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PART 3/5

COMMISSION STAFF WORKING DOCUMENT

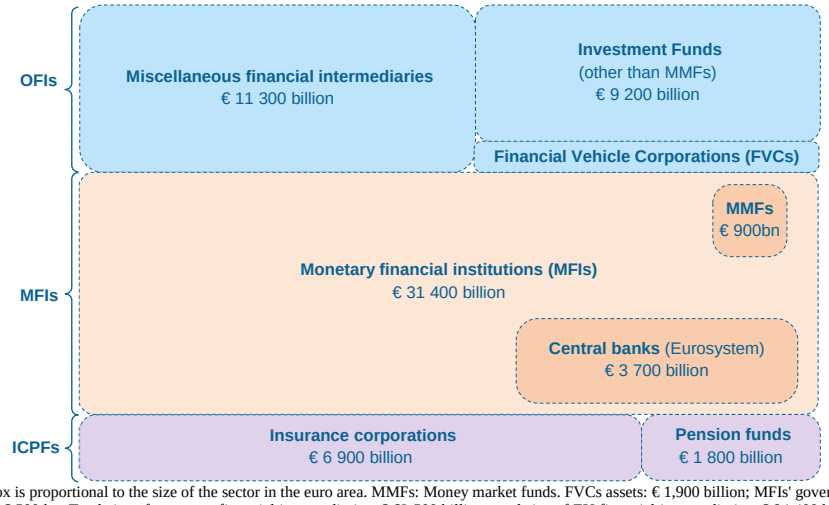
European Financial Stability and Integration Review, April 2015

4. FINANCIAL INTERMEDIATION

Financial institutions intermediate between savers and users of funds (e.g. a bank takes short-term deposits from savers and provides long-term loans to borrowers, in a process termed 'maturity transformation'). In general, financial institutions do not generate net additional financial resources for the economy but just intermediate between other economic agents. Financial institutions also perform other functions, such as creating and managing payment systems, providing market infrastructure (e.g. trading platforms or management of initial public offerings), providing savings facilities for households (e.g. investment funds, insurance or pension funds), participating actively in markets (e.g. through 'prop trading' of bonds and quoted shares), providing liquidity (e.g. factoring) and helping economic actors to manage and insure against risks (e.g. insurance companies and pension funds).

The financial sector can be split in a number of subsectors (Chart 22). An overview of financial intermediation as a whole is given in Section 4.1. A detailed analysis of the three main subsectors is provided in Sections 4.2 to 4.4: monetary financial institutions, insurance corporations and pension funds, and other financial institutions. In addition to the interaction of financial intermediaries with the rest of the economy, there are significant interconnections within the financial sector; the implications for financial integration and stability of these interconnections and of the complexity of the financial sector are briefly discussed in Section 4.5.

Chart 22: **Financial intermediaries and sub-sectors**, total assets, 2014 Q3, euro area



Notes: The surface of each box is proportional to the size of the sector in the euro area. MMFs: Money market funds. FVCs assets: € 1,900 billion; MFIs' government assets: € 2 900 billion; MFIs' government liabilities: € 500 bn. Total size of euro area financial intermediaries: € 62 500 billion; total size of EU financial intermediaries: € 94 400 billion. The chart indicates the values for the euro area; the EU presents a similar distribution among sectors and subsectors.
Source: ECB, Eurostat and own calculations.

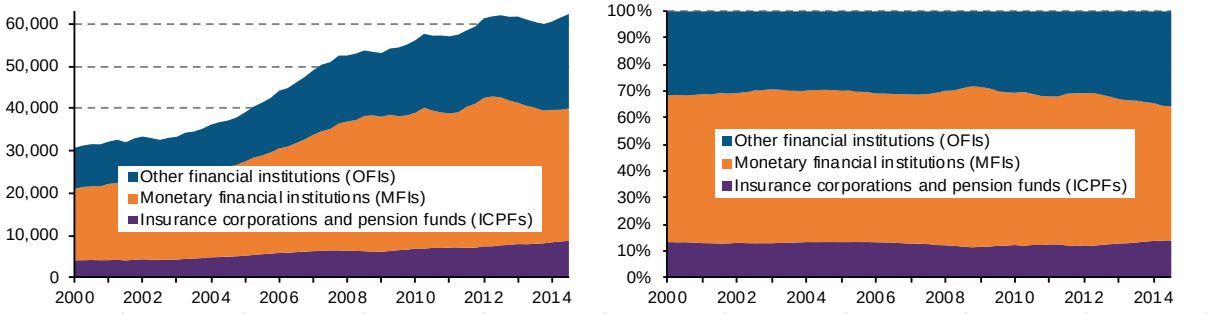
4.1. Financial intermediation: an overview

Financial intermediation can be divided into three subsectors: monetary financial institutions (MFIs), insurance corporations and pension funds (ICPFs), and other financial institutions (OFIs). In the third quarter of 2014, MFIs' total assets accounted for about half of the EU financial sector, ICPFs for about 14 per cent and OFIs for about 36 per cent[1]. MFIs can further be split into credit institutions, money market funds and the central bank; OFIs, can be split into investment funds, financial vehicle corporations (FVCs) and miscellaneous financial intermediaries; ICPFs can be split into insurance corporations and pension funds (Chart 22).

The European financial sector doubled in size between the early 2000s and 2012 and then levelled off. This was mainly because of stagnation or even a reduction in the size of MFIs since the onset of the financial crisis; both ICPFs and OFIs kept expanding (Chart 23).

[1] See also Section 2 for a comparison with the other sectors of the economy.

Chart 23: Total assets of **financial intermediaries**, Outstanding amounts, euro area



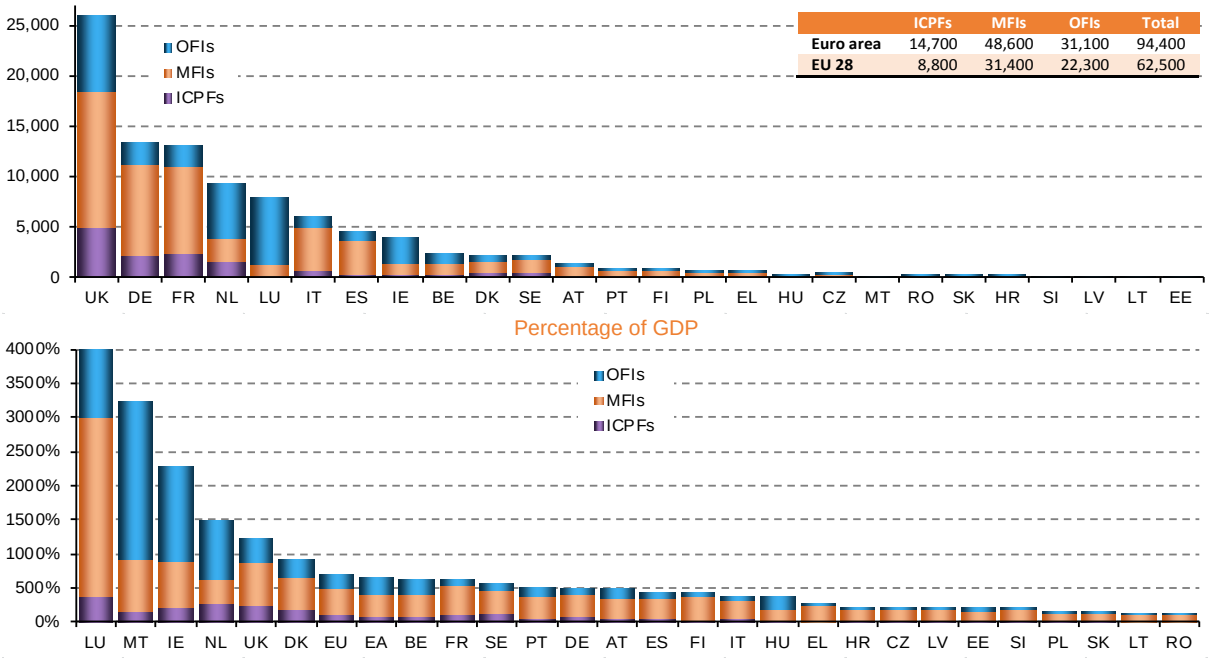
Notes: Data according to ESA 2010 methodology.
Source: ECB, Eurostat and own calculations.

Country analysis

In September 2014, the total balance sheet of EU financial institutions was almost € 100 000 billion, over seven times the annual GDP of the EU. The size of the financial sector varies widely across countries, both in absolute and relative terms.

In absolute terms, the UK has the largest financial sector (27 per cent of the total); in Germany and France, the financial sector is about half the size of that of the UK. The Netherlands' financial sector is larger than that of Italy or Spain, even though the country is between two and three times smaller. Despite its small size in terms of GDP, Luxembourg's financial sector is the fifth largest[2] (Chart 24, top panel).

Chart 24: **Size and composition of the financial sector**, total assets, 2014 Q3



	ICPFs	MFIs	OFIs	Total
Euro area	14,700	48,600	31,100	94,400
EU 28	8,800	31,400	22,300	62,500

Notes: Luxembourg: OFIs = 16 000 per cent of GDP. Data for Cyprus and Bulgaria are not available.
Source: ECB, Office for National Statistics (UK), Eurostat and own calculations.

In relative terms, the countries with the largest financial systems are Luxembourg, Malta and Ireland (at more than 20 times their respective GDP), followed by the Netherlands, the UK and Denmark.[3] On the other hand, in most eastern European countries, the financial sector represents no more than three times GDP.

[2] The GDP of Luxembourg represents about 0.3 per cent of the GDP of the EU.
[3] Data are not available for Cyprus, but it should probably be included among the countries with the largest financial systems, in relative terms.

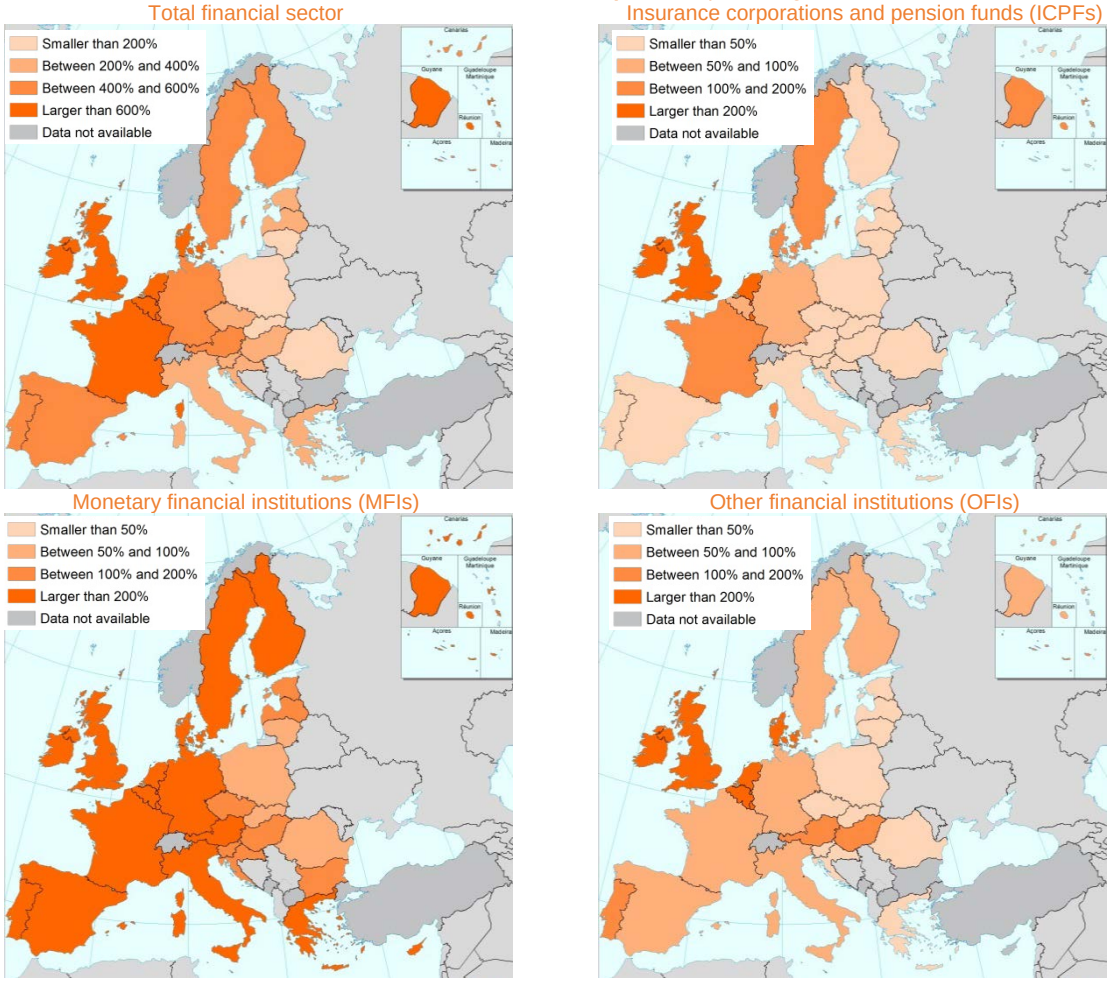
In terms of composition, in most countries, MFIs account for more than half of the financial sector (Chart 25). Exceptions are Luxembourg, the Netherlands and Malta, where OFIs are the largest sector. In the UK, Germany, Belgium and Hungary, OFIs are also significant. ICPFs tend to be smaller across the board.

4.2. Credit institutions

Credit institutions (banks), central banks and money market funds are grouped together in the category of 'monetary and financial institutions' (MFIs) because they all issue money. However, they have very different characteristics. This section focuses on banks; money market funds are discussed in more detail in Section 4.4[4].

Most economic financing arises from direct interaction between economic agents. However, it is not always possible to match the needs of savers and investment. So banks provide a service of maturity transformation and intermediation which bridges these needs: traditionally, they take in mostly short-term funds (mainly deposits) from their customers and transform them into long-term lending.[5] The use of short-term liabilities to fund long-term assets, while being critical for the functioning of the economy, leaves banks with an intrinsic weakness. However, this is mitigated by imposing a framework of authorisation, prudential requirements and close supervision. The financial crisis showed that the previous framework had not provided enough safeguards to ensure the stability of the system. Consequently, a series of regulatory reforms were adopted to increase the resilience and stability of the sector.[6]

Chart 25: **Size of the financial sector and its components**, percentage of GDP, 2014 Q3



[4] This chapter does not go into the role of the central bank. For a discussion of the ECB's role in supporting the financial system during the financial crisis, see last year's review (European Commission, 2014a), Section 2.2.2.
[5] Regulation (EU) No 575/2013 defines a credit institution as 'an undertaking the business of which is to take deposits or other repayable funds from the public and to grant credits for its own account' (Article 4(1)(1).
[6] For further details of the regulatory reform, see Section 2.3 in last year's review.

Source: ECB and own elaboration.

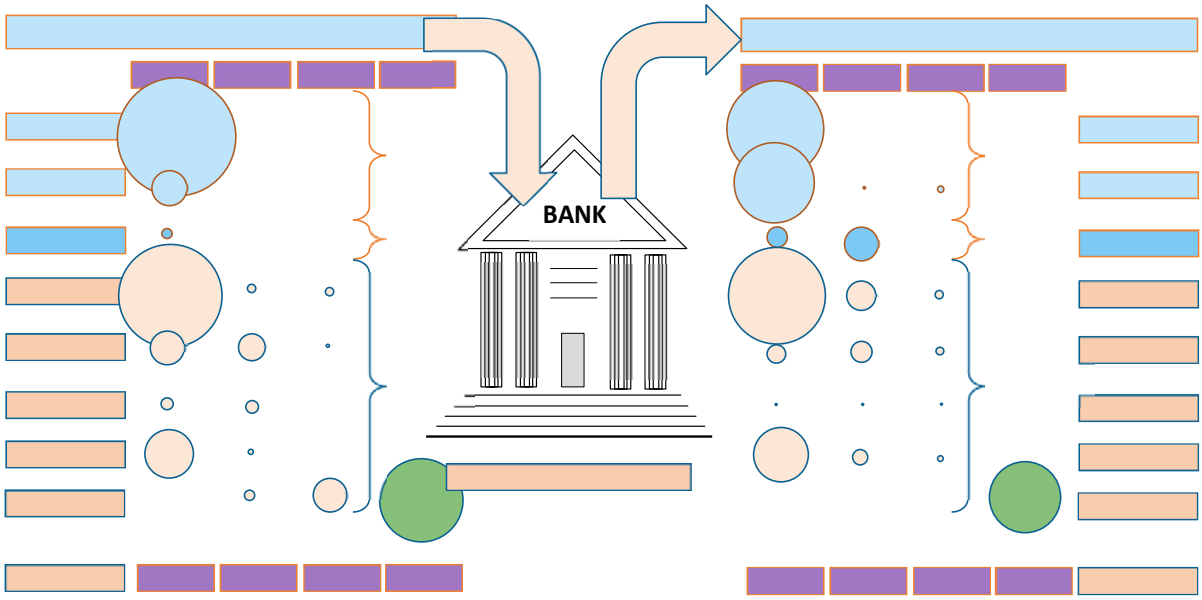
Data show that deposits are an important source of financing for banks; however, banks also obtain funds from other sources, e.g. by issuing bonds, quoted shares, other equity, derivatives and other products (Chart 26). Similarly, besides bank loans, credit institutions provide financing to the rest of the economy through a variety of products (e.g. banks are very active in capital markets and their holdings of bonds and equity account for between 20 and 80 per cent of the different market segments).

Financing of the economy vs positions within the financial sector

Through intermediation and maturity transformation, banks provide products that meet the specific needs of each customer (in terms of size, maturity and other features) by means of bilateral negotiations that complement the funds that stakeholders have already obtained directly through economic interactions.[7] However, bank funding of the economy also involves significant movements of funds within the financial sector (Chart 26).

Deposits from other banks (interbank lending received) and other financing received by banks from financial institutions have radically different features from deposits received from households and non-financial corporations (NFCs). The former are much less stable than the latter. Similarly, loans granted to households and NFCs typically have long maturities (e.g. up to 30 years or longer for mortgages), unlike loans granted to financial institutions (e.g. interbank lending provided), which typically have a maturity of a few days only. In order to mitigate the vulnerabilities implicit in inter-financial positions and the potential adverse effects on financial stability, the new prudential legislation introduces new requirements for the short-term and medium-term liquidity of bank assets (the so-called liquidity coverage ratio, or LCR, and the net stable funding ratio, or NSFR).[8]

Chart 26: **Financial intermediation by MFIs**, Outstanding amounts, euro area, 2014 Q2, € billion



Note: The size of the bubbles is proportional to the amounts.
Source: Own elaboration based on ECB data and on own calculations.

Given these different features of banks' assets and liabilities, depending on the counterparty (the non-financial or the financial sectors), bank balance sheets can be split into core and non-core activities. Core activities would cover the banks' positions vis-à-vis the non-financial sectors (households and non-financial corporations); non-core activities would cover their positions vis-à-vis the financial sector (MFIs, ICPFs and OFIs). The positions vis-à-vis governments, given its mixed features,[9] could also be distinguished.

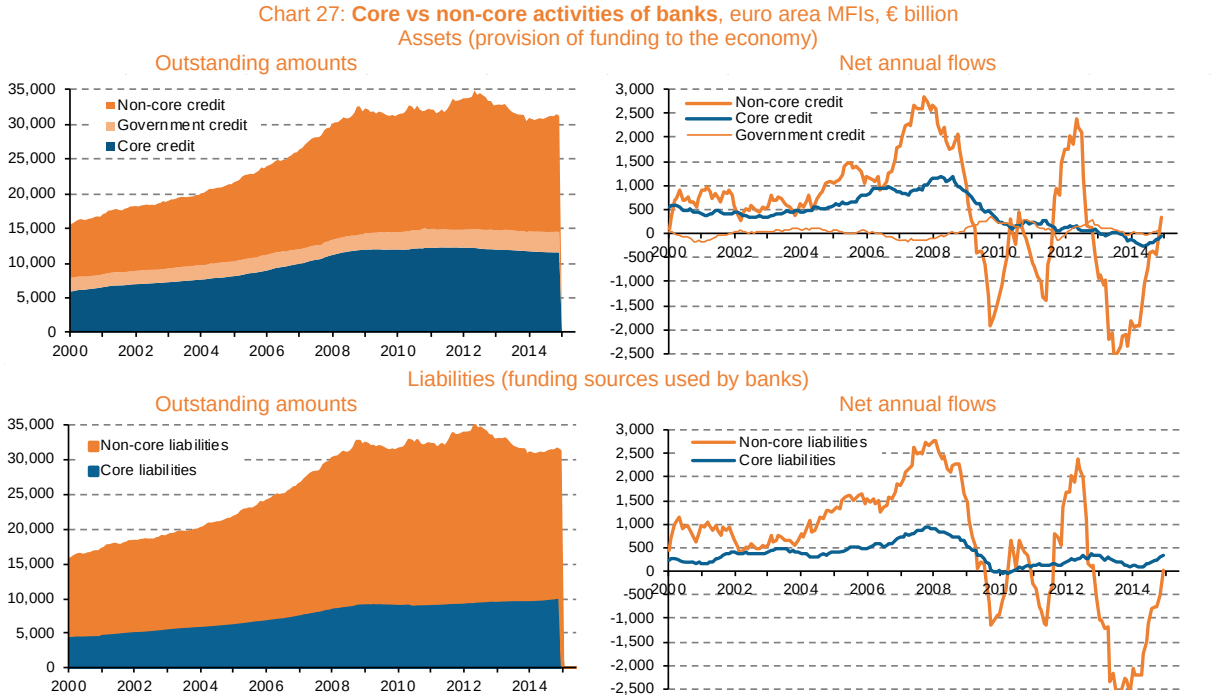
[7] See Sections 5 and 6 for further details.
[8] For further details about the LCR see Basel Committee on Banking Supervision (2013); for further details about the NSFR see Basel Committee on Banking Supervision (2014a).
[9] Governments bonds are often used by banks as collateral in inter-financial operations such as repos and others.

Data show that interaction with the economy (i.e. core activities) accounts for about one third of bank balance sheets while inter-financial positions (non-core activities) account for two thirds (Chart 27, left-hand panels). The data also show how these broad categories are different: during the crisis, the volume of core activities showed very little change, while non-core activities were strikingly volatile.

This volatility was linked to the loss of confidence in the markets and, particularly, in wholesale funding markets as reflected in the evolution of the Euribor-OIS spread (see Chart 8 in Chapter 1). Substantial public intervention was needed both from governments, in the form of guarantees of bank liabilities,[10] and from the central bank, in the form of conventional and unconventional monetary policy measures,[11] to stabilise the financial markets. On these grounds, the volatility observed in non-core activities seems to have been excessive or, at least, to indicate excessive risk-taking on the part of banks.

Although at lower rates than during the boom period, the amounts deposited at banks by households and NFCs increased throughout virtually the whole crisis period (i.e. net annual flows of core liabilities remained positive; see Chart 27, bottom-right panel). On the other hand, new credit provided by banks to the economy (core assets) was very low and even turned negative (Chart 27, top-right panel). It seems therefore, that banks have used the fresh funds obtained from the economy for purposes other than intermediating and providing credit.[12] While (credit) demand factors may have played a role, the dynamics of non-core activities seem to indicate that the fall in the provision of new credit may have also been influenced by the turmoil in inter-financial positions.

Chart 27: **Core vs non-core activities of banks**, euro area MFIs, € billion



Notes: Core assets: credit provided by banks to households and NFCs through loans or the purchase of securities. Government assets: loans to governments and holdings of sovereign bonds. Non-core assets are calculated as the residual factor with respect to total assets. M3 is used as a proxy for core liabilities. Non-core liabilities are calculated as the difference between total assets and M3. Government liabilities are negligible and, therefore, are not shown. Annual flows are computed as the sum of net flows for 12 consecutive months through a rolling window. 'Net' refers to new transactions minus redemptions.
Source: ECB Statistical Data Warehouse and own calculations.

The volatile profile of non-core activities is partly due to the interconnectedness of banks (e.g. see the size of interbank deposits and loans in Chart 26). This implies that tensions in specific institutions could quickly spread to other banks. Similarly, good news and confidence can also quickly spread. On top of that, the banks' interconnections with other financial institutions may have further contributed to the volatility of non-core assets.[13]

[10] For further details, see European Commission, 2014d.
[11] For further details, see the Annex to Chapter 1 and last years' report (European Commission, 2014a), Chapter 2.
[12] See also last year's review (European Commission, 2014a), page 46.
[13] There is extensive literature about the advantages and risks of the wholesale activities of banks and the advantages and disadvantages of narrow banking. See, for instance, Phillips and Roselli (2009) or Kay (2010). The debate is also at the root of proposals for structural reform

Many analysts have pointed out that the origins of the crisis are to be found in excessive risk-taking by banks and the subsequent erosion of confidence in wholesale markets.[14] However, risk-taking can be excessive under many circumstances and does not require the kind of contagion on the liability side which has been observed during recent years. Risk-taking on the asset side is much better understood and easier to monitor via markets, whereas monitoring contagion and interconnectedness requires granular data which are not publicly available.[15]

These dynamics are, to some extent, reflected in the data, particularly the data on net annual flows in non-core activities (Chart 27, right-hand panels). These increased from around € 500 billion a year in the mid-2000s to almost € 3 000 billion a year in 2007-2008. As indicated by the ESRB (2014), excessive credit growth has been identified as a key driver of asset price bubbles and subsequent financial crises, as it is usually founded on excessive risk-taking. Indeed, excessive growth in non-core activities eventually led to their collapse. Inter-financial lenders not only stopped providing increasing amounts of financial resources but they also called back the funding they had previously provided. In 2010, euro area banks asked for € 2 000 billion more in redemptions from other financial institutions than they rolled over or underwrote in new lending; in 2013, net redemptions increased even further (see Chart 27, top-right panel). In this context, so-called shadow banking has also played an important role in financial stability dynamics, both at EU and at international level, as has been widely acknowledged.[16]

While the bulk of loans (and core assets in general) provided to the non-financial sectors of the economy were financed by deposits (or core liabilities in general), some credit institutions made recourse to wholesale funding to finance some of their retail activities. Confronted with a withdrawal of funding in those markets, these credit institutions had to fill the gap with retail deposits and central bank funding. These dynamics explain, to a large extent, three phenomena observed throughout the crisis. Firstly, retail loans contracted despite a continuous increase in deposits (see core assets and core liabilities in Chart 27); secondly, extensive recourse to central bank funding did not result in more lending (see Charts A6 and A7 in the Annex to Chapter 1); and thirdly, a deposits or liabilities 'war' was triggered in several Member States which resulted in spill-overs in terms of very different lending rates across countries.

A series of measures have helped to stabilise the situation and to foster confidence among financial institutions: the cleaning up of banks' balance sheets, including increasing improvements in capital positions (see, for instance, Section 5.2 below); the resilience checks and transparency exercises coordinated by the European Banking Authority[17] including the comprehensive assessment made by the European Central Bank (ECB) before it assumed the role of supervision;[18] regulatory reform including the revised capital requirements directive and regulation,[19] the bank recovery and resolution directive[20] and the creation of a banking union with a Single Supervisory Mechanism (SSM) and the Single Resolution Board (SRB);[21] the financial support provided by the ECB;[22] and the positive macroeconomic developments;[23].[24] This is reflected in flows in non-core activities, which recovered to neutral or even positive net annual values by late 2014. However, given the volatility of non-core flows, it is very difficult to predict how the situation will evolve in the future.

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of the banking system such as those of the Vickers Commission in the UK, the Volker rule in the US and the Liikanen report on the EU and the proposal presented by the European Commission (2014e).

[14] See, for instance, Cœuré (2013), Krugman (2013), Gorton and Metrick (2012), Kay (2010), Varoufakis (2011), Abbassi and Schnabel (2009) or Cochrane (2014).

[15] Improving the data on network connections among financial institutions is the aim of the initiative on Data Gaps promoted by the FSB since 2009. See FSB and IMF (2009).

[16] For further discussion of shadow banking, see Section 4.5.

[17] See, for instance, EBA (2014b).

[18] See ECB (2014a).

[19] Directive 2013/36/EU and Regulation (EU) No 575/2013.

[20] Directive 2014/59/EU.

[21] Regulation (EU) No 1024/2013 and Regulation (EU) No 806/2014.

[22] See Charts A6 and A7 in the Annex to Chapter 1.

[23] See Chapter 1.

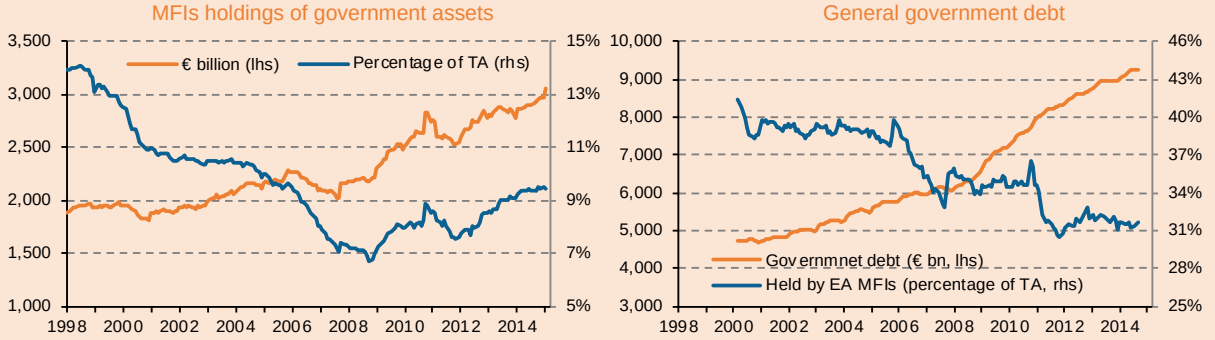
[24] Other initiatives are still being negotiated; e.g. in the field of shadow banking and in structural reform. See, for instance, the Commission (2012a) green paper *Shadow banking*, European Commission (2014e) and Chapters 2 and 3 of last year's review (European Commission, 2014a).
Moreover, most of the initiatives agreed so far are only the first step in the regulatory process and further require a number of so-called 'level 2' legislative acts.

Box C. **Interlinkages between banks and governments**

One recurrent issue during the recent financial crisis was the interconnection between the sovereign and banks. Governments depend on banks to obtain funding and banks depend on their governments for support in the event of a liquidity crunch. In some countries, the ties between banks and their sovereign became very significant. The financial turmoil exacerbated these interconnections and generated a 'doom loop', where countries with deteriorating fiscal positions were unable to support a weakening banking system.[25] In countries like Greece, Ireland, Portugal, Spain and Cyprus, the problems in the banking sector became a major burden on public finances and contributed to an eventual request for financial support from their European partners.[26]

Aggregate figures show how the general government debt of euro area Member States increased throughout the crisis (Chart B6, right-hand panel) and how the exposure of euro area MFIs to euro area governments also increased (Chart B6, left-hand panel). However, the picture is more nuanced in relative terms. Even if the relative size of government exposure increased between 2008 and 2014, the latest available figure (with exposure to the sovereigns standing at 9.5 per cent of total assets) is significantly below the level of the late 90s (almost 15 per cent). On the other hand, the increase in government debt outpaced the increase in government bond debt held by euro area banks. As a result, government dependence on banks for finding financing fell from over 40 per cent in 2000 to about 31 per cent in the latest years. Despite this fall, governments still rely heavily on banks to finance their debt.

Chart B6: **Banks – government dependence**, euro area



Source: ECB Statistical Data Warehouse and own calculations.

The combination of important difficulties to cope with these interlinks in some specific countries with a much more benign situation at the Euro area as a whole was one of the main rationales for the creation of the Banking Union in Europe.

Country analysis[27]

While the financial sector as a whole is twice as big in the UK as it is in France or Germany (see Chart 24), the banking system is similar in size in all three countries (Chart 28, top panel), with the banking systems of Italy, Spain and the Netherlands the next largest. Other EU countries have much smaller banking systems (in absolute terms).

In relative terms, there is a clear divide between the banking systems in western and eastern European countries. Banks in western European countries typically have balance sheets equivalent to between 200 and 400 per cent of the country's GDP, while banks in easter European countries are at around 100 per cent GDP or less. There are two main reasons for this. First, most of eastern European countries had to build their banking systems from scratch after the transition from communist regimes. Therefore, they are still catching up in the process of developing a modern banking system. Second, many banks in eastern countries are subsidiaries or branches of banks in western countries. Subsidiaries and branches focus mainly on retail activities, while investment and wholesale activities are concentrated in the parent companies (situated in western countries), which perform

[25] For a detailed analysis of the interconnections between the sovereign and banking systems in a number of EU countries, see Darvas et al. (2015).
[26] For further details about the financial assistance provided to countries under financial stress, see last year's review (European Commission, 2014a), Section 2.2.
[27] For details on the evolution of core and non-core assets for each one of the 28 Member States, see the Annex to Chapter 1.

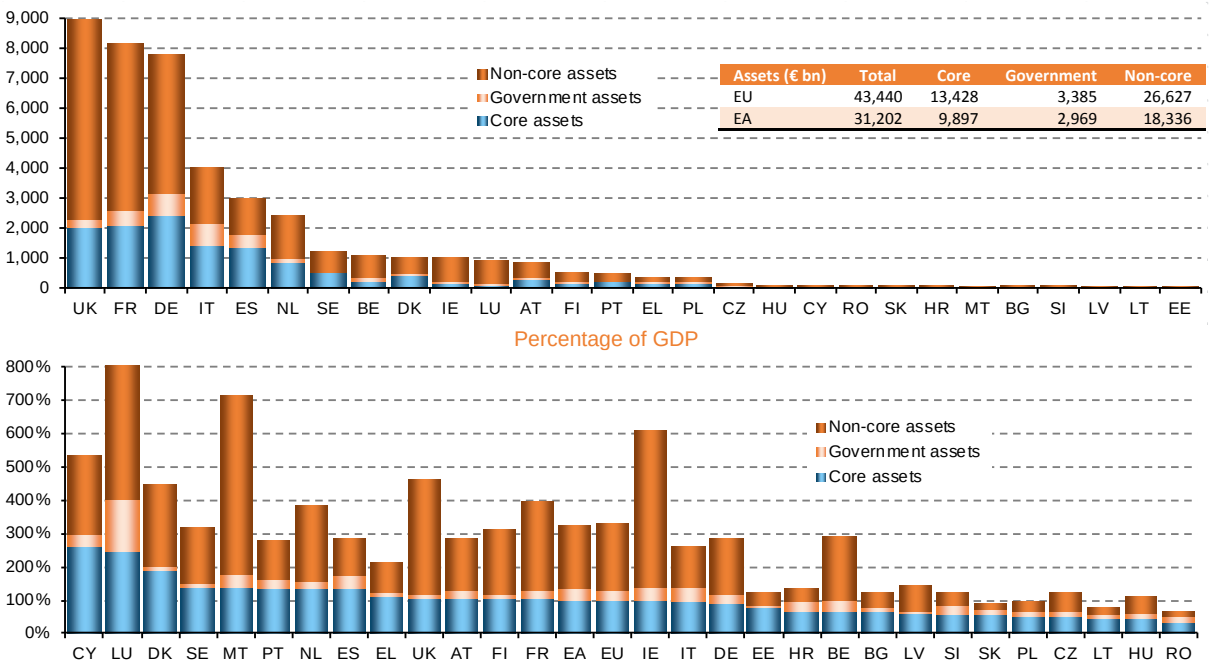
them for the group as a whole.[28] This cross-border ownership of banks is an important source of integration of financial markets within the European Union, but also a source of interdependence among countries.

Core assets are typically equivalent to around 100 per cent of GDP (although they are smaller in Eastern countries). Particular features in a few countries explain why their core assets are a much higher proportion of GDP. Firstly, Cyprus, Luxembourg and Malta are countries with very large banking systems. It has been argued that a group of companies can implement a 'tax shield' or 'tax optimisation' strategy through intra-company lending to subsidiaries in countries with low taxation.[29] A similar goal can be achieved through bank intermediation by simultaneously depositing funds and applying for a loan in a financial institution. Data seem to confirm this interpretation: loans provided by banks in these three countries go mainly to non-financial corporations, while in most other countries the majority of loans go to households (i.e. to finance mortgages). On top of that, a much larger proportion of these loans are cross-border than in most other countries.

Secondly, in Denmark, Sweden and, to a lesser extent, in the Netherlands, *perpetual mortgages* are very popular. In such loans, the monthly instalments include only the payment of interest; the reimbursement of capital is not required. These *interest-only mortgages* partly explain the relatively large size of the banking systems (in terms of total assets) in these three countries.

Finally, the relatively large size of core activities in Portugal and Spain might have been driven by the housing bubble or, in general, excessive credit growth leading to increasing leverage for households and firms. On the other hand, this also points to the issue of debt overhang, discussed in Chapter 3.

Chart 28: **Balance sheet of MFIs: size and composition**, December 2014



Assets (€ bn)	Total	Core	Government	Non-core
EU	43,440	13,428	3,385	26,627
EA	31,202	9,897	2,969	18,336

Notes: Core assets: credit provided by banks to households and NFCs through loans or the purchase of securities. Government assets: loans to governments and holdings of sovereign bonds. Non-core assets are calculated as the residual factor with respect to total assets. For the UK and Denmark, data on holdings of equity and bonds issued by NFCs were not available. Luxembourg: non-core assets = 1 900 per cent of GDP.
Source: ECB and own calculations.

The great variation in the size of the banking system across countries seems to be driven, to a large extent, by the size of non-core assets. The foundations of the recent financial crisis are closely linked to non-core activities (see discussion above). Indeed, countries whose banking systems had larger non-core assets as a share of GDP were hit harder by the financial crisis. Ireland's request for support from its European partners was linked mainly to the size of its banking system. The UK had the largest public bailouts and the majority of the banking system

[28] For further details about the cross-border ownership and the size of banks, see last year's review (European Commission, 2014a), Section 1.4.5.
[29] See, for instance, Bershidsky (2015) and House of Commons (2015). See also the discussion at the end of Section 3.3.

ended up nationalised. Similarly, governments in Germany, Netherlands, Luxembourg and Belgium had to provide massive support to prevent their banking systems from collapsing.

Banks in most of these countries already reduced the size of their non-core activities throughout the financial crisis in line with movements in the euro area aggregate, particularly in 2013 and 2014.

Box D. **Size of financial institutions: comparison against NFCs**

Background

The interconnectedness and complexity of financial institutions have been recurring topics since the start of the financial crisis because of their implications for financial stability. Firstly, the loose term of *too big to fail* was replaced by a list of *systemically important financial institutions (SIFIs)* by the international Financial Stability Board (FSB), capturing not only the size but also the complexity and interconnection of such companies (see Chapter 1, Section 2.3)[30].

Secondly, significant amounts of taxpayers' money had to be mobilised to bail out some of these SIFIs as a consequence of the substantial losses they incurred during the crisis and because it was deemed impossible to resolve them in an orderly manner under the prevailing framework. European funds had to be pooled together to help countries whose domestic capacity appeared to be insufficient to confront the financial and debt crisis. In this context, a series of temporary instruments were agreed, leading ultimately to the creation of a permanent European stability mechanism (ESM).[31]

Thirdly, legislators embarked on reform to improve bank resolvability with the adoption of the bank recovery and resolution directive.[32] Similarly, a banking union was created to break the connection between banks and the countries from which the parent companies of banking groups operate. European-wide supervision, resolution, deposit guarantees, rulebooks and backstops are more in line with the cross-border business model and size of banks.[33]

Fourthly, the prospect of bailout created moral hazard, and many SIFIs took excessive risks. New prudential requirements addressed this flaw by imposing additional capital requirements and new minimum requirements for liquidity and leverage.[34] At the same time, the revised requirements encouraged the use of a single rulebook, as national legislation had evolved differently and sometimes became inconsistent between Member States.

A similar approach to the EU's was followed in the US (mainly enshrined in the Dodd-Frank act)[35] and globally (coordinated through the Financial Stability Board)[36].

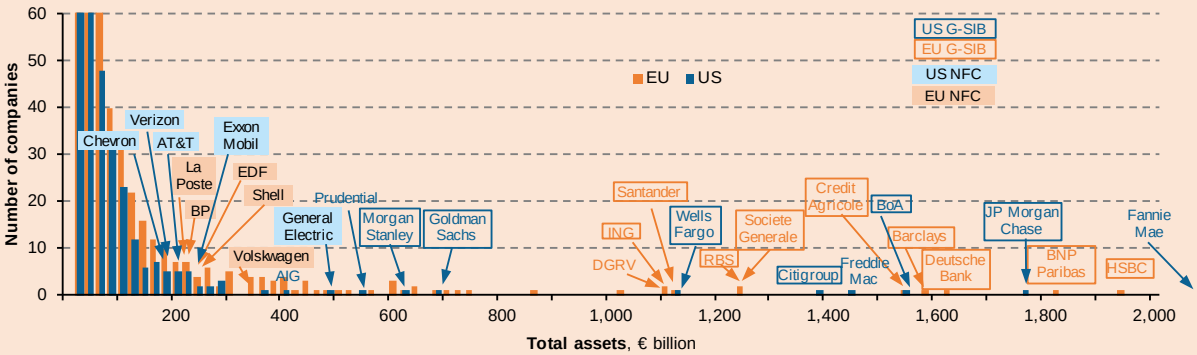
Large companies create value and employment but also concentrate power

The size and complexity of financial institutions can be better grasped by comparing them with large non-financial companies. In most Member States, a few large corporations can be considered national flagship companies. In many cases, they form an intrinsic part of their national culture and have significantly contributed to the progress and development of the country. Some examples are Volskwagen, Daimler, BMW, E.ON, Deutsche Telekom, Siemens, RWE, BASF, Bosch, Bayer and Audi in Germany; EDF, Total, GDF Suez, Sanofi, Orange, Renault and Peugeot in France; Shell, BP, Vodafone, GlaxoSmithKline (GSK), Network Rail, National Grid, Tesco and BT in the UK; Enel, Eni, Telecom Italia, Ferrovie, ANAS, Atlantia, Finmeccanica and Fiat in Italy. Similar lists can be made for many other countries. Car producers, telecoms, retail distributors, oil companies, chemical companies, pharmaceuticals, electrical companies, etc. have contributed to the increasing welfare observed throughout the twentieth century and as a source of employment.

At the same time, concerns have been raised about the concentration of power in a few actors which are mainly led by profit maximisation goals and less concerned about potential negative externalities. Competition authorities, at national and European levels, are in charge of preventing large players from abusing a dominant position and potential mergers from significantly impeding competition in the markets. Regulatory measures are there to limit firms' potential negative social and environmental externalities. Moreover, stakeholder pressure has led many of those firms to develop corporate social responsibility.

[30] For further information, see, for instance, FSB (2014b) or Masciantonio (2013).
[31] See the *Treaty establishing the European Stability Mechanism*, T/ESM 2012-LT/en 1.
[32] See EP and Council (2014a).
[33] The banking union covers all euro area countries and any other EU Member State that wish to join. See European Commission (2012b).
[34] See EP and Council (2013a and 2013b).
[35] United States Congress (2010).
[36] See, for instance, FSB (2014c).

Chart B7: **Number of companies by total assets**, € billion



Notes: Companies are grouped by segments of € 20 billion of total assets. The top 10 financial companies from the EU and the US are marked with orange and blue text. Banks classified as globally systemically important are framed. The top 5 non-financial companies in the EU and the US are marked with orange and blue shading. All EU companies larger than La Poste (€ 215 billion) are financial companies (except for the ones that are spelled out). All US companies larger than Chevron (€ 185 billion) are financial companies (except for the ones that are spelled out).
Source: Orbis, FSB (2014b) and own calculations.

Banks and financial institutions within large corporations

The strong market position and market power of these big companies is widely acknowledged. Having said that, in terms of total assets, the size of financial companies dwarfs any of those large corporations. With € 320 billion in total assets, Volkswagen is the largest industrial (and non-financial in general) company in Europe. But one would need to merge 5 Volkswagen to match the size of one of the largest banks (e.g. HSBC, BNP Paribas, Deutsche Bank, Barclays or Credit Agricole). Similarly, one would need 10 Microsoft, 10 Apple or between 50 and 100 Siemens, Carrefour, Fiat, Inditex, British Airlines, Air France, etc. (see Chart B7). Any failure of these large financial institutions could have a huge impact, due to their seemingly disproportionate size in terms of total assets.[37] This context explains the need for public authorities to intervene in the aftermath of the crisis by bailing out some of the systemically important financial institutions, by introducing sovereign backstops and by embarking on a comprehensive regulatory reform agenda to better frame risk-taking in the banking sector, as discussed in the introduction to this box.

The need for such large financial institutions

In light of Chart B7, one might ask what the right size of financial corporations for a robust economic development of the EU would be. The answer could revolve around the value added by these large financial institutions, in contributing to growth, weighed against the risks that they may entail in terms of financial stability. On the one hand, large banks can have economies of scale and can benefit from economies of scope such as diversification. One can argue that banks need to be large because they are exposed to all the other sectors in the economy and any single exposure should not compromise the survival of the bank.[38]

However, large and complex banks are harder to monitor, supervise and manage. Moreover, they can become too big to fail and lead to excessive risk-taking. The financial crisis revealed the potential implications when some of these risks materialise and result in significant loses in terms of economic and social welfare.[39] With average unemployment rates above 10 per cent in the EU and exceeding 20 per cent in some countries (see Chapter 1), the final size of such losses is still difficult to fully quantify. Having said that, the various measures taken throughout the crisis aim to address the shortcoming of the previous framework. More time is still needed to assess whether such measures can be deemed sufficient to properly mitigate the risk to financial stability that such large financial corporations could cause.

Besides the size of individual banks, the financial sector's efficiency and overall contribution to the society improves as it increases in size, but only up to a point where it may become counterproductive.[40]

In addition, there are alternatives to the provision of funding by banks. For example, the distribution of risk and the collection of funding in large amounts was precisely the main motivation for the creation and development of public listed companies starting in the industrial revolution in the nineteenth century. In fact, large companies use a variety of funding sources, with bank loans being relatively small (e.g. Exxon Mobil finances over 50 per cent of its activities from equity). Therefore, bank

[37] In addition to size, these large financial institutions are systemically important because of their interconnections and the potential for disruption of basic financial services (e.g. payment systems). Furthermore, the overall potential exposure of banks is even larger than what is suggested by their total assets because contingent liabilities and some derivatives are reported off-balance sheet.
[38] Limiting the size of large exposures is among the new prudential requirements promoted by the Basel Committee on Banking Supervision; see, for instance, BCBS (2014b).
[39] For further discussion of the losses stemming from the financial crisis, see, for instance Wolf (2014).
[40] See, for instance, Pagano (2014) and Wolf (2014).

lending is mainly geared to companies smaller than those large multinational firms and, consequently, such large financial institutions do not seem to be necessary.

On top of that, Section 4.2 shows that a significant share of the balance sheet of banks (and financial institutions) do not involve loans to the real economy but inter-financial positions. If this is already the case for the financial sector as a whole, it is even more so for the large financial institutions.[41,42]

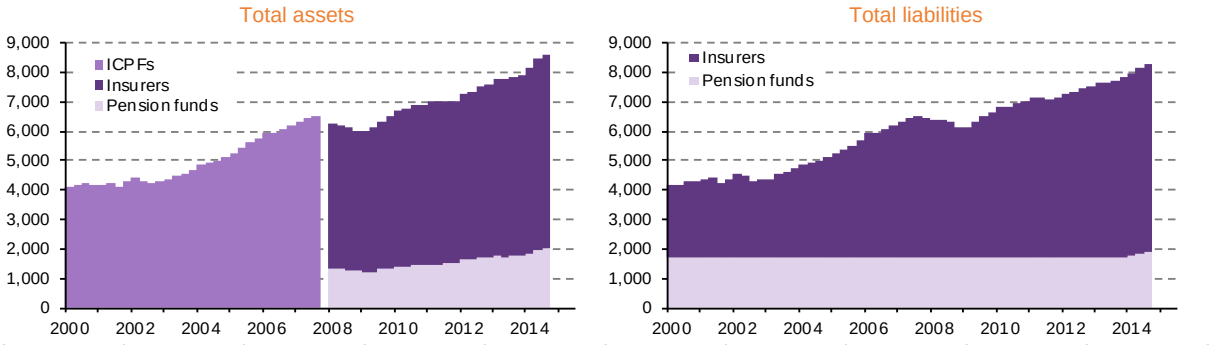
4.3. Insurance corporations and pension funds (ICPFs)

Overview

The premium paid to underwrite insurance provides the customer with the right to a large payment in the future if the risk specified in the contract materialises. Similarly, pension funds are built up from 'small' contributions throughout the working life of an employee who receives 'large' payments on reaching retirement age. Although they address different issues, ICPFs share several characteristics, so they are usually computed together within a single sector. Unlike those of other financial intermediaries ICPFs' liabilities have very long maturities; e.g. employees can join a pension fund early in their careers while redemption becomes only due when they reach the age of retirement. This feature puts ICPFs in a comfortable position to provide long-term funding to other sectors of the economy.

Given that business model, ICPFs invest most of their funds in long-term-assets, which are usually held to maturity. However, they also need the flexibility to make large payments when specific events materialise (e.g. insurance against a natural catastrophe or retirement of a contributor to a pension fund); in other words, ICPFs' assets need to be very liquid. So ICPFs invest the bulk of their assets in bonds (mainly financial bonds and government bonds) and investment fund shares (see Chart 11). Therefore, ICPFs are generally a source of long-term financing for financial institutions and for governments.

Chart 29: **Balance sheet of ICPFs**, euro area, € billion



Notes: The breakdown of assets between insurers and pensions funds is only available from 2008 onwards.
Source: ECB Statistical Data Warehouse and own elaboration.

The low yield environment[43] is putting some strain on ICPFs by eroding their margins. The business model of these investors relies on the fact that long-term investments usually provide higher returns than short-term investments. In order to support the financial system, central banks reduced the policy rate to virtually zero. After more than six years of financial crisis, the extremely low rates have been translated throughout the whole term structure of interest rates (see Chart A3 in Chapter 1).

In terms of size, at € 8 800 billion, the balance sheet of euro area ICPFs represented about 90 per cent of GDP in the third quarter of 2014. Insurance corporations (€ 6 900 billion of total assets) are over three times larger than pension funds (€ 1 800 billion). Since 2002, the ICPFs sector has continuously expanded in size, except for a short correction in 2008 (Chart 29).

[41] Indeed, apart from the small financial centres (e.g. Luxembourg, Cyprus and Malta), the countries with banks with relatively large non-core assets are those where SIFIs are headquartered (e.g. France, the UK or Netherlands). See Chart 28. On top of that, large financial institutions tend to have larger off-balance sheet exposures.
[42] For further discussion about competition in the financial sector, see Chapter 5.
[43] About the low interest rate environment, see Section 1 and Chapter 1.

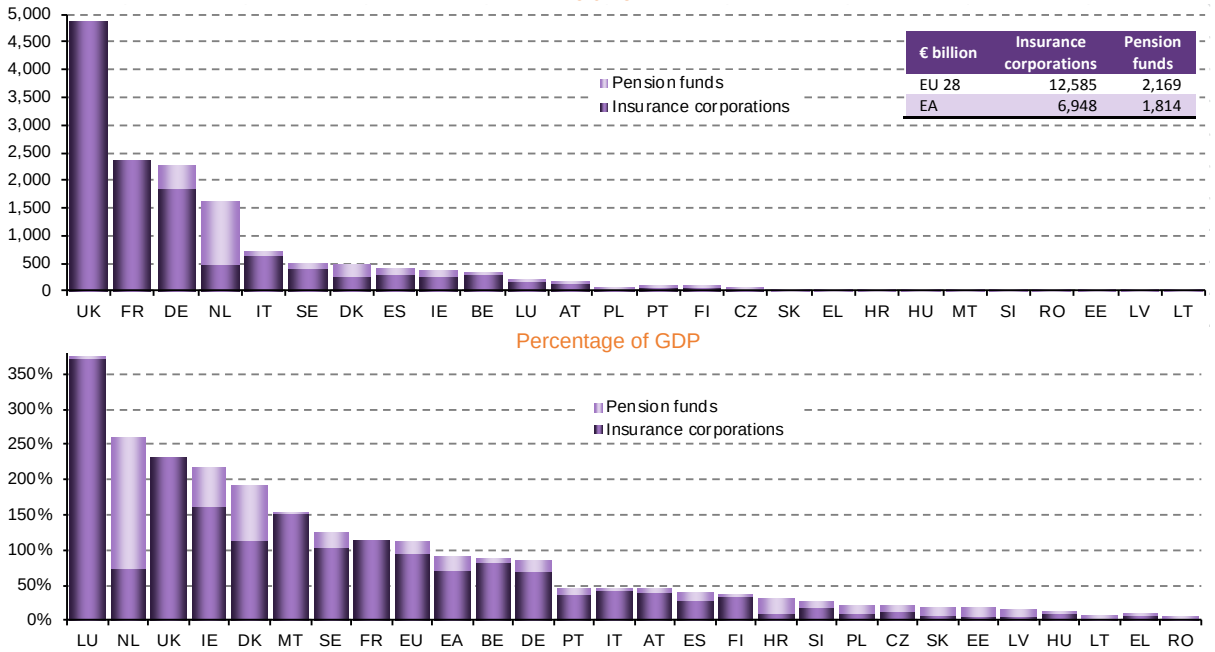
The expansion of the ICPFs balance sheet seems to be mainly driven by insurers; the balance sheet of pension funds remained stable throughout 2000-2012, particularly on the liabilities side, but started to expand thereafter. The dynamics in pension funds were driven by two main factors. Firstly, in most euro area countries, retirement is financed through pension schemes provided by the public sector, which are usually based on a pay-as-you-go (PAYG) system. The pensions of those in retirement are paid from the contributions of the current workforce, so PAYG pension schemes do not set aside funds to be invested and are not included in the statistics on ICPFs. These systems may have the disadvantage of not providing a pool of funding that can be used to finance long-term projects, but they have the advantage of being protected from the risk of losing their value, as they might have done during the most acute phases of the financial crisis. The second driving factor is demographic: the greater longevity of the population is triggering a re-thinking of retirement systems and how to ensure that they can be financed in a sustainable manner in the future. The increased awareness of this issue may explain the sustained increase in pension funds observed since early 2012. The longevity risk and its implications are further discussed on Chapter 4.

Country analysis

With almost € 5 000 billion in total assets in the their quarter of 2014, the UK has the largest ICPF sector in the EU. It represents 230 per cent of the UK's GDP and 40 per cent of the EU's GDP. France and Germany and the Netherlands are next in importance (Chart 30). In all other countries, the ICPF balance sheet is significantly smaller. Insurers represent the bulk of the ICPF sector; however, pension funds are relatively significant in a few countries (the Netherlands and, to a lesser extent, also in Denmark, Ireland, Sweden or Germany[44]).

As with credit institutions, there is a divide between western and eastern European countries. ICPFs have a much larger size, relative to the respective GDP, in the former than in the latter. This suggest a process where easter European countries are catching up not only in banking but also in terms of the wider financial system.

Chart 30: **Size of insurance corporations and pension funds**, total assets, 2014 Q3



€ billion	Insurance corporations	Pension funds
EU 28	12,585	2,169
EA	6,948	1,814

Notes: In the UK and France, *Insurance corporations* include pension funds. Data for Cyprus and Bulgaria are not available.
Source: ECB, Eurostat and own calculations.

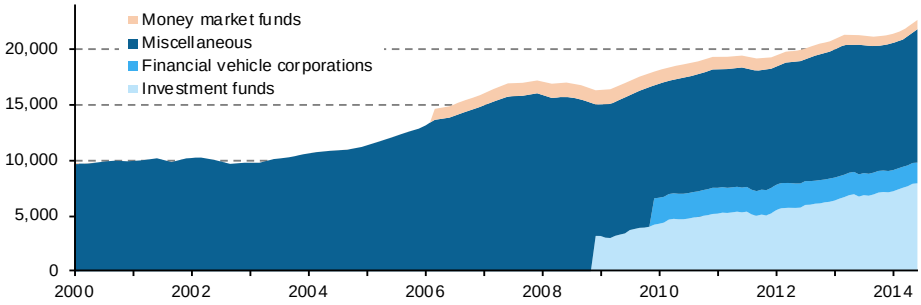
4.4. Other financial intermediaries (OFIs)

A variety of financial institutions other than MFIs and ICPFs are grouped together in 'other financial intermediaries' (OFIs). Some of these are investment funds and vehicles, which often provide general services

[44] France and the UK might be added to this group, however the breakdown between insurance corporations and pension funds is not available.

for financial institutions, such as long-term funding, distribution of risk, clearing services and market infrastructure. Many OFIs are captive finance companies: subsidiaries of other companies, whose business is usually geared to providing finance to customers buying the parent company's product. Car manufacturers and electrical firms typically have captive finance companies.

Chart 31: **Balance sheet of 'other financial institutions'**, total assets, euro area, € billion



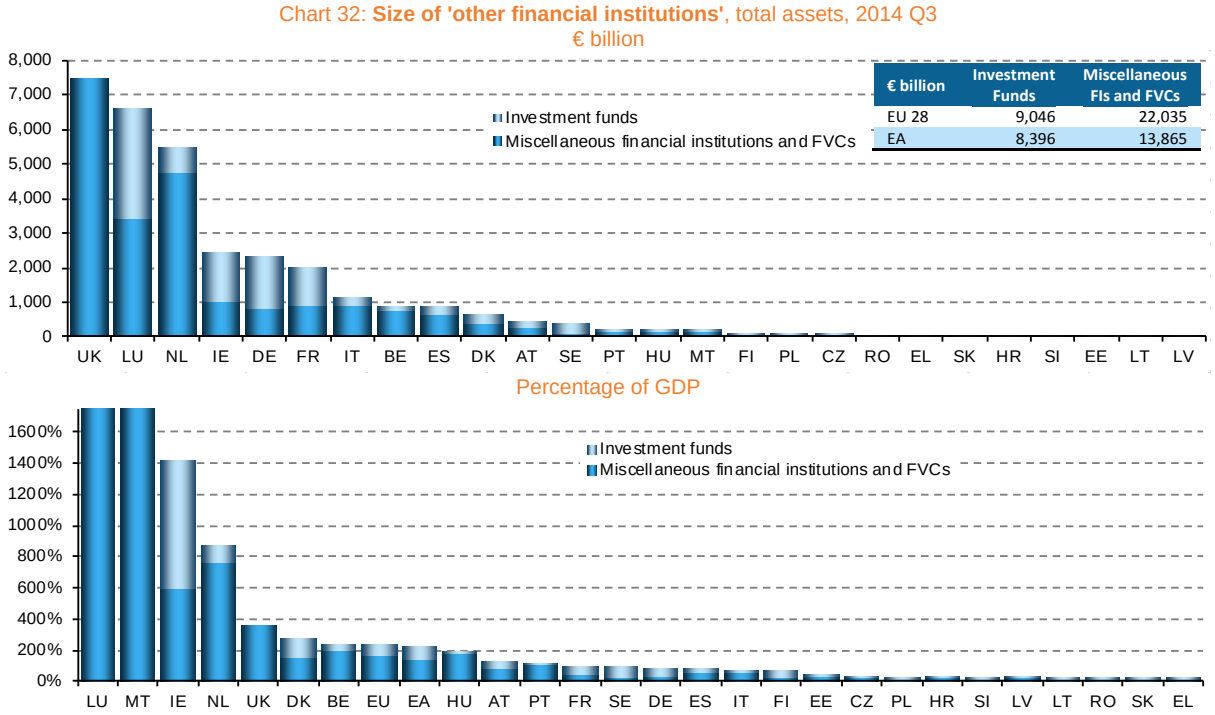
Notes: 'Investment funds' do not include money market funds. Data collection started at different times for the various subsectors; 'Miscellaneous OFIs' include financial vehicle corporations and investment funds before the breakdown was available. Money market funds are included in the chart even if they are usually classed as MFIs.
Source: ECB, Eurostat and own elaboration.

In the first half of 2000s, the total size of OFIs remained stable; however, thereafter OFIs expanded in size to more than double between 2004 and 2014 (Chart 31). Miscellaneous financial institutions represent more than half of OFIs; investment funds (including money market funds) represent 40 per cent of the total; and financial vehicle corporations, 8 per cent.

Country analysis

As in other subsectors, the largest OFIs sector is the UK's. Luxembourg's is also very large, not only in relative terms, but in this case also in absolute terms (Chart 32, top panel). Similarly, the OFI sector in the Netherlands and Ireland is disproportionately large (i.e. larger than those of Germany, France or Italy despite the significantly smaller size of those two countries).

Chart 32: **Size of 'other financial institutions'**, total assets, 2014 Q3



€ billion	Investment Funds	Miscellaneous FIs and FVCs
EU 28	9,046	22,035
EA	8,396	13,865

Notes: 'Investment funds' do not include money market funds. FVCs: financial vehicle corporations. In the UK, the category *Miscellaneous financial institutions and FVCs* includes investment funds. In Luxembourg, *Miscellaneous financial institutions and FVCs* represent 8 200 per cent of GDP; *Investment funds* represent 7 800 per cent of GDP. In Malta, *Miscellaneous financial institutions and FVCs* represent 2 300 per cent of GDP; *Investment funds* represent 70 per cent of GDP. Data for Cyprus and Bulgaria are not available.
Source: ECB, Eurostat and own calculations

Consequently, the OFI sector represents more than 800 per cent of GDP in Luxembourg, Ireland the Netherlands and Malta. In all other countries, OFIs represent around 200 per cent of GDP or less. As was the case for MFIs and ICPFs, the size of OFIs operating from eastern European countries is significantly smaller than for western European countries (Chart 32, bottom panel).

In the majority of countries, the bulk of OFIs consists of miscellaneous financial institutions (including FVCs). However, investment funds are relatively significant in Luxembourg, Ireland, Germany, France, Sweden and, to a lesser extent, Denmark and Austria.[45]

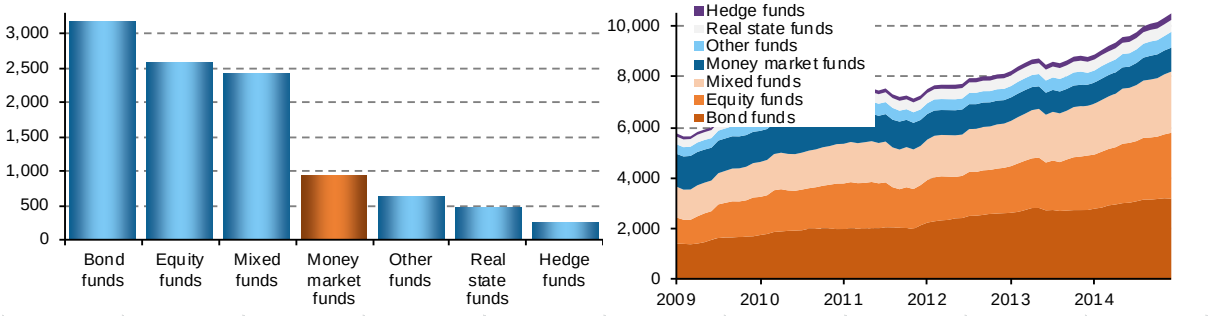
4.4.1. Investment funds[46]

Investment funds allow people to invest money collectively alongside other investors. Investors use investment funds to seek benefits such as economies of scales (and therefore lower transaction costs) and better risk management through asset diversification. The total size of investment funds has significantly expanded in the last few years, particularly since 2012 (Chart 33).

Investment policy: type of instrument

Investment funds are classified according to their investment mandate, which stipulates the type of asset in which the investment portfolio is primarily invested. Bond funds are the most prominent (accounting for 30 per cent of assets), followed by equity funds (25 per cent) and mixed funds (23 per cent); investment funds with other mandates are much smaller. Funds have expanded for all mandates except for money market funds.[47] Note that about 90 per cent of the funds managed by euro area investment funds operate from Luxembourg, Germany, Ireland, France or the Netherlands (see Chart 32 top panel)[48].

Chart 33: **Investment funds by investment policy**, total assets, euro area, € billion



Source: ECB and own calculations.

Even taking into account that investment funds invest both in the EU and other countries and in bonds, shares and other products, they account for a very significant proportion of the total size of bond and stock markets. Indeed, in 2014, euro area investment funds had a total balance sheet of over € 10 000 billion (Chart 33), which is more than the total capitalisation of euro area companies (see Chart 59) and similar in size to the total outstanding volume of bonds issued by euro area residents (see Chart 52).

Counterparts: provision of funding to other sectors

An analysis of counterparts indicates how investment funds contribute to financing the economy and how they are interlinked with other financial institutions (see Chart 34). The bulk of investment funds' resources are

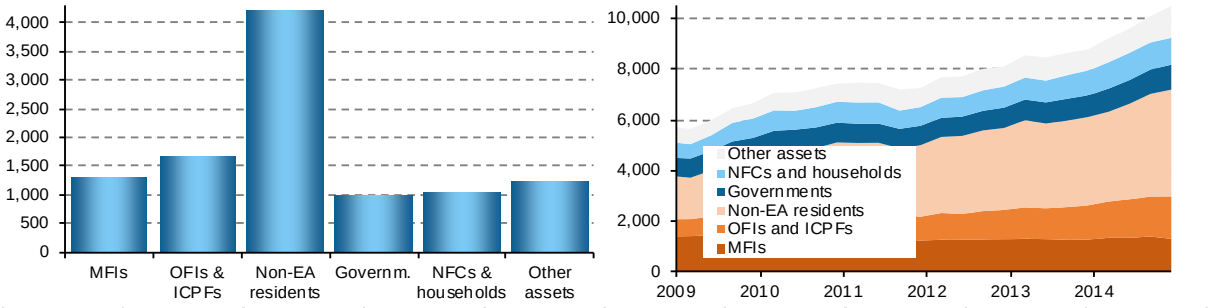
[45] Investment funds operating from the UK are probably also significant in size; however, the breakdown is not available.
[46] We analysis in this section all investment funds, including money-market funds.
[47] However, part of the decline in the size of money market funds is explained by a change in the definition. After a transitional period that ended in January 2012, the definition of money market funds was brought into line with the guidelines issued by the CESR (the predecessor of the European Securities Market Authority – ESMA). The change in definition led to a statistical reclassification from money market funds to other investment funds, estimated at € 180 billion (see ECB, 2014b, p. 33).
[48] France, Ireland and Luxembourg account for 96 per cent of the euro area money market funds sector (ECB, 2014b, p. 34).

invested either cross-border or in the financial sector. This is in line with the high levels of interconnection observed within the financial sector and helps explain the potential destabilising effects linked to 'sudden stops' (see sections 4.2 and 4.5). Over 40 per cent of the assets of euro area investment funds provide financing to economic agents outside the euro area, mainly in the UK, the US[49] and Japan, but also in other countries including emerging economies. This share has significantly expanded since early 2009, when it was below 30 per cent. This increase in investment outside the euro area is partly explained by the erosion in confidence in the aftermath of the financial crisis, but also by the low yield environment and the subsequent search for higher yields by investors.[50]

About € 3 000 billion of investment fund assets provide funding to euro area financial institutions (MFIs, ICPFs and OFIs) either by purchasing bonds and equity or by underwriting loans. Although those funding provided by investment funds represents only about 5 per cent of the total funding of financial institutions, this can be much more significant for specific asset classes; for instance, investment funds hold almost 15 per cent of the bonds issued by MFIs.

The importance of the interconnectedness between investment funds and other financial institutions should be weighed against non-core sources of funding (i.e. sources of funding other than customer loans, in the case of banks, or insurance premiums, in the case of insurances). One should take into account that investment funds are, in general, less 'attached' to their investments than other stakeholders such as households investing in family businesses, or employees (see Section 6). Therefore, a coordinated withdrawal of investment funds from specific investments cannot be discarded as a latent risk that can materialise in moments of deteriorating confidence, as it was observed in 2008-2009. Given the size of the investment funds sector compared to the balance sheet of the different institutional sectors (see Section 2), such a coordinated withdrawal has the potential to provoke or amplify market turmoil. Having said that, so-called 'private equity investors' tend to have long-term relations with their investment, and to channel a significant part through (equity) investment funds[51].

Chart 34: **Investment funds by counterpart**, total assets, euro area, € billion



Notes: Data for all investment funds, including MMFs.
Source: ECB and own calculations.

Investment funds are also a notable source of financing for governments: they provide almost € 1 000 billion or 14 per cent of the bonds issued by governments. Similarly, investment funds are also an important source of financing for NFCs as they provide up to € 1,030 billion of funds representing almost 30 per cent of the total volume of bonds issued by NFCs and over 15 per cent of the volume of quoted shares issued by NFCs. Finally, investment funds also invest in non-financial assets, particularly in real estate (included in 'other assets').

Liabilities: source of funding used by investment funds and implications for financial stability

Besides providing funding to other sectors (the assets side of the balance sheet), investment funds need to finance themselves (the liabilities side). The funding structure of investment funds makes them very robust in absorbing losses, but extremely fragile against runs. The bulk of investment funding is equity (typically over 90 per cent). This means that investment funds operate with almost no leverage and, therefore, potential losses

[49] For instance, 40 per cent of non-euro area assets held by bond funds are bonds issued by US residents (ECB, 2014b. p. 37).
[50] About the low interest rate environment, see Section 1 and Chapter 1.
[51] See Section 2.4.3 for further details about private equity investors.

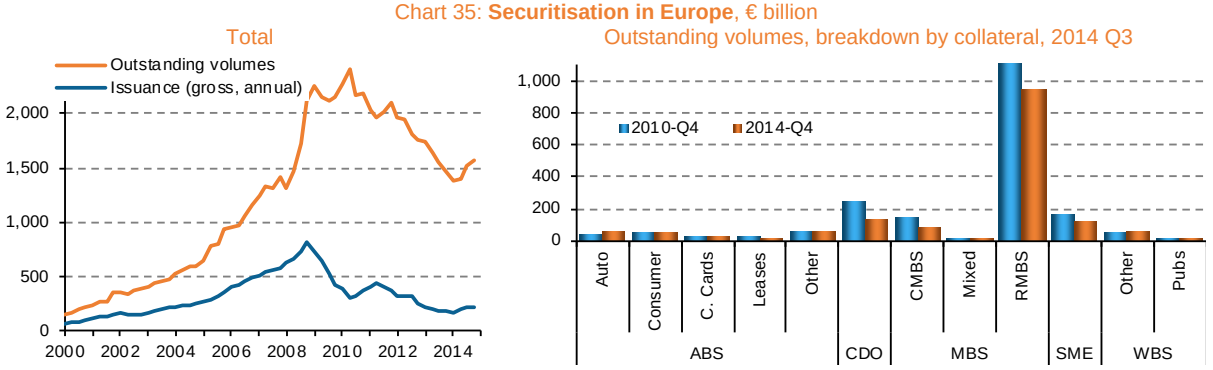
arising from problems with the assets are absorbed by the investment funds 'shareholders' and do not further impact other agents (at least not directly).

However, the prominence of so-called 'open-end' funds can be a major source of instability. Once issued, bonds and securities in general can be traded in the secondary market among investors; this is also the case for 'closed-end' funds. However, 'open-end' funds work on a kind of 'continuous primary market': new investors are incorporated into the fund by issuing new shares (and investing the corresponding funds obtained); similarly, the shares of investors who want to leave the fund are redeemed against the assets of the fund. If, in a moment of financial turmoil or for other reasons, a large number of investors want to withdraw from an investment fund, this may trigger fire sales of the fund's assets. Having said that, most UCITs are open-end funds but they do not seem to have been a source of instability.

4.4.2. Financial vehicle corporations

Financial vehicle corporations play an important role in the transforming liquidity and transferring credit risk. They are set up to carry out securitisation: on the one hand, transforming illiquid loans into securities which are marketable or can be pledged to obtain liquidity and, on the other hand, insulating financial vehicule corporations' assets from the originator's risks.

Chart 35: **Securitisation in Europe**, € billion



Notes: ABS: asset-backed securities; CDO: collaterised debt obligations; MBS: mortgage-backed securities; CMBS: commercial mortgage-backed securities; RMBS: residential mortgage-backed securities; SME: small and medium-sized enterprises; WBS: whole business securitisation. RMBS in 2010-Q4 = € 1,350 billion.
Source: AFME, SIFMA, ECB and own calculations.

Securitisation has existed for decades, but it mushroomed in the mid-2000s. The volume of securitisation in Europe expanded from less than € 100 billion in early 2000 to a peak of over € 2 400 billion in 2010 and subsequently declined. Gross issuance has followed a similar evolution, although the decline is observed already since 2008. Nevertheless, a change in trend is observed since early 2014 for both outstanding volumes and gross issuance (Chart 35, left-hand panel). Besides markets having regain confidence on securitisation after the shock of the subprime markets, the activation of the ECB's third covered bond purchase programme and asset-back securities purchase programme in late 2014[52] can be mentioned as important drivers of this new trend.

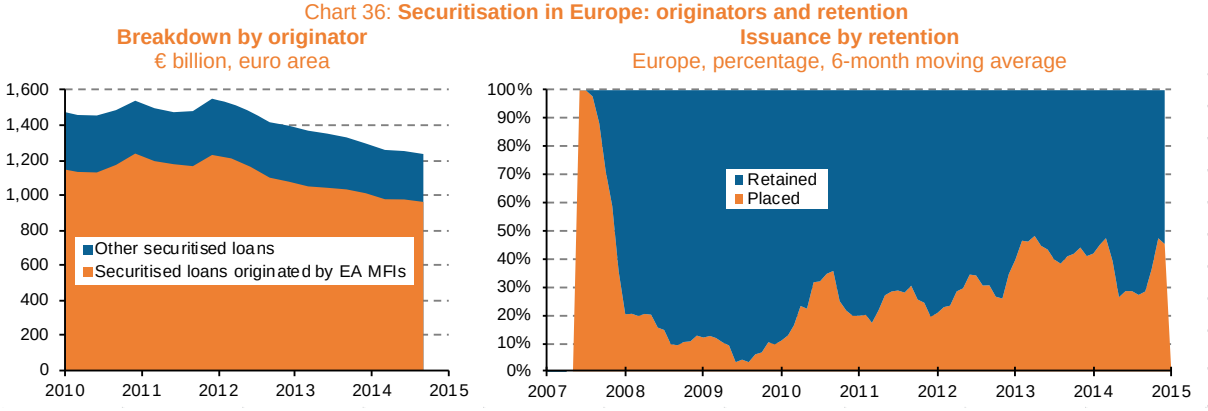
Residential mortgages account for over 60 per cent of the underlying assets for securitisation in Europe (Chart 35, right-hand panel). This implies that securitisation plays an important role in intermediating credit to euro area households. Whether or not the securitisation market should be revived as a way to improve the availability of credit has been debated for some months[53]. One of the outcomes of this debate was that the ECB introduced an asset-backed securities purchase programme in late 2014[54].

Securitisation is closely interlinked with banks as about 80 per cent of it originates from banks (Chart 36, left-hand panel). While securitisation was initially used by the originators to distribute their credit risk, with the outbreak of the crisis, an increasing proportion of new securities were retained by the originators themselves

[52] See Chapter 1 including the Charts in its Annex.
[53] See, for instance, BCBS (2014c) and the consultations of the European Commission (2015f) and of the EBA (2014c).
[54] See ECB (2014c).

(Chart 36, right-hand panel). Therefore, securitisation (and FVCs) seems to have become more a source of liquidity (e.g. by pledging a covered bond at the central bank) rather than a tool for distributing risk.

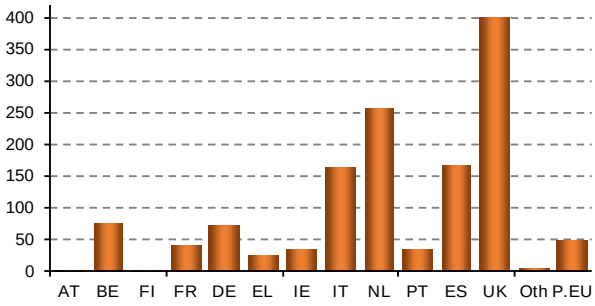
Chart 36: **Securitisation in Europe: originators and retention**



Source: AFME, SIFMA, ECB and own calculations.

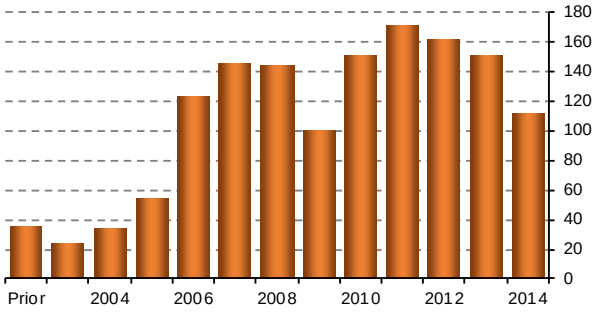
Four countries account for more than 70 per cent of all securitisation activities in Europe: the UK, the Netherlands, Spain and Italy (Chart 37). However, the scale of these activities should be judged against the total volume of loans in banks' portfolios. Securitisation represents between 12 per cent (Italy and Spain) and 33 per cent (the Netherlands) of the total loan portfolio of banks in the relevant countries and between 22 per cent (Spain) and 60 per cent (the Netherlands) of loans to households (see the volume of core assets in Chart 28, top panel).

Chart 37: **Securitisation by country of collateral**
Outstanding amounts, € billion, 2014 Q3



Notes: P.EU: PanEuope (multinational).
Source: AFME and own presentation.

Chart 38: **Securitisation by vintage**
Europe, outstanding amounts, € billion, 2014 Q3



Notes: 2014 includes data up to 2014 Q3 only.
Source: AFME and own presentation.

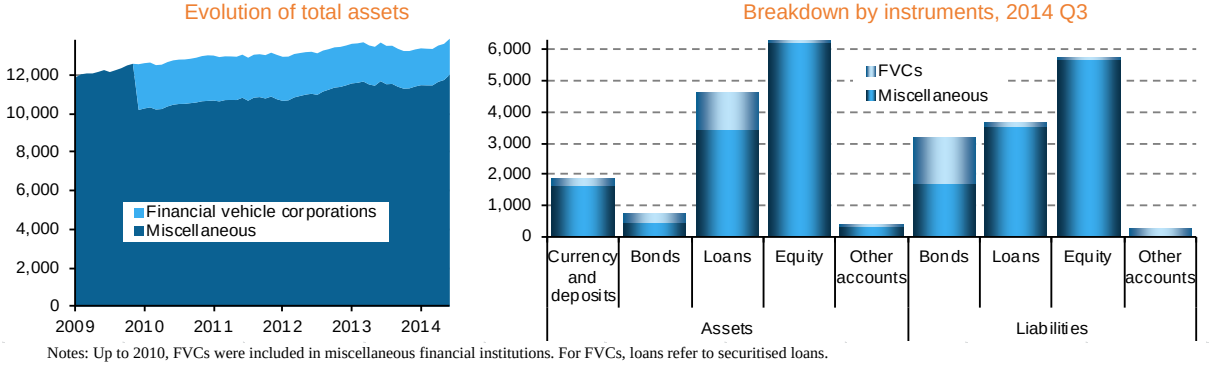
While FVCs operate with extremely high levels of leverage (equity is less than 2 per cent of total assets), risks are mitigated somewhat by the fact that the bulk of the funding comes from securities with long-term maturities. Indeed, Chart 38 shows how the currently outstanding securities were issued spread throughout the period 2006–2014, so securities outstanding in the third quarter of 2014 had an average maturity of at least 5.6 years. This is also reflected in the time lag between the decline in gross issuance and the subsequent contraction in outstanding volumes (Chart 35).

4.4.3. Miscellaneous financial institutions

Financial intermediaries not classified elsewhere (i.e. financial institutions other than MFIs, ICPFs, investment funds or FVCs) can be classified in a category of miscellaneous financial institutions. They are mainly captive financial institutions, which are subsidiaries of other companies or whose operations are restricted within a group (e.g. holding companies or special purpose entities), but also include private equity firms, venture capital companies, leasing and factoring corporations, securities dealers and other miscellaneous financial corporations. Financial auxiliaries, a term which covers insurance brokers, investment advisers and corporations providing infrastructure for financial markets, are also included in this category but their balance sheet size is negligible.

These 'miscellaneous' financial institutions represent over half of the euro area OFIs sector or about 130 per cent of euro area GDP (Chart 39, left-hand panel). The bulk of these miscellaneous financial institutions operate from the UK, Luxembourg or the Netherlands (Chart 32).

Chart 39: **Miscellaneous financial institutions**, outstanding volume, euro area, € billion



Notes: Up to 2010, FVCs were included in miscellaneous financial institutions. For FVCs, loans refer to securitised loans.
Source: ECB, Eurostat and own calculations.

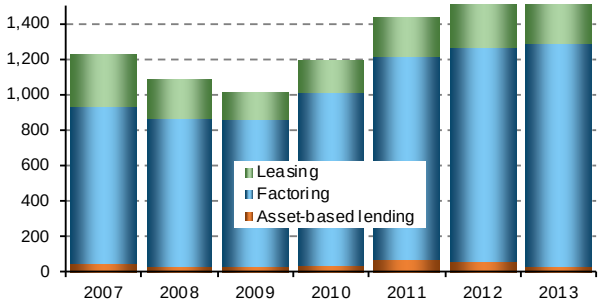
These institutions finance more than half of their activities through equity, 32 per cent from loans and 16 per cent by issuing bonds. They invest the majority of their resources in equity instruments or loans (Chart 39, right-hand panel). These categories (equity and loans) point to two important types of miscellaneous financial institutions: private equity firms and firms engaged in asset-back lending. On top of equity and loans, miscellaneous financial institutions keep a significant amount of funds in the form of liquid currency and deposits not only for payment needs (e.g. distribution of dividends) but also available to be invested whenever an opportunity arises.

Asset-based finance

Many miscellaneous financial institutions provide financing to non-financial corporations against collateral. In a similar way to financial institutions that use securitisation or pledge securities to obtain liquidity, non-financial corporations can use assets such as accounts receivable, inventories or fixed assets as a guarantee to access credit and liquidity. The use of assets as collateral for obtaining financing is often referred to as asset-based finance and includes the following processes: (1) asset-based lending, (2) factoring, (3) purchase order finance, (4) warehouse receipts, and (5) leasing. In all cases, the credit or liquidity is provided by a financial intermediary based on an assessment of the collateral. The cost usually takes the form of a 'haircut' on the amount of financing provided with respect to the value of the assets used as collateral. Given the specificities and potential uncertainties of some of these collateral assets, costs are often non-negligible. The turnover of asset-based finance in Europe increased beyond € 1 500 billion (Chart 40), which is equivalent to almost half the 'other resources' used by euro area NFCs (Chart 13).

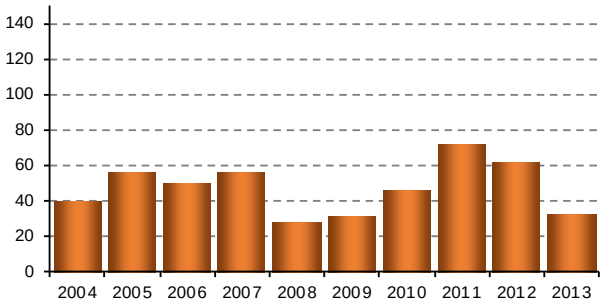
Asset-based finance is particularly advantageous for firms that lack credit history, face temporarily shortfalls or losses, or need to accelerate cash flows in order to seize investment opportunities. Another advantage of this type of financing is that lenders do not require any personal guarantee or share in the entrepreneur's equity. The flexibility of this type of finance generally comes at the expense of higher costs than those of conventional bank loans.

Chart 40: **Asset-based finance turnover**, Europe, € billion



Notes: 2013 includes data only up to September. No data are available for purchase order finance and warehouse receipts. Turnover includes new issuances and refinance.
Source: Thomson Reuters, Factors Chain International and own calculations.

Chart 41: **Asset-based lending turnover**, Europe, € billion



Notes: 2013 includes data only up to September. Turnover includes new issuances and refinance.
Source: Bank of America Merrill Lynch and Thomson Reuters.

Asset-based lending (ABL) designates a broad category of debt financing consisting of lending against the assets of a company. ABL is considered to be a transitional source of financing, aimed at responding to temporary cash flow shortfalls for firms with limited or no access to conventional bank lending. ABL is also suitable for firms seeking to take advantage of growth opportunities. It can also be used in times of transition and restructuring, e.g. in mergers and acquisitions, management buy-ins and buy-outs, or when increased liquidity is needed for a short time (OECD, 2014b).

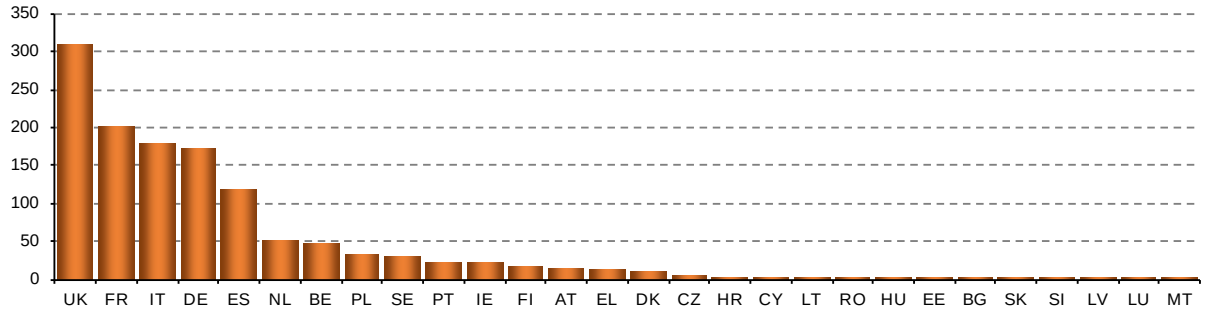
The amount a firm can borrow depends on the liquidation value of its assets rather than its overall creditworthiness. Four types of asset classes are typically serve as security: accounts receivable, inventory, equipment and real estate. However, intangible asset-based lending has recently emerged as a particular sub-type of ABL in which a loan is secured by a portfolio of intellectual property or other intangible assets.

The costs of funds are higher in asset-based lending than in conventional lending and the loan-to-value ratio ranges from 80-85 per cent for accounts receivables to 40 per cent for inventories (OECD, 2014b). However, increasing competition is contributing to bringing lending costs down. Traditional commercial finance companies, hedge funds, private equity funds, pension funds and companies with cash surpluses seeking to diversify their business have recently entered the market as providers of ABL (OECD, 2014b).

ABL was widely used to finance the mergers and acquisitions boom of 2006 and 2007, when the ABL market was characterised by liquidity, intense competition and innovation (with annual turnovers of up to € 60 billion). Following the collapse of Lehman Brothers in early autumn 2008, both the liquidity and the turnover of ABL fell considerably as ABL lending turned into a more conservative financing mechanism and asset valuations fell, but volumes recovered in 2010-2012 (Chart 41).

In Europe, recourse to ABL is concentrated in a few countries (mainly Denmark, Germany, the Netherlands and the UK); it is much more limited in the rest of the EU. ABL is significantly more developed in the US.

Chart 42: **Factoring turnover**, 2013, € billion



Source: Factors Chain International.

Factoring is a short-term financing mechanism for suppliers in which receivables are transferred from the holder to a 'factor', i.e. the factor buys the right to collect a firm's invoices from its customers. The factor guarantees the contract even if the debtor fails. As a source of working capital funding, factoring is of particular interest to

firms with a solid base of customers but high investment in intangible assets which cannot be used as collateral in securing bank loans (OECD, 2014b).

Factoring can also take place across borders ('export' or 'international' factoring), reducing the risk of international sales. It is used as an instrument of *trade finance*, which is often a key tool for helping smaller businesses to become active internationally (OECD, 2014b).

In 2013, the EU factoring and commercial finance industry's total turnover stood at € 1 300 billion,[55] equivalent to almost 10 per cent of the EU's GDP. In most countries, factoring is a source of funding of a size similar to or larger than the volume of bonds issued by non-financial companies (see Chart 42 and 55).

Purchase order finance (POF) consists of working capital advanced to cover part of the production of a good or service for one or more specified customers. As it is intended to support production or distribution, POF is mostly used by producers, distributors, wholesalers or resellers of manufactured products. POF tends to work well for both importers and exporters.

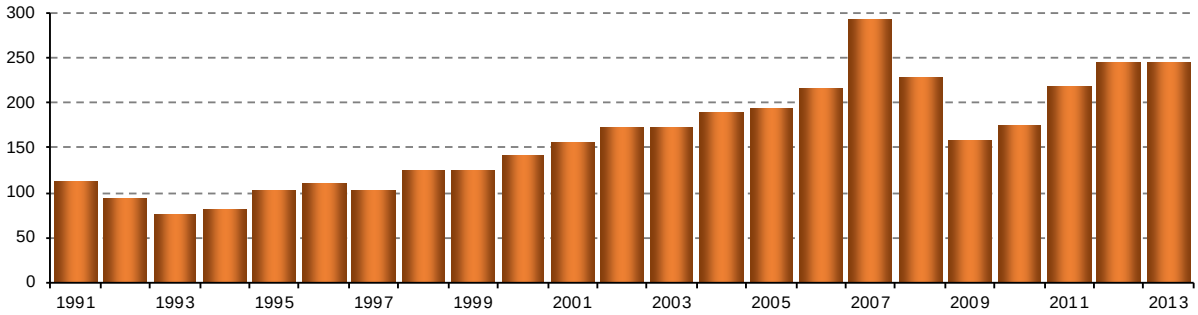
Usually, the same financial firms provide both factoring and POF services. POF is similar to factoring in as far as it is secured by future receipts from customers, but POF relies on orders and future deliverables while factoring is provided against invoices on products already delivered. While trade credit is directly provided by customers or suppliers (e.g. when one books a hotel room online and pays for it three months in advance of the actual trip), the financing obtained through factoring or POF requires the involvement of financial intermediaries.

Before granting POF, the financial intermediary assesses a number of criteria including the customer's creditworthiness and the firm's capacity to produce and deliver the product according to the terms of the contract. When the final product is delivered to the end customer, the POF lender is repaid by factoring the invoice (Marks et al., 2009).

Warehouse receipts (WHR) are obtained against commodities or finished goods deposited at a certified warehouse. Warehouses allow products to be stored and sold when price conditions are favourable, rather than solely around harvest periods, when prices are low. In this context, WHR allows producers and commodity traders to obtain liquidity or financing as an alternative to traditional bank loans (e.g. when they lack a credit history or it is difficult to comply with rules on collateral). WHR is particularly suitable for producers and traders of storable agricultural commodities.

Warehouse receipts financing has proved especially successful in eastern European and central Asian countries, where farms have no loan history and limited potential for supporting their loan requests with sufficient collateral. The EBRD developed a Support Programme for WHR through commercial banks in countries like Bulgaria, Hungary, Slovakia and Ukraine. This EBRD programme has contributed to permanent recovery of the agricultural production in those countries (Jovičić et al., 2014).

Chart 43: **Leasing turnover**, Europe, € billion



Source: White Clarke global leasing report, Leaseurope Annual Survey 2013, ECB and own calculations.

A ***lease*** is a rental contract, concluded for a fixed term, which is accompanied by the option of purchase when the contract matures. Leasing can be used to finance the purchase of 'long-lived' fixed assets such as equipment,

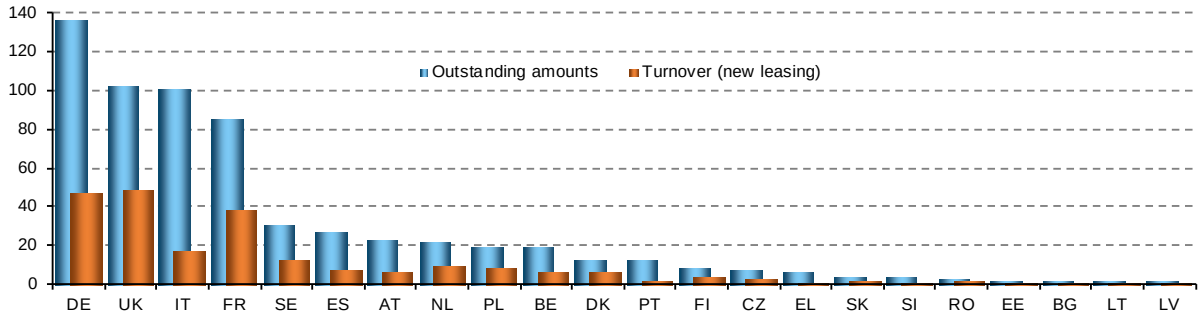
[55] Data extracted from the EU Federation for the Factoring and Commercial Finance Industry.

real estate and buildings (a *financial or capital lease*) or relatively 'short-lived' assets such as copiers, automobiles or computers (an *operating lease*). Contrary to common bank loans (e.g. a mortgage), leasing contracts require only a small or no cash down-payment or security deposit and, therefore, allow the firm to finance its fixed assets while preserving its cash resources and credit facilities to meet working capital needs (Gallardo, 1997).

Leasing is a suitable source of funding for new firms in need of working capital which lack the credit history to qualify for conventional bank loans; for cash-constrained firms which can generate cash flows by using the leased asset; and for firms that change their capital assets frequently, as it gives access to equipment at minimal initial cost (OECD, 2014b).

With the outbreak of the crisis, firms' investment needs fell, and so did recourse to leasing. However, by 2012, leasing turnover seemed to be following the pre-crisis trend again (Chart 43). In 2013, outstanding volumes of leasing stood at € 600 billion in the EU (€ 450 billion in the euro area), representing about 15 per cent of 'other sources' of finance used by NFCs (see Chart 13).

Chart 44: **Leasing volumes across countries**, 2013, € billion



Source: Leaseurope Annual Survey 2013 and own calculations.

Almost half of leasing was for passenger cars (46 per cent), followed by commercial vehicles (18 per cent), machinery and industrial equipment (17 per cent), and computers and business machines (7 per cent). The services sector had the highest new leasing volume (46 per cent of total), followed by manufacturing, industry and construction (25 per cent), and households (20 per cent). In 2013, Germany, the UK and France remained the largest European leasing markets, with outstanding volumes between € 80 and € 140 billion and turnover (new leasing) around € 40 billion. Italy had similar outstanding volumes, but new leasing was smaller (Chart 44).

Alternative equity Instruments

Section 3.2 shows that equity represents more than half of the resources used by non-financial corporations to finance their activities. The bulk of this equity is capital provided by the owners of family businesses on start-up, combined with the subsequent generation of value by the business and retained in the company. However, the financial sector and other investors may also be involved in providing equity to finance firms. In particular, 'miscellaneous financial institutions' invest a large share of their assets in equity instruments (see Chart 39). In this context, ***private equity*** refers to investment in the ownership of a company and, therefore, involves sharing the management and business risk, but also the income generated by the company an any proceeds if the company is sold.

Private equity can be provided by banks, non-financial corporations, institutional investors (e.g. pension funds or asset managers), high net worth individuals (HNWI), governments or individuals. By investing in private equity, banks and NFCs create groups and conglomerates that generate both financial and strategic benefits for their businesses.

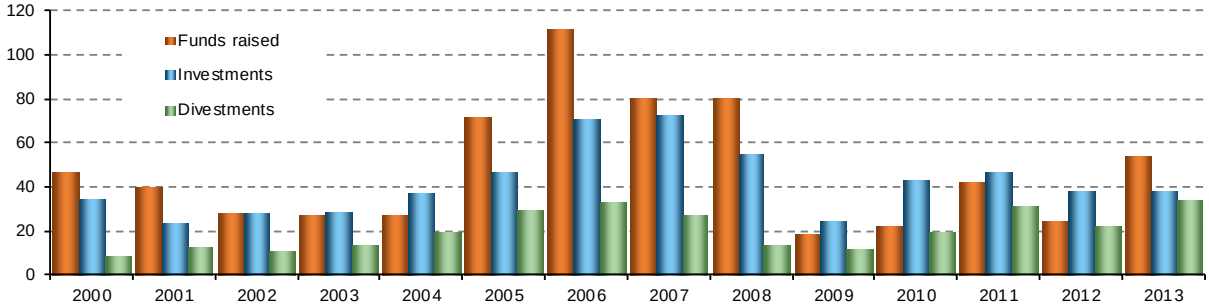
Institutional investors and HNWI are more driven by financial returns than by specific synergies or strategic goals. National and regional governments invest in equity as a mean of achieving public policy goals such as boosting growth and employment at local, regional or national level. Some HNWI may also invest their personal capital directly in the firm's equity. These so-called business angels typically invest in seed capital. While some

banks and NFCs may have a specific business unit dealing with equity investment, in most cases, equity investment is channelled through equity funds[56,57] (see also Section 4.4.1).

Private equity investment may target either mature businesses, taking the form of development capital or buyouts, or new and early stage companies, where it takes the form of venture capital. Private equity investment typically focuses on firms with high growth potential or on under-performing firms that can be transformed into profitable businesses and subsequently sold. This involves high risk as many projects end up being unviable; however, other projects may become highly profitable not only for the investors but for society in terms of jobs and value creation and of improving living conditions.

European private equity funds[58] have a total of € 560 billion of capital under management on European markets.[59] This is equivalent to about 25 per cent of the capital under management by equity funds (see Chart 33) and it is also of an order of magnitude similar to the total amount of bonds issued by NFCs.

Chart 45: **Private equity activity**, gross annual flows, Europe, € billion



Notes: Data include venture capital. Funds raised: gross increases of liabilities. Investments: use of liquidity to purchase equity. Divestments: liquidation of previous investments.
Source: EVCA 2013 European Private Equity Activity

Private equity was significantly hit by the financial crisis with funds raised dropping from over € 100 billion in 2006 to less than € 20 billion in 2009. However, it has recovered in recent years with fundraising by European private equity investors reaching € 52 billion in 2013 (Chart 45), representing significantly higher activity than in the early 2000s. In order to grasp the significance of these private investors, their activity can be compared with stock markets. In 2013, gross investments by private equity firms (almost € 40 billion) was equivalent to about 50 per cent of the gross issuance of quoted shares (see Chart 52). Except for strategic investment (such as in NFCs), private equity investment firms seek a return through the sale of their stakes: European private equity companies divested € 33 billion in 2013. The € 20 billion of net equity provided by private equity firms in 2013 is equivalent to about 10 per cent of the fresh equity raised by NFCs in 2013 (see Chart 21, right-hand panel).

Chart 46: **Funds raised by region of management,** 2013, € billion

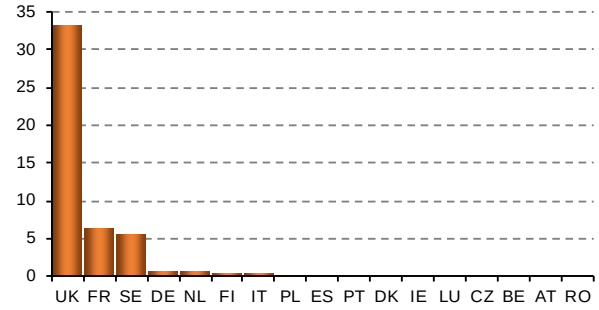
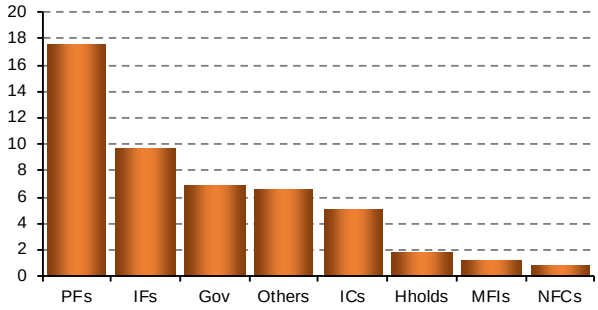


Chart 47: **Funds raised by investor type**, 2013, € billion



Notes: 'Gov' includes government agencies and sovereign wealth funds. PFs: Pension funds; IFs: Investment funds; Gov: Governments; ICs: Insurance corporations; Hholds: Households; MFIs: Monetary financial institutions; NFCs: Non-financial corporations.
Source: EVCA 2013 European Private Equity Activity.

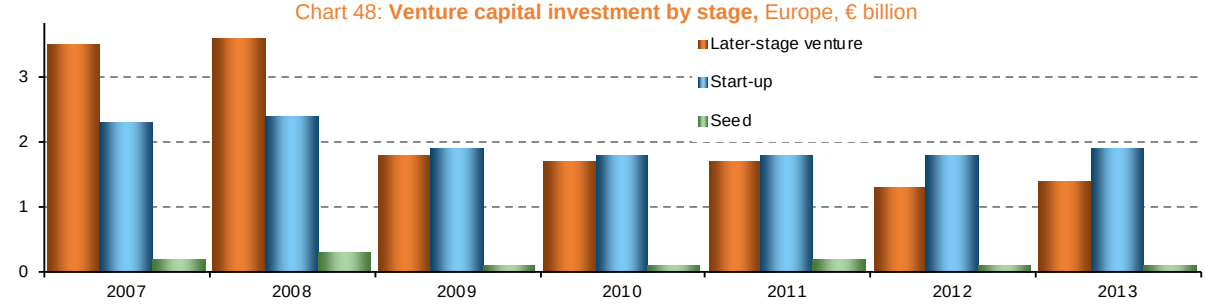
[56] Unless otherwise indicated, the rest of this section focuses on the private equity invested through funds.
[57] See Cumming, (2009).
[58] Equity funds excluding infrastructure funds, real estate funds, distress debt funds, primary funds-of-funds, and secondary funds-of-funds.
[59] Data extracted from EVCA (2014).

In 2013, two thirds of EU equity investment came from the UK alone, followed by France and Sweden (Chart 46). On the other hand, almost half of the private equity investors were pension funds or insurance companies (Chart 47). Private equity investment is particularly attractive for ICPFs because it is more suited to their business model of seeking long-term growth and returns than capital markets are (Institutional Investor, 2014). Investment funds and governments are next in importance. Some of the government investment was private investment managed by government agencies which sought to promote economic growth and employment in countries particularly affected by the crisis.

Venture capital refers to equity investment made to launch, develop or expand unlisted companies. Venture capital firms add funding to the capital provided by entrepreneurs to increase the company's value, but generally take only a minority stake so the entrepreneurs still control the company. Venture capital funds are invested with a view to selling them with a high return (an internal rate of return of up to 35 to 40 per cent) fairly quickly once the company has taken off. The exit prospects, i.e. how the venture capitalists will cash out their investment, is therefore critical in the venture capital industry.

About half of venture capital finances companies in their start-up phase; the other half is allocated to companies in a later stage. Little venture capital is seed capital (Chart 48). Venture capital investment is concentrated in a few industries such as the digital economy and biotechnology (OECD, 2014b). Venture capital was not very large before the crisis, and the volume of funding was seriously affected by it.

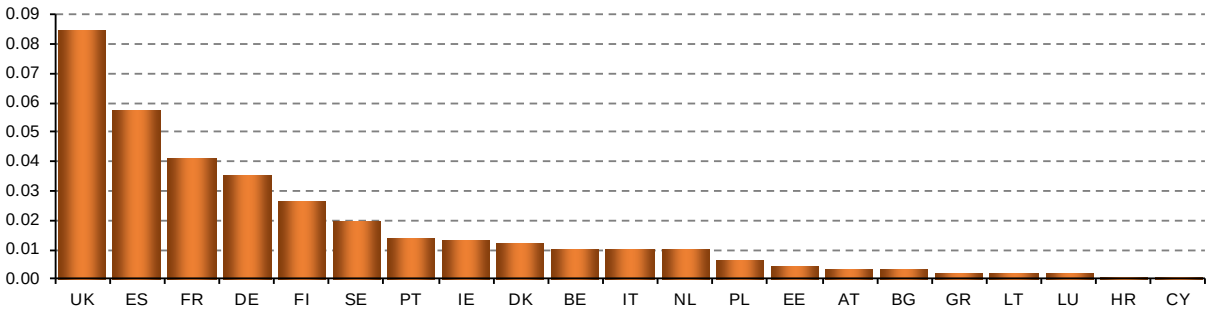
Chart 48: **Venture capital investment by stage,** Europe, € billion



Source: EVCA 2013 European Private Equity Activity

Business angels are individuals who risk part of their capital by investing directly in an enterprise, without relying on institutional intermediaries. In most cases, business angels are active or previously successful entrepreneurs or executive employees whose professional activity has given tehm a high level of experience and an extensive network of contacts. With their know-how, capital and contacts, business angels provide support both at the initial stages of start-ups and to growing young enterprises. Investment takes the form of private transactions and is therefore not subject to public disclosure. Although data may be incomplete, available figures suggest that the amounts spent by business angels remain small (Chart 49).

Chart 49: **Business angel investment**, 2013, € billion



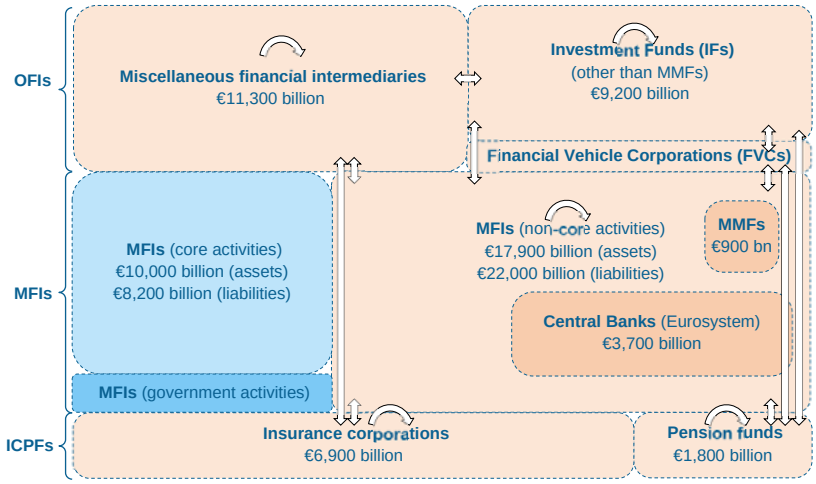
Source: EBAN Statistics Compendium 2014

4.5. Interconnectedness and complexity within the financial sector

The interconnection of different financial institutions can pose a risk of contagion across sectors and countries

and generate systemic risk. Section 4 shows how the different components of the financial sectors are interlinked with each other and how banks play a central role: insurance corporations form groups with banks through 'bank/insurance' holding companies; insurance corporations, pension funds and investment funds provide financing to MFIs by buying their securities; financial vehicle corporations channel the securitisation activities of various financial intermediaries (mainly banks), which nevertheless may retain a significant chunk of an issuance; and many of the companies operating in the 'miscellaneous' financial institutions are in fact subsidiaries of credit institutions. The interconnections between the different sectors are illustrated in Chart 50. One consequence of this network is that, although the financial sector can be divided into different subsectors depending either on their economic function or on their legal status, the financial sector should in reality be considered as an 'organism' which operates as a system.

Chart 50: **Interconnections within the financial sector**, euro area, 2014 Q3



Notes: The surface of each box is proportional to the size of the sector in the euro area. FVCs assets: € 1 900 billion; MFIs government assets: € 2 900 billion; MFIs government liabilities: € 500 billion.
Source: ECB, Eurostat and own calculations.

Shadow banking

In recent years, the term 'shadow banking' has been coined to refer to financial intermediation activities outside the regular banking system.[60] In previous subsections, we have seen that the different types of financial intermediaries play specific roles. Increasing attention is paid to shadow banking because financial institutions other than banks are not subject to the same high standards of supervision and prudential requirements as banking activities. This means that, although shadow banking can contribute to the financing of the economy, it can also become a source of systemic risk because of its high levels of leverage, its interconnectedness and its complexity.

Under the national accounts framework, shadow banking would correspond to the combined value of investment funds, money market funds and 'other financial institutions', representing roughly one third of the financial sector. However, a narrower measure of shadow banking has also been proposed, excluding investment funds that are not involved in credit intermediation (i.e. equity funds and real estate funds), financial assets linked to self-securitisation and activities that are prudentially consolidated into a banking group (see FSB, 2014a). According to this narrower view, shadow banking accounts for about one fifth of the total financial sector.

An alternative approach, focusing on the nature of activities rather than the nature of the entities, is also possible. That approach would particularly apply to credit institutions. When a financial corporation receives a banking licence, it is allowed to collect deposits from households and non-financial corporations and to provide loans to them. Although these institutions are classed as credit institutions, they perform many activities other than credit intermediation: brokering, repos, securitisation, derivatives, operations with foreign currency, etc.

[60] For further discussion of shadow banking see, for instance, FSB (2014a), ECB (Luck and Schempp, 2014; Bakk-Simon et al., 2012), the IMF's Global Financial Stability Report – October 2014 (Valckx et al., 2014) and Chapter 3 of last year's review.

The statistics on the balance sheet of MFIs provides some granularity in terms of counterparties and instruments that can be used to split the balance sheet of credit institutions into 'core' and 'non-core' activities (see Section 4.2). Non-core activities are banking activities that could potentially be transferred to the shadow banking sector to avoid the high standards of supervision and prudential requirements imposed on banks. If these non-core banking activities of credit institutions are included, shadow banking may account for a much larger proportion of the financial sector.

In fact, the interconnections go beyond the boundaries of the financial intermediaries. Although considered 'direct financing', bonds and shares issues in the markets are also closely interlinked with financial intermediaries, as markets need a minimum infrastructure to function. The corporations providing the infrastructure for financial markets are classed as OFIs, but other intermediaries such as broker-dealers or investment advisers are also involved in placing securities in the markets. If they are independent, they are classed as financial auxiliaries (within OFIs); however, in most cases, these services are provided by (the non-core activities of) credit institutions.

In addition to interconnection and the latent possibility of contagion, leverage is another potential source of risk. Highly leveraged institutions have a very limited capacity to absorb losses, so deteriorating returns can quickly spill over to their creditors. This Section 4 shows that the different categories of financial institutions work with different levels of leverage. FVCs and credit institutions are the most highly leveraged corporations, as they operate with a very thin layer of equity; at the other end of the spectrum, investment funds are financed with virtually only equity, so their leverage is almost nil. All other financial institutions (e.g. insurance corporations, pension funds or residual financial institutions) are somewhere in between[61].

Complexity

The multiple layers of interconnection between the different institutions lead to a complex system of networks. Increasing attention is being given to representing and understanding the implications of such networks[62]. In this context, the financial system has been compared with a nuclear reactor or an electric grid and a panic episode in the markets with an industrial accident[63].

These systems are 'tightly coupled' like a domino-toppling display. Once a process starts, it is difficult or impossible to stop. Harford (2011) argues that any sufficiently complex, tightly coupled system will fail sooner or later; the answer would be to simplify the system, decouple it, or reduce the consequence of failure. In the case of the financial system, he considers that, rather than making a particular bank less likely to fail, it might be safer to focus on ensuring that one falling bank does not topple other companies.

According to Haldane (2015), modern economic and financial systems can be characterised as complex, adaptative 'system of systems'. Such a system is composed of multiple, interacting layers each a complex system in its own right. In complex systems, the whole behaves very differently than the sum of its parts given dynamic properties such as amplifying feedback effects. Haldane proposes that the macro-financial system of systems can be split into four layers of complex systems interacting among each other.

According to Tinbergen's rule, at least as many policy tools as there are complex sub-systems are required if risk is to be monitored and managed effectively in a complex system of systems. The four layers and their policy approaches would be the following. Firstly, the 'micro-prudential' layer of individual firms. Secondly, the 'macro-prudential' layer of the financial system. Thirdly, the 'macro-economic' layer of the national economy, monitored through monetary policy. And fourthly, the 'telescope' layer of the global economic and financial system which is managed through the international financial architecture.

[61] For a comparison of the levels of equity and, therefore, of leverage across sectors, see Section 3.2.
[62] See, for instance, Castrén and Rancan, (2013), Hautony and Héamz (2014) and Haldane (2015).
[63] See, for instance, Harford (2011).

An appropriate policy response requires accurate data and timely mapping of each layer of this system of systems. This chapter aims at contributing to the availability of data and analytical tools; in particular, Sections 2 and 3 focus on the 'macro-economic' layer and Sections 4 to 6 focus on the 'macro-prudential' layer.