFMD (Alternative Investment Fund Managers Directive) framework.



yield corporate bond funds. Whereas the share of loans in total assets is relatively high for the former, the latter mainly invest in less liquid corporate bonds.

Maturity transformation: The maturity transformation of EU bond funds, assessed by computing the ratio of long-term assets to total assets, stood at 74% in the fourth quarter of 2015, more than twice the average ratio for investment funds as a whole (Chart 14). Bond funds investing in liquid assets, such as sovereign or investment-grade corporate bonds, have a marked engagement in maturity transformation, while other bond funds investing in high-yield corporate bonds and loan funds have a weaker, albeit relevant, level of engagement. Mixed funds and hedge funds in the euro area are likely to engage in some maturity transformation, with a ratio of long-term assets to total assets of 37% and 23% respectively in the fourth quarter of 2015.

Maturity transformation undertaken by funds, however, is not of the same nature as that undertaken by banks. Whereas depositors' claims on banks are redeemable at a given value, asset managers make no such guarantee as to the future value of investments. Where funds seek to meet redemptions of investors by selling assets, liquidity transformation will be a more relevant metric, although – as is the case for maturity transformation – the absence of deposit-like claims means this will take a different form from liquidity transformation employed by banks.

Liquidity transformation: Liquidity transformation occurs when investors are offered a greater degree of access to their investments than is consistent with the ease with which the corresponding assets can be sold without a material price impact. There is a risk that provision of such access could cause investors to believe that their investments are more liquid than is actually the case.

Euro area real estate funds engage in liquidity transformation through their holdings of non-financial assets (i.e. property). Similarly, euro area bond funds investing in high-yield corporate bonds and loan funds are also likely to engage in liquidity transformation. One measure is the share of non-liquid assets in total assets (for open-ended funds), which was 71% for real estate funds, 38% for bond funds and 35% for hedge funds in the fourth quarter of 2015 (Chart 13). Within the bond funds category, complementary data show that funds investing in high-yield corporate bonds and loans engage significantly in liquidity transformation.

The other fund categories engage in some liquidity transformation, with a ratio between 6% and 25% in the fourth quarter of 2015 (Chart 13). Additional risks for constant net asset value (CNAV) MMFs relate to their commitment to repay investors at a constant value, which can create the risk of a run in adverse conditions.

Available evidence seems to point to a trade-off between liquidity and maturity transformation. Funds focusing on less liquid corporate debt generally invest in securities with a shorter than average term, while funds investing in more liquid sovereign bonds tend to invest in longer-dated assets. A fund investing in long-term liquid assets is generally able to sell them at any time, while a fund investing in short-term illiquid assets should be able to roll over its portfolio frequently, thus limiting its liquidity risk.⁶

A further example of liquidity transformation is the use of securitisation to transform very illiquid assets – typically loans – into marketable debt securities, for which there may be a greater or lesser degree of market liquidity. However, FVCs do not engage in maturity transformation (with the

⁶ "Measuring the shadow banking system – a focused approach", ESMA Report on Trends, Risks and Vulnerabilities, No 2, 2015.



exception of asset-backed commercial paper issuers) and generally would not need to meet liabilities by liquidating assets in the market.

Leverage: This includes both financial leverage, which arises from direct borrowing, and synthetic leverage (i.e. contingent exposures gained through the use of derivatives).

FVCs are highly leveraged, with borrowing through debt securities issued and loans received making up 84% of their total liabilities in the fourth quarter of 2015. This reflects the fact that losses arising from the assets backing the securitisation are absorbed by investors (or providers of credit enhancement) and not by the capital base.

Among euro area investment funds, real estate funds are the most leveraged based on direct borrowing, with loans making up 13% of total liabilities in the fourth quarter of 2015, having fallen from over 20% since mid-2009 (Chart 15). Hedge funds are not subject to regulatory leverage limits and may build up synthetic leverage which is not captured by this indicator. Therefore, overall, hedge funds are considered to have pronounced leverage.

Interconnectedness: Credit institutions are highly interconnected with the entities which comprise the broad measure of shadow banking. Approximately 9% of euro area credit institutions' assets are loans to euro area investment funds and OFIs, or debt securities, equity and investment fund shares issued by these entities (Chart 9). Deposits from euro area investment funds and OFIs constitute 7% of credit institutions' liabilities (Chart 10).

With regard to the exposures of investment funds and OFIs to credit institutions, MMFs mainly invest in debt securities issued by credit institutions (as much as two-thirds of their total assets) and are therefore significantly interconnected with the banking system (Chart 17). Bond funds and hedge funds also have some exposure to MFIs (11% and 8% respectively).

Shadow banking definitions

Following the original commitment of the G20 leaders in 2011, international policymakers have been engaged, through the FSB, in a global project to monitor and measure shadow banking, and to adapt the regulatory framework to address shadow banking risks, where necessary. The definition of shadow banking and the delineation of its perimeter continue to be refined, and substantial data limitations prevail. Bridging the existing gaps is one aim of the new regulations (e.g. the AIFMD and the Securities Financing Transaction (SFT) Regulation), which provide for the collection of data.

The definition and size of shadow banking are the subject of ongoing discussion within markets, the regulatory community and academia. The FSB has been carrying out extensive work on the topic and has developed a widely used definition of shadow banking, namely "credit intermediation that involves entities and activities fully or partially outside the regular banking system". In a narrower definition, it focuses more specifically on entities that raise:

- systemic risk concerns, in particular through maturity and liquidity transformation, imperfect credit risk transfer and/or leverage;
- regulatory arbitrage concerns.



Based on this definition, the FSB established a practical two-step approach to monitoring shadow banking⁷:

- First, authorities cast the net wide, looking at all non-bank financial intermediation to ensure that data gathering and surveillance cover all areas where shadow banking-related risks to the financial system might potentially arise.
- Second, authorities narrow the shadow banking measure to the subset of activities that give rise to various bank-like risks – liquidity and maturity transformation, leverage, and imperfect credit risk transfer. To implement this step, the FSB introduced an economic functions approach in its 2015 monitoring exercise under which the entities from the first step are selected and classified according to their engagement in the following five economic functions:
 1. management of collective investment vehicles with features that make them susceptible to runs;
 2. loan provision that is dependent on short-term funding;
 3. intermediation of market activities that is dependent on short-term funding or on secured funding of client assets;
 4. facilitation of credit creation; and
 5. securitisation-based credit intermediation and funding of financial entities.

The ESRB's Joint Advisory Technical Committee (ATC)-Advisory Scientific Committee (ASC) Expert Group on Shadow Banking is working towards consistency with the definitions and approaches provided by the FSB, focusing on a risk-based assessment of shadow banking-type activities in the EU. In particular, the Expert Group has implemented a dual approach to mapping and monitoring shadow banking risks, emanating either from financial institutions ("entity-based approach") or from their activities ("activity-based approach"). The risk metrics and assessment approach outlined in this Monitor are likely to evolve as the analysis of risks in the shadow banking sector is further developed.

The entity-based approach consists of aggregating balance sheet data of financial institutions taken from financial accounts and monetary statistics.⁸ In an initial step, the "broad measure" includes all entities of the financial sector except banks and insurance corporations and pension funds (ICPFs).⁹ The aim is to cover all the areas where shadow banking-related risks to the financial system might potentially arise. In a second step, the focus is narrowed down to entities that have more specific potential to pose systemic risk, more specifically with regard to their engagement in credit intermediation, liquidity and maturity transformation, leverage and interconnectedness with the banking system.

The activity-based approach aims to capture activities which are not restricted to specific entities or which contribute to interconnectedness within the financial system, including for example SFTs and derivatives (noting that for the latter significant data gaps remain). Although the types of risk

⁷ "Shadow Banking: Strengthening Oversight and Regulation", Financial Stability Board, 27 October 2011.

⁸ These data are based on the solo balance sheets of entities, i.e. not accounting for consolidation across groups (either in accounting or regulatory terms).

⁹ Although ICPFs are not considered here as shadow banking entities, risks arising from their shadow banking activities – e.g. in secured funding markets – are covered by this framework.



embedded in shadow banking activities are similar to those of shadow banking entities, the intrinsic differences between financial markets and financial institutions make this approach complementary, so that all segments of the shadow banking system are covered. In addition, entities which are not captured under the entity-based approach but engage in some shadow banking activities are captured with the activity-based approach (e.g. insurance companies engaging in SFTs).

Going forward, the ESRB's Joint ATC-ASC Expert Group on Shadow Banking aims to further align its conceptual approach with the FSB methodology as it evolves.

1.3 Entity-based mapping of shadow banking

1.3.1 Other financial institutions

Financial vehicle corporations (FVCs): FVCs are securitisation vehicles which are relevant to shadow banking due to their role in credit intermediation and their interconnectedness with the banking system.

In the fourth quarter of 2015 around €1.2 trillion or 66% of euro area FVCs' assets were securitised loans (Chart 5), and most recent loan securitisation activity relates to euro area credit institutions (Chart 6). Also important for credit risk transfer are synthetic securitisations which guarantee loans or enter into credit default swaps (CDSs).¹⁰ In total, around 60% of euro area FVC assets are interconnected with euro area credit institutions (Chart 7), as well as over 40% of their liabilities, due mainly to retained securitisations. Further interconnectedness may arise through credit enhancement provided by credit institutions, which may be off or on balance sheet.

Outstanding debt securities issued by euro area FVCs decreased from over €2 trillion at end-2009 to €1.4 trillion at end-2015. Data on wider European issuance show issuance has been mainly of residential mortgage-backed securities and securities backed by consumer credit (Chart 8).

Security and derivative dealers (SDDs): SDDs are investment firms which are authorised to provide investment services to third parties by investing in securities on their own account. SDDs might constitute a source of risk in the financial system as they undertake liquidity and maturity transformation. Due to the very limited disclosure concerning these entities and the lack of data, a full assessment of SDDs is not possible at this point. However, a large part of the total assets of these entities appears to be consolidated in banking groups. Consequently, SDDs may be subject to banking regulatory requirements on transparency, liquidity and capital on a consolidated basis.

Financial corporations engaged in lending (FCLs): FCLs are financial corporations principally specialised in asset financing for households and non-financial corporations. Their activities include financial leasing, factoring, mortgage lending and consumer lending. Regulatory regimes for FCLs

¹⁰ Debt securities issued by FVCs engaged in synthetic transactions totalled €69 billion in the fourth quarter of 2015, but this may underestimate the true extent of credit risk transferred (since synthetic securitisation may not be fully funded).



exist in some countries and a part of the total assets of these entities may be consolidated in banking groups.¹¹

Non-securitisation special-purpose entities (SPEs): The financial sector includes entities set up for special purposes other than securitisations. These entities may, for example, engage in transactions on behalf of their parent corporations and multinational groups in order to raise finance or to facilitate intra-group transactions. Information on these entities is scarce overall in the EU. However, data are collected by the Dutch central bank on resident entities, which they call “Special Financial Institutions (SFIs)” and held €3.7 trillion in total assets at end-2015. This includes SFIs which are owned by non-financial corporations (€3.4 trillion) which may have limited relevance from a shadow banking perspective. Dutch SFIs which are owned by financial corporations are much smaller, with total assets of €0.3 trillion.¹²

1.3.2 Investment funds

Total assets of EU investment funds amounted to €12.7 trillion in the fourth quarter of 2015, of which euro area investment funds accounted for €11.4 trillion. Investment funds can be considered as part of the shadow banking universe for monitoring purposes since: (i) open-ended funds exposed to credit intermediation risks may be subject to runs as investors can redeem their shares on demand; (ii) some funds may perform maturity and liquidity transformation and have significant leverage, especially hedge funds; and (iii) some funds can originate loans. This publication reviews the engagement of the investment fund sector in typical shadow banking activities. An overall risk assessment of the sector would also need to take account of the UCITS Directive, which already provides an effective regulatory and supervisory framework in the EU.

Money market funds (MMFs): MMFs perform maturity and liquidity transformation and at the same time are highly interconnected with both euro area and non-euro area credit institutions. MMFs’ shares are very liquid, can be redeemed on a daily basis and show a degree of substitutability with bank deposits. MMFs’ assets are required to have a short-term maturity, but this maturity generally exceeds that of their liabilities. As a result, MMFs are exposed to maturity transformation risk.

According to some measures, liquidity risk has been rising lately and, according to Fitch data¹³, highly liquid assets account for less than half of MMFs’ total assets (Chart 18). The daily and weekly liquidity of MMFs has decreased slightly, falling from 32% and 44% of total assets respectively in January 2012 to 28% and 41% in December 2015. Liquidity risk is particularly relevant for CNAV MMFs due to their commitment to repay investors at constant value.

According to Fitch data, the weighted average maturity of the portfolio rose by three days since January 2012 to reach 38 days in December 2015 (Chart 19), pointing to a rise in interest rate risk. In addition, the weighted average life of the portfolio rose from 46 days in January 2012 to 56 days

¹¹ See the report of the European Banking Authority to the European Commission on the perimeter of credit institutions established in EU Member States, which summarises the prudential regimes applicable to entities (such as FCLs) carrying out credit intermediation activities which are neither subject to relevant EU regulation nor prudentially consolidated.

¹² Note that these entities (in addition to other heterogeneous types of entities which are in the “residual” category) are not included in Table 1 due to a lack of granular data which would allow an assessment against the broad shadow banking functions.

¹³ “European MMF Quarterly – 1Q15”, Fitch Ratings.



in December 2015, pointing to higher credit risk. Fitch data also show that direct credit provision to financial institutions (including banks), consisting mainly of repos, amounts to less than 10% of MMFs' total assets.

Hedge funds: Hedge funds can exhibit high levels of leverage¹⁴, particularly for some types of strategies (e.g. fixed income and credit arbitrage, macro and quantitative strategies). Leverage may be obtained by direct borrowing (e.g. prime broker financing), by borrowing in the secured or non-secured market, or by using repurchase agreements, securities lending or margin lending. Gross notional exposure ratios show a very high concentration of hedge fund leverage in a few large funds (typically those applying relative value and global macro strategies).¹⁵

Hedge funds also engage in liquidity transformation. Vulnerabilities could result from a combination of: (i) rising liquidity requirements of hedge fund shareholders; (ii) relatively low liquidity buffers of some leveraged strategies and the ensuing vulnerability to future margin calls, refinancing needs and redemption requests; and (iii) the significance of some hedge fund strategies for market liquidity, particularly in some fixed income markets. Indeed, the most active funds show annual turnover ratios above 1,000 and the vast majority of hedge funds' turnover is concentrated in the interest rate derivatives market.

Through the credit transfer channel, hedge fund strategies (in particular those focusing on credit markets) incur significant credit market exposures, including by investing in securitised vehicles or selling credit insurance in the CDS market.

Again, an overall risk assessment needs to take into account that an effective regulatory and supervisory framework for hedge funds and private equity funds already exists in the EU in the form of the AIFMD.

Bond funds: Bond funds are involved in credit intermediation as their business model includes investment in credit-related fixed income securities. Leverage of bond funds does not appear to be a major concern as most of their holdings are financed by the issuance of units/shares. However, material data gaps impede any firm conclusions on the extent of risks posed by leverage in funds. Bond funds engage in significant maturity transformation. For example, they invest in long-term assets, while a significant part of their liabilities (units issued) are redeemable at very short notice.¹⁶

This maturity mismatch may make bond funds vulnerable to runs and generate contagion risk. Generally, bond fund managers mitigate this risk by holding cash and liquid assets including sovereign bonds which can be sold to meet redemption needs. However, some funds are specialised in less liquid assets, such as high-yield debt or loans which may not be listed.

Liquidity risk, as measured by the liquidity transformation indicator (Chart 13), has remained relatively stable at a high level in 2015 (around 38%), reflecting a low proportion of cash and short-term assets.

As regards maturity risk, the ratio of EU bond funds' long-term assets (with an original maturity over one year) to their total assets has broadly decreased since 2008, reaching a value of 74% in the

¹⁴ Fund leverage metrics are not directly comparable to the leverage ratios of banks, for example as measured under Basel III as the ratio of the bank's average total consolidated assets to Tier 1 capital.

¹⁵ See "Hedge Fund Survey", Financial Conduct Authority, 2015.

¹⁶ With due consideration for applicable sector legislation (e.g. the UCITS Directive, the AIFMD), the ESRB is reviewing the scope for developing macroprudential policy tools in this field.



fourth quarter of 2015. The weighted average maturity of bond funds' financial assets decreased continuously in the period from the first quarter of 2008 to the third quarter of 2013, from 9.5 to 7.8 years. Since the fourth quarter of 2013 the trend has reversed and in the fourth quarter of 2015 the weighted average maturity stood at 8.6 years (Chart 21).

The leverage multiplier of bond funds – measured by the ratio of total assets to shares/units issued – has been on an increasing trend since 2010 but, in line with the restrictions which apply for UCITS funds, remains at a relatively low level close to 1.1. Leverage may be higher than this metric suggests as bond funds, including UCITS, are allowed to engage in financial derivatives activity which can create leverage. Interconnections between euro area bond funds and MFIs have declined steadily since 2009 to 11% of bond funds' assets in the fourth quarter of 2015, as the share of non-euro area bonds in portfolios has grown.

Data on credit ratings of fixed income securities held by EU bond funds indicate that the credit quality of assets held has decreased slightly. For example, the holdings of bonds rated AAA decreased from 28% in the second quarter of 2011 to 15% in the fourth quarter of 2015, while the holdings of bonds rated BBB have increased from 15% to 26% during the same period (Chart 20). The credit quality of assets is also correlated to their liquidity and may be used to further assess liquidity transformation in bond funds.

As for investment funds in general, an overall risk assessment of bond funds would also need to take into account the UCITS Directive, which already presents an effective regulatory and supervisory framework in the EU.

1.4 Activity-based mapping of shadow banking

The activity-based mapping approach aims to complement the previous focus on shadow banking entities in order to ensure that all segments of the shadow banking system are considered. For example, some market-based activities described below may pose shadow banking risks which are not fully captured by an entity-based mapping approach.

Derivatives: Derivatives may be used for hedging purposes, but may also be used to leverage exposures or transfer credit risk. Synthetic leverage is a specific form of leverage which differs from conventional financial leverage as the leverage is created through the use of derivative instruments or other financial transactions not directly involving borrowing from counterparties.¹⁷ Synthetic leverage may increase procyclicality and interconnectedness in the EU financial system, including between banks and non-banks. A full risk assessment of the use of derivatives in the EU will benefit from new supervisory data collected in accordance with the AIFMD and the European Market Infrastructure Regulation (EMIR).

Repo markets: The size of European repo markets is significant. The December 2015 ICMA European Repo Markets Survey estimated the size at €5.6 trillion, up from €5.5 trillion in December 2014 (Chart 22). Transaction data from ICAP show that trading volumes through central counterparties for seven EU sovereign repo markets average around €300 billion per day.

¹⁷ Synthetic financial instruments are generally understood to be financial instruments that are created artificially by simulating another instrument with the combined features of a collection of other assets.



Repos contribute to a high degree of interconnectedness between MFIs because the majority of transactions are interbank, but they also reflect links between MFIs and OFIs (Chart 24). Furthermore, the volume of open maturity transactions which would mitigate run risk appears limited. Besides, repos are generally short-term instruments, and both lenders and borrowers can easily decide to withdraw from funding at short notice. Around 30% of repo transactions have a maturity shorter than a week and 60% shorter than a month. The size and trading activity of repo markets imply that liquidity risk is limited under normal market conditions, but this may vary across markets. The very limited information available on repo transactions and exposures makes it challenging to assess what might happen under stressed market conditions.

Securities lending: In the fourth quarter of 2015, according to Markit data on securities lending, the total outstanding value of EU securities on loan was €304 billion for government bonds (Charts 26 and 27), €39 billion for corporate bonds (Charts 28 and 29) and €158 billion for equities (Charts 30 and 31). For all three types of securities lent, non-cash collateral is most commonly used.¹⁸

Table 1
Mapping of broad shadow banking functions

Mapping of broad shadow banking activities and risks, and illustrative indication of the typical engagement of entities in these activities. Based on qualitative expert judgement, taking into account market intelligence and quantitative evidence (noting that measurement is hindered by data gaps). This structural assessment of engagement is not a risk assessment. It neither pre-empts nor replaces systematic evaluations of systemic or other risks for dedicated purposes. The colours of the circles provide a broad indication of the intensity of institutional engagement in the relevant areas of activity, based on the coding specified in the note below. Areas of engagement include maturity and liquidity transformation, leverage, credit intermediation, interconnectedness with the regular banking system and use of securities financing and derivatives. Illustrative indications provided in this table may change over time.

	Other financial institutions			Money market funds		Investment funds				
	FVCs	FCLs	SDDs	VNAV	CNAV	Bond funds	Hedge funds	Real estate funds	Exchange-traded funds	Private equity funds
Summary assessment	●	●	●	●	●	●	●	●	○	○
Engagement in shadow banking activities and risks										
Credit intermediation	●	●	○	●	●	●	●	●	○	●
Maturity transformation	●	●	●	●	●	●	●	○	●	○
Liquidity transformation	●	●	●	●	●	●	●	●	●	○
Leverage	●	●	●	○	○	●	●	●	○	●
Interconnectedness with banking system	●	○	○	●	●	●	●	○	●	○
Securities financing	○	○	●	●	●	●	●	●	●	○
Use of derivatives	●	○	○	●	●	●	●	●	●	○

Note: FVCs stands for financial vehicle corporations (non-retained securitisations), FCLs for financial corporations engaged in lending, SDDs for security and derivative dealers, VNAV for variable net asset value and CNAV for constant net asset value.
Colour coding: ●=pronounced engagement; ●=medium engagement; ●=low engagement; ○=unlikely or insignificant engagement.

¹⁸ European equity lending trades show seasonality, e.g. corporate action trading (lending for cross-border dividend tax arbitrage) boosts volumes during the second quarter of each year.



Securities lending activities peaked in 2007 for all asset classes. As the market deteriorated in 2008, there was a significant drop in the demand for securities following deleveraging by funds and brokers/dealers, driven primarily by the need to raise cash to meet investor redemptions and to shrink their balance sheets. On the supply side, the risk aversion of the beneficial owners of securities triggered by the crisis reduced supply. In addition, lenders restricted the counterparties to which they were willing to lend securities. The ban on short-selling also played a role in reducing the demand for securities lending. As a result, in 2008 the European markets for government bond lending, corporate bond lending and equity lending fell by €200 billion, €50 billion and €180 billion respectively. Since the beginning of 2009, EU government bond lending activity has hovered between €270 billion and €300 billion, with more than 90% being collateralised with other securities. Corporate bond lending activity was more limited at about €39 billion in the fourth quarter of 2015, with 42% being collateralised with other securities.



Section 2

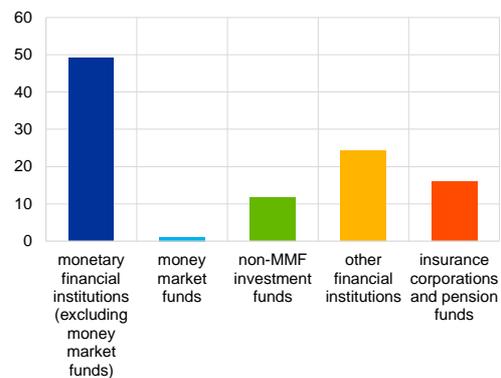
Statistical overview

2.1 Entity-based mapping

2.1.1 Overview

Chart 1
EU financial sector

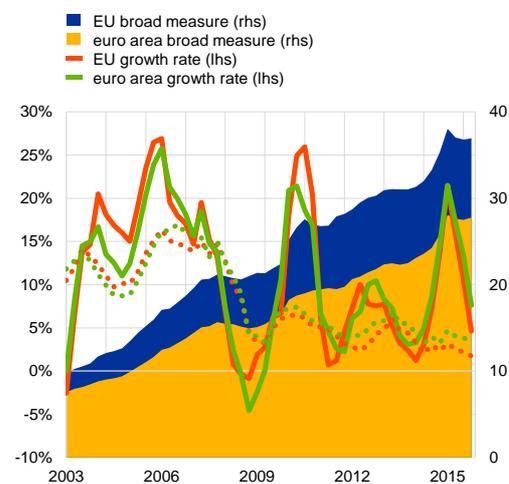
(€ trillions; Q4 2015)



Source: ECB.
Note: Based on financial accounts data on the total financial assets of the financial sector of the euro area plus non-euro area EU Member States.

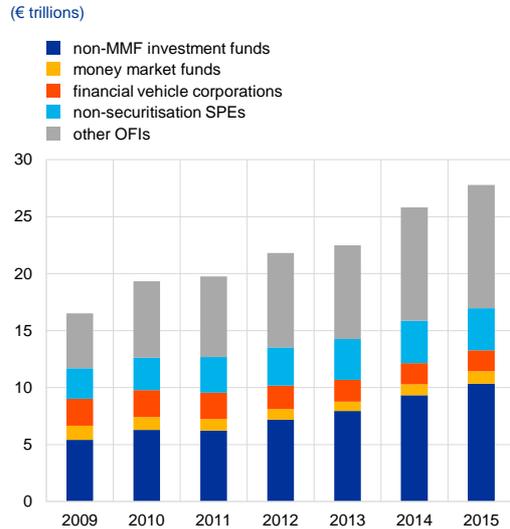
Chart 2
Broad measure of EU and euro area shadow banking (investment funds and OFIs)

(€ trillions and annual growth rates; last observation: Q4 2015)



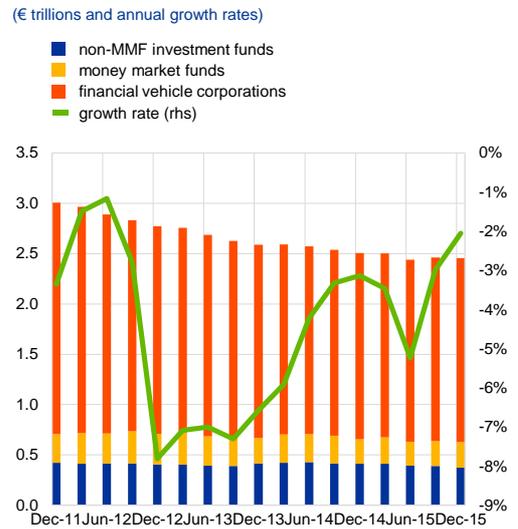
Sources: ECB and ECB calculations.
Notes: Annual growth rates based on changes in outstanding amounts are indicated with the continuous lines. Dotted lines indicate annual growth rates based on transactions – i.e. excluding the impact of FX or other revaluations and statistical reclassifications.

Chart 3
Breakdown of euro area investment funds and OFIs by type



Source: ECB, De Nederlandsche Bank (DNB) and ECB calculations.
 Notes: Data for the total OFI sector are sourced from financial accounts statistics; data on investment funds and FVCs are based on ECB monetary statistics. Note that data on non-securitisation special-purpose entities (SPEs) are incomplete and cover only the Netherlands (based on preliminary end-year data made available by the DNB). No further data breakdowns are available for the residual "other OFIs".

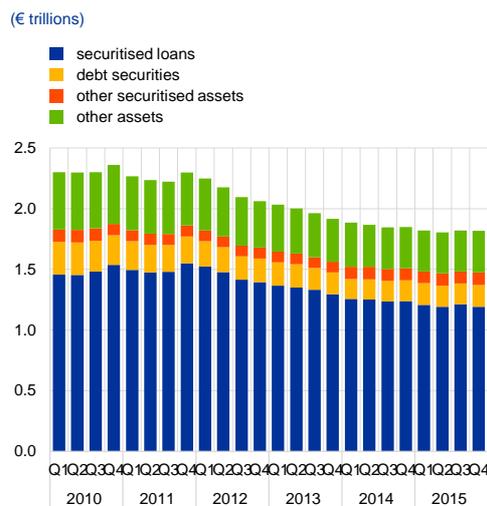
Chart 4
Wholesale funding by euro area non-banks



Source: ECB and ESMA calculations.
 Notes: Amount of wholesale funding by non-banks. For investment funds and money market funds, the part of their debt securities holdings issued by euro area MFIs is shown.

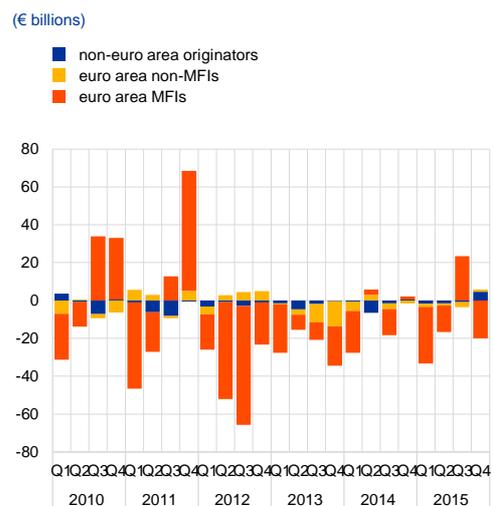
2.1.2 Other financial institutions

Chart 5
Euro area FVCs' assets



Source: ECB.
 Note: "Other assets" includes shares and other equity, financial derivatives and remaining assets.

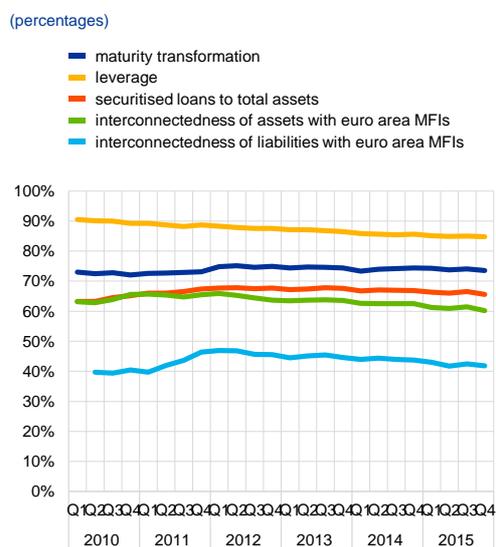
Chart 6
Loans securitised by euro area FVCs by originator



Source: ECB.
 Note: Euro area FVCs' securitised loans by originator; transactions.

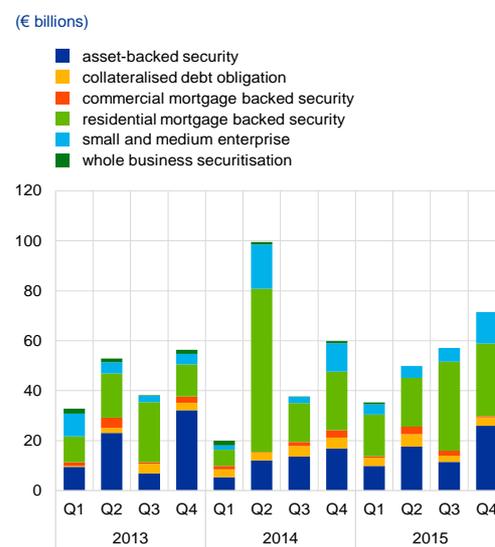


Chart 7
Euro area FVCs' maturity transformation, leverage, interconnectedness and credit intermediation



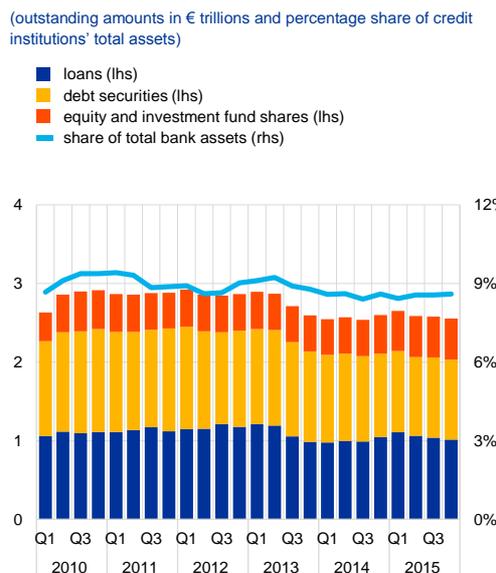
Source: ECB.
 Note: Data on MFI holdings of euro area FVC securities commence in Q2 2010.

Chart 8
European securitisation issuance by collateral



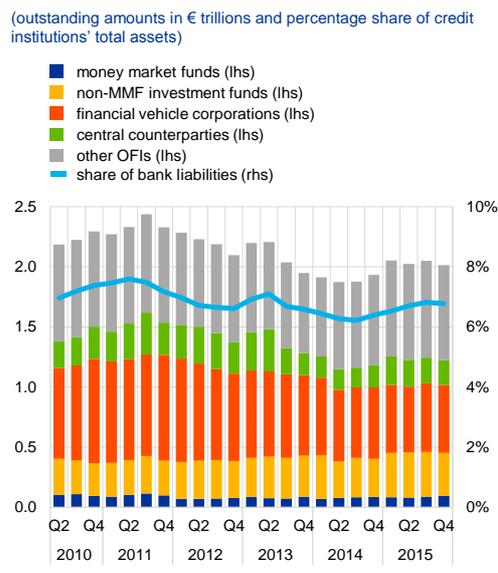
Source: AFME.
 Note: "Asset-backed security" includes auto loans, credit card receivables, leases, loans and other receivables; certain public finance initiative securitisations are included within the category "whole business securitisation" as of Q4 2013. European covers all EEA countries and certain non-EEA countries located on the geographical European continent.

Chart 9
Euro area credit institutions' assets vis-à-vis euro area investment funds and OFIs



Source: ECB.

Chart 10
Euro area credit institutions' deposits from euro area investment funds and OFIs

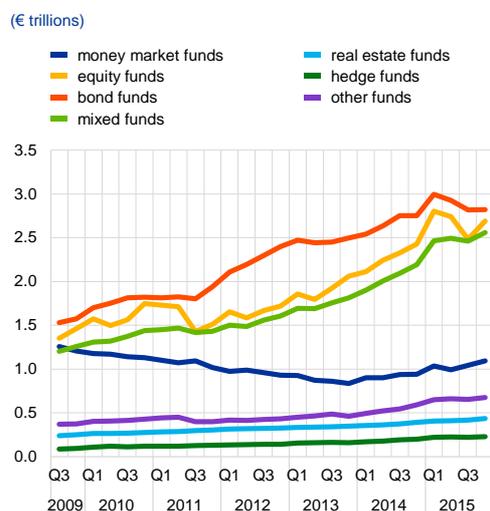


Source: ECB.



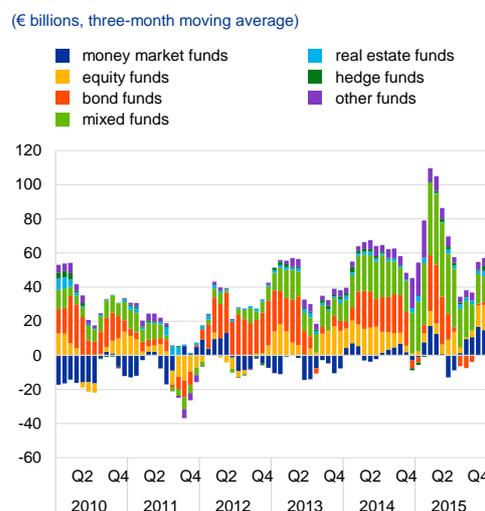
2.1.3 Investment funds

Chart 11
EU investment funds: Net asset values



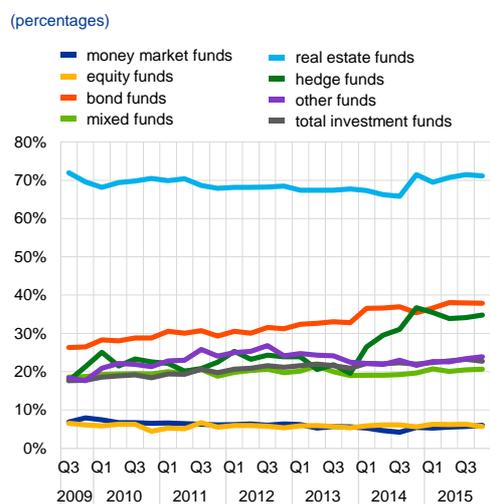
Source: ECB.
Note: Based on available data for the EU; Bulgaria, Croatia, Denmark, Sweden and the United Kingdom are not included.

Chart 12
EU investment funds: Net issuance



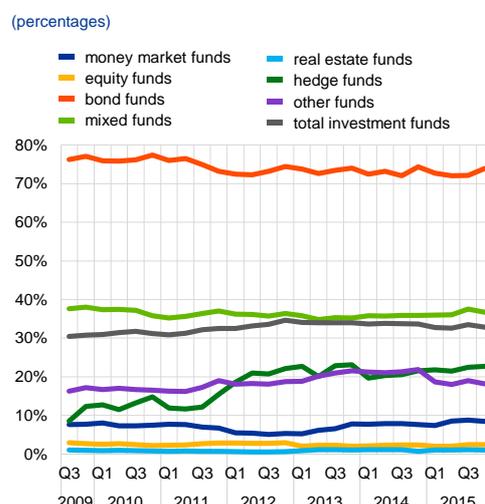
Source: ECB.
Note: Based on available data for the EU; Bulgaria, Croatia, Denmark, Sweden and the United Kingdom are not included.

Chart 13
EU investment funds: Liquidity transformation



Source: ECB.
Notes: Based on available data for the EU; Bulgaria, Croatia, Denmark, Sweden and the United Kingdom are not included. Total assets less liquid assets (deposits, sovereign bonds, debt securities issued by MFIs and equity and investment fund shares), as a share of total assets. Closed-end funds are not included. Estimates are made for holdings of non-euro area securities and funds not resident in the euro area. For further data on MMF liquidity, see also Chart 18.

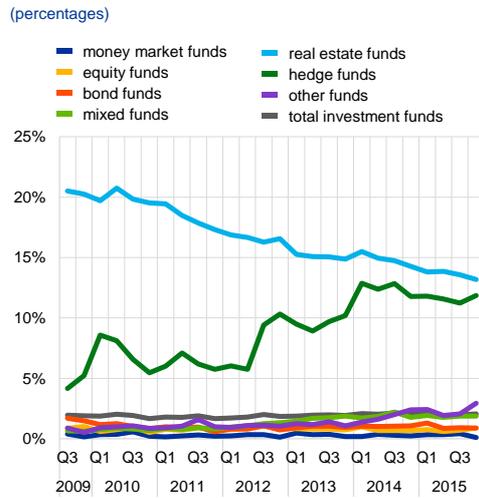
Chart 14
EU investment funds: Maturity transformation



Source: ECB.
Notes: Based on available data for the EU; Bulgaria, Croatia, Denmark, Sweden and the United Kingdom are not included. Maturity transformation by investment funds expressed as the ratio of long-term assets (with original maturities over one year) to total assets. By this measure, maturity transformation is low for equity funds and real estate funds (which invest in non-financial assets). Regarding MMFs, see also Chart 19.

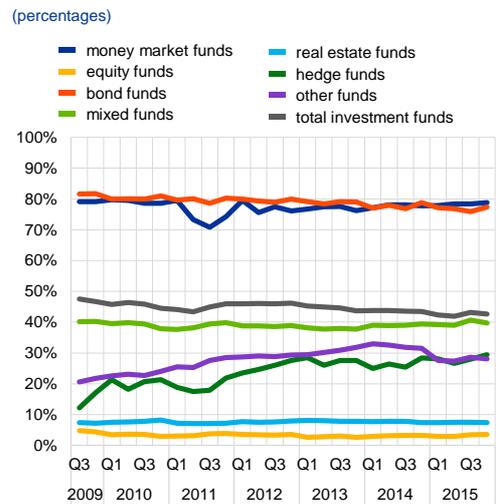


Chart 15
EU investment funds: Financial leverage



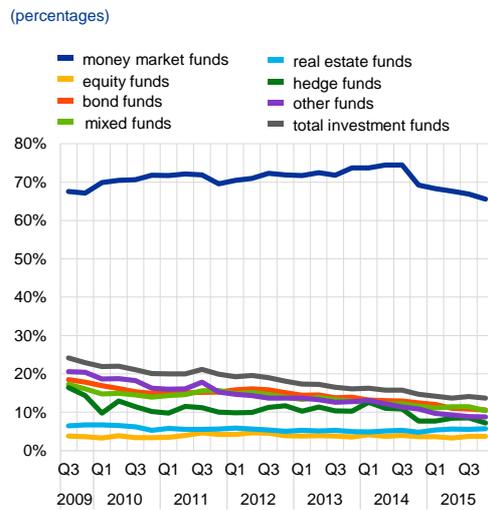
Source: ECB.
 Notes: Based on available data for the EU; Bulgaria, Croatia, Denmark, Sweden and the United Kingdom are not included. Leverage is calculated as the ratio of loans received to total liabilities.

Chart 16
EU investment funds: Credit intermediation



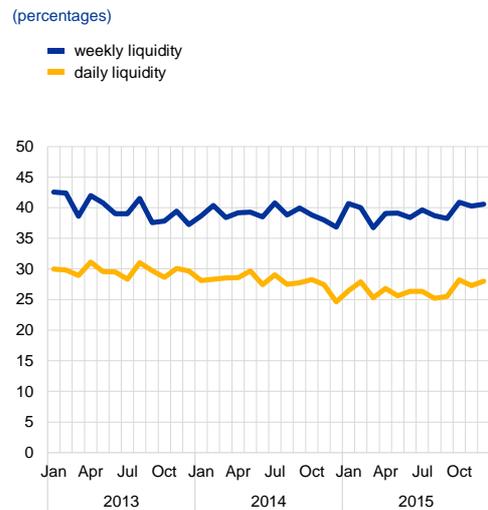
Source: ECB.
 Notes: Based on available data for the EU; Bulgaria, Croatia, Denmark, Sweden and the United Kingdom are not included. The credit intermediation ratio is calculated as holdings of loans and debt securities to total assets.

Chart 17
EU investment funds: Interconnectedness



Source: ECB.
 Notes: Based on available data for the EU; Bulgaria, Croatia, Denmark, Sweden and the United Kingdom are not included. Interconnectedness is proxied by the assets with an MFI as counterpart as a share of total assets. MMF data in Q4 2014 are affected by reclassifications in some positions.

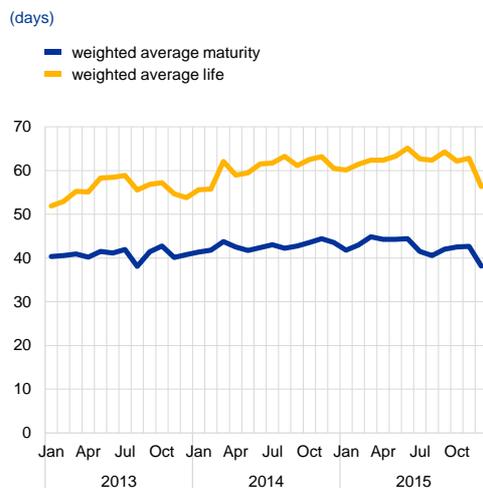
Chart 18
EU MMF liquidity



Sources: Fitch Ratings and ESMA.
 Notes: Daily liquidity includes all assets maturing overnight and weekly liquidity includes shares issued by AAA-rated MMFs and securities issued by highly rated sovereigns with a maturity of less than one year. Aggregation carried out using individual MMF data weighted by assets under management.

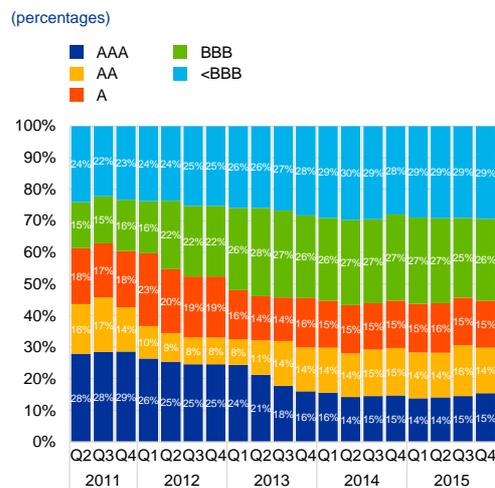


Chart 19
EU MMF maturity



Sources: Fitch Ratings and ESMA.
 Notes: Weighted average maturity (WAM) and weighted average life (WAL) of EU prime MMFs. Aggregation carried out by weighting individual MMFs' WAM and WAL by assets under management.

Chart 20
Average rating of EU bond fund holdings



Sources: Lipper, ESMA and Standard & Poor's.

Chart 21
Weighted average maturity of EU bond funds' assets



Sources: Lipper and ESMA.



2.2 Activity-based mapping

Chart 22
Size of the EU repo market

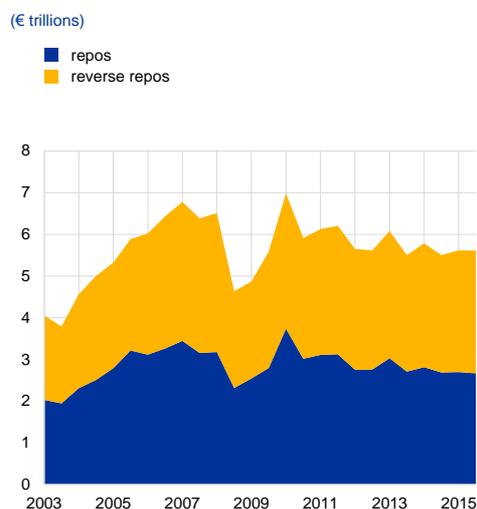


Chart 23
Repo rate on selected sovereigns

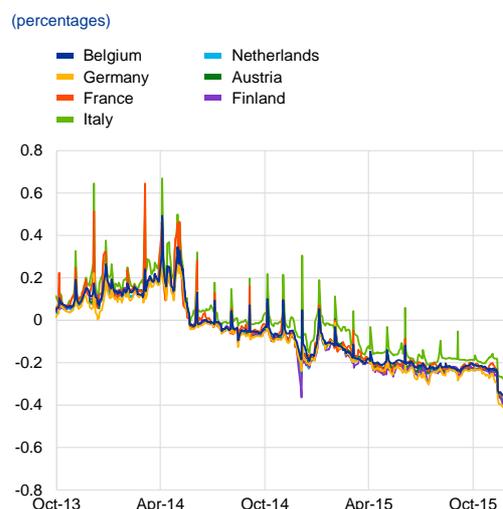


Chart 24
Euro area MFIs' repos with non-MFIs, by sector

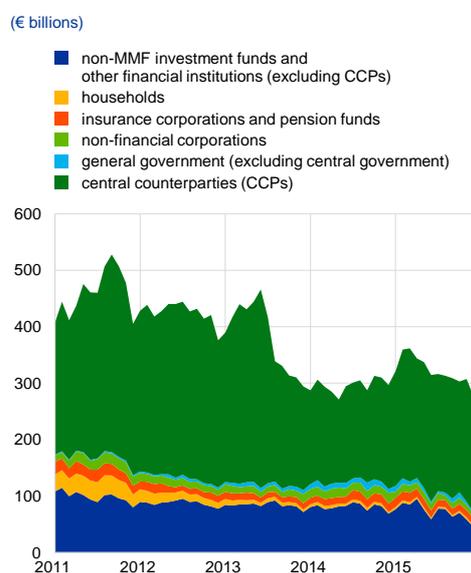


Chart 25
EU securities utilisation rates

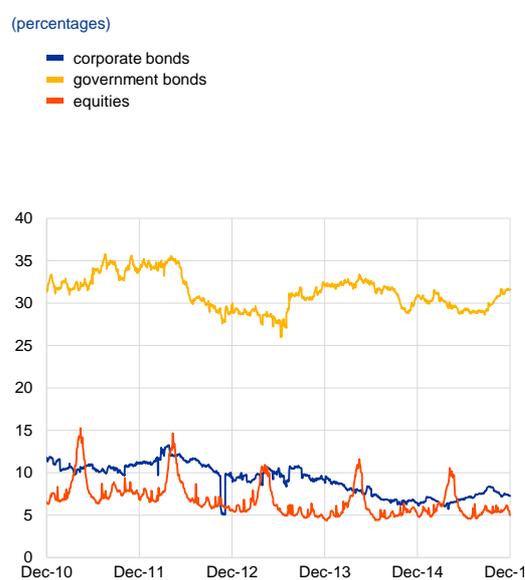
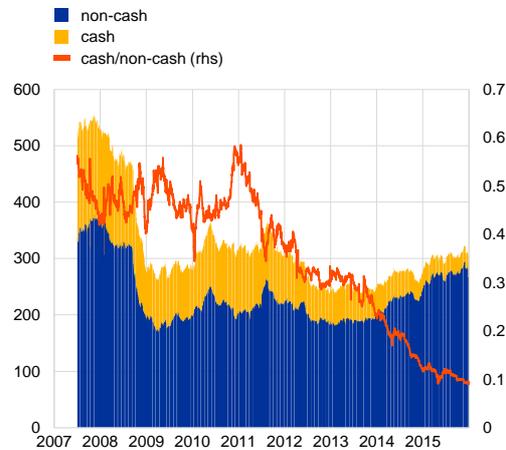
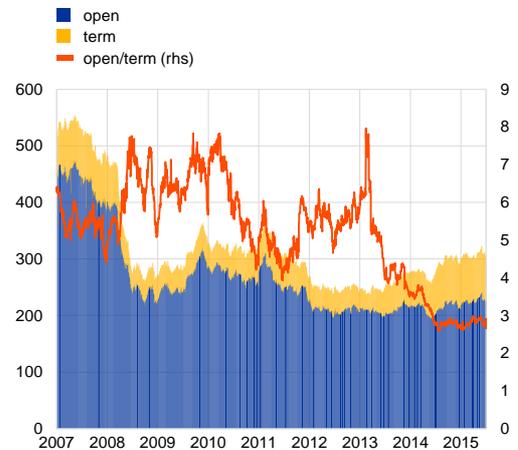


Chart 26
EU government bond lending (cash vs. non-cash collateral)



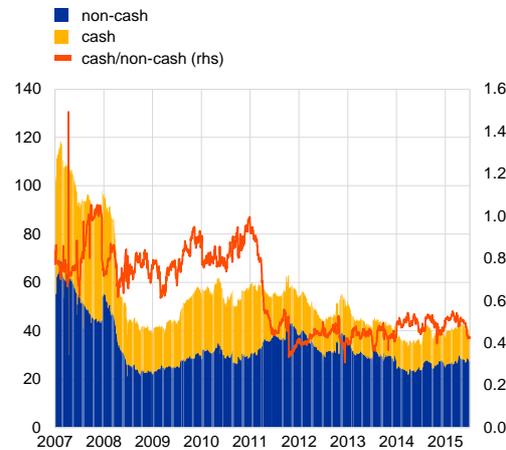
Sources: Markit and ESMA.
 Notes: Outstanding value of European government bonds on loan against cash/non-cash collateral, in € billions. Ratio of cash/non-cash collateral shown on the right-hand scale.

Chart 27
EU government bond lending (open vs. term maturity)



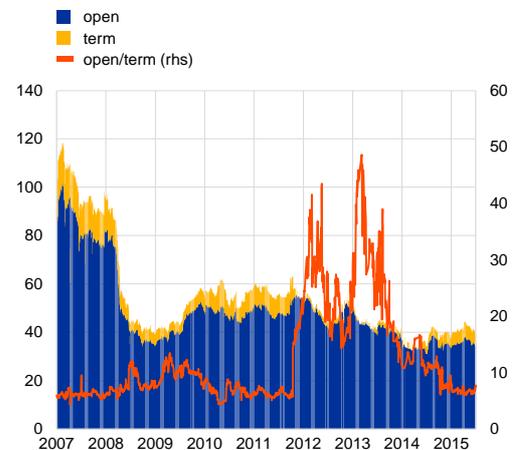
Sources: Markit and ESMA.
 Note: Outstanding value of European government bonds on loan by type of transaction, in € billions. Ratio of open/term transactions shown on the right-hand scale.

Chart 28
EU corporate bond lending (cash vs. non-cash collateral)



Sources: Markit and ESMA.
 Notes: Outstanding value of European corporate bonds on loan against cash/non-cash collateral, in € billions. Ratio of cash/non-cash collateral shown on the right-hand scale.

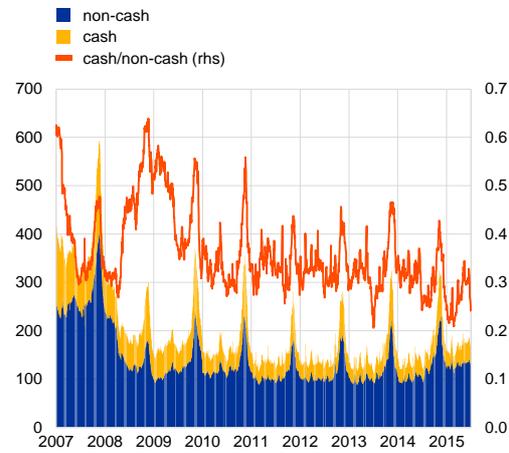
Chart 29
EU corporate bond lending (open vs. term maturity)



Sources: Markit and ESMA.
 Notes: Outstanding value of European corporate bonds on loan by type of transaction, in € billions. Ratio of open/term transactions shown on the right-hand scale.

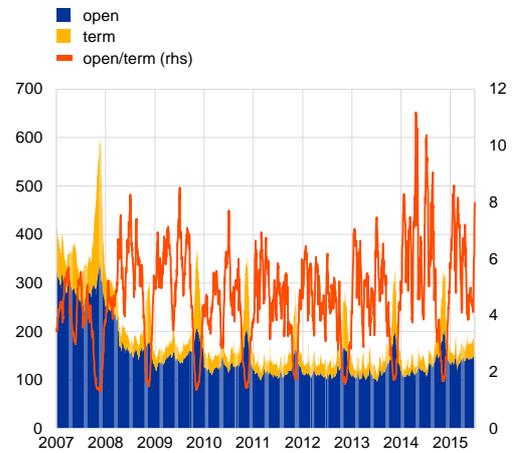


Chart 30
EU equity lending (cash vs. non-cash collateral)



Sources: Markit and ESMA.
 Notes: Outstanding value of European equities on loan against cash/non-cash collateral, in € billions. Ratio of cash/non-cash collateral shown on the right-hand scale.

Chart 31
EU equity lending (open vs. term maturity)



Sources: Markit and ESMA.
 Notes: Outstanding value of European equities on loan by type of transaction, in € billions. Ratio of open/term transactions shown on the right-hand scale.



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