

Chapter 3

The role of financial corporations in the financial system

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Financial corporations are at the centre of the financial system, channelling funds from lenders/savers to borrowers/investors. Although a large part of the funds is channelled through financial corporations, savers can also finance investment directly (for example, households granting loans to an enterprise). Savers may place their funds with a bank in order to benefit from the higher liquidity of a deposit, or purchase investment fund shares as a convenient way to diversify their assets. Even if savers buy securities on the stock market, they typically make use of a security broker or other so called “financial auxiliaries”. This chapter explains the role of the different types of financial corporations in the economy, how they are evolving and how they can be analysed.

1. Short overview

The financial corporations' sector is defined in the 2008 System of National Accounts (2008 SNA) as all institutional units whose principal activity is the production of financial services which are “the result of financial intermediation, financial risk management, liquidity transformation or auxiliary financial activities” (SNA 2008, paragraph 4.98). This definition does not only include financial intermediaries, such as banks, insurance companies and pension funds, but also financial auxiliaries as well as captive financial institutions; see Table 3.1.¹

Table 3.1. **The financial corporations' sector and its subsectors**

Financial corporations
Monetary financial institutions (MFIs)
Central bank
Deposit-taking corporations except the central bank – “banks”
Money market funds (MMFs)
Other financial institutions (OFIs, i.e. financial corporations except MFIs, insurance corporations and pension funds)
Non-MMF investment funds
OFIs excluding investment funds
Other financial intermediaries
Financial corporations engaged in securitisation of assets
Securities and derivatives dealers
Financial corporations engaged in lending
Specialised financial corporations
Financial auxiliaries
Captive financial institutions and money lenders
Insurance corporations
Pension funds

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Financial intermediaries play an important role in monetary and economic analysis, because of their role in channelling funds from savers to investors. They are further broken down into subsectors on the basis of their function and their main type of financing. Monetary financial institutions (MFIs) comprise the central bank, which issues currency and deposits, and exercises control over the financial system; deposit-taking institutions, which engage in financial

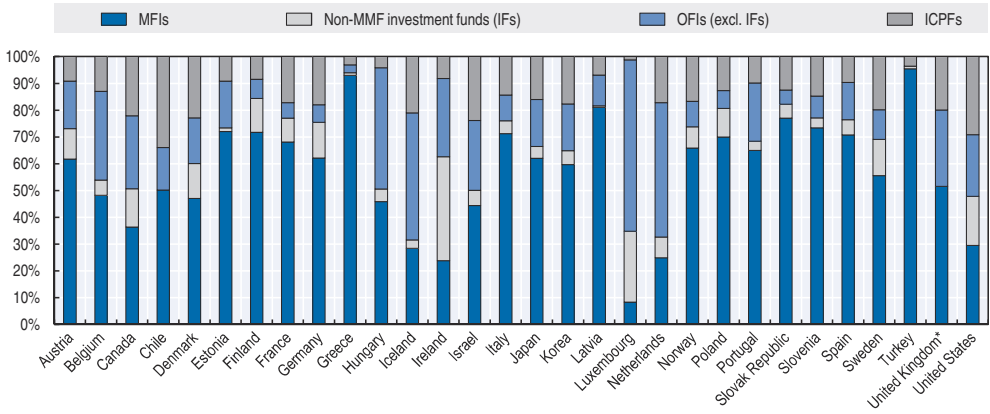
intermediation via incurring liabilities in the form of deposits (or close substitutes); and money market funds (MMFs). MMFs consist of investment schemes that raise funds by issuing shares (or units), and invest primarily in short-term funds. MMFs belong to the MFI sector, as their shares are considered close substitutes for bank deposits. Because of their important role in the supply of money, they are usually closely monitored and subject to specific regulations.

Non-monetary financial institutions are characterised by the fact they cannot issue deposits or money market shares. As they do not offer deposits (or close substitutes) to the public they are not subject to the same regulations as MFIs. Three non-monetary financial subsectors can easily be distinguished by their main liabilities: non-MMF investment funds, insurance corporations and pension funds. While non-MMF funds also raise funds by issuing shares (or units), similar to MMFs, they typically invest in longer-term investments, such as shares, debt securities and real estate. Insurance corporations and pension funds have quite different objectives, in that their main function is related to the provision of life insurance, insurance against accidents, sickness, fire, etc., or to provide and organise (collective) pension schemes for employees and self-employed. Because of this distinct function, they are usually grouped separately.

The final group, the so-called “other financial intermediaries”, is very heterogeneous and comprises, for example, financial vehicle corporations (FVCs) engaged in securitisation transactions, security and derivative dealers, financial corporations engaged in lending, and other specialised financial corporations. Due to the lack of harmonised data sources in many OECD countries, which would allow separate identification of these subsectors, other financial intermediaries are frequently grouped together with financial auxiliaries and “captives”, and referred to as “other financial institutions”. Depending on data availability, other financial institutions are, in some countries, grouped together with non-MMF investment funds.

Figure 3.1 shows that in terms of size of the balance sheets, MFIs are the largest group of financial institutions in most OECD countries, typically followed by OFIs (other financial institutions – that is, financial corporations except MFIs, insurance corporations and pension funds) and then insurance corporations and pension funds. However, in some countries, like the United States, the combined balance sheets of OFIs are larger than those of MFIs. In other countries like Iceland, Ireland, Luxembourg and the Netherlands, more than 50% of the balance sheets total concerns OFIs. This is related to country-specific circumstances, such as the massive presence of holdings of multinational operating enterprises in OFIs in the latter two countries. Generally, the relative size of the OFI sector has increased in more than 75% of OECD countries over the last decade.

Figure 3.1. **Relative size of financial corporations by subsector, 2016**
 Financial corporations' liabilities by subsector, percentage % of total

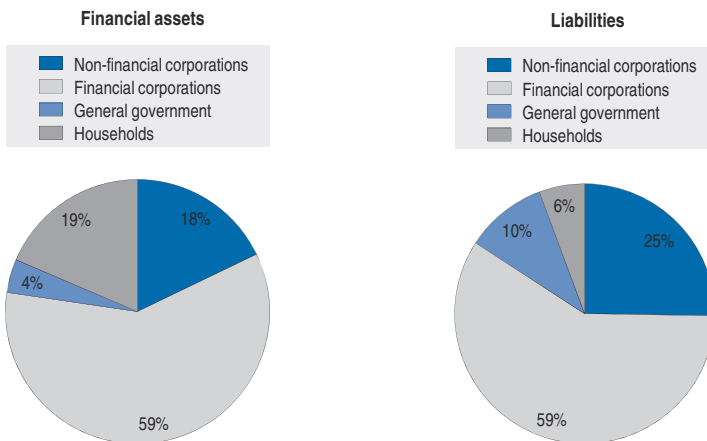


* Separation between non-MMF IFs and OFIs excluding IFs is not available for the United Kingdom.
 Source: OECD (2017), "Financial Balance Sheets, SNA 2008 (or SNA 1993): Non-consolidated stocks, annual", OECD National Accounts Statistics (database), <http://dx.doi.org/10.1787/data-00720-en>.

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The importance of the financial sector for the channelling of funds from savers/lenders to investors/borrowers is evident in the financial accounts. The financial sector's share of financial assets and liabilities is about 60% of the total outstanding amount in the economy of the Euro Area (see Figure 3.2) which broadly means that the majority of funds are channelled through financial institutions.

Figure 3.2. **Sector shares in total financial assets and liabilities, Euro Area, 2016**

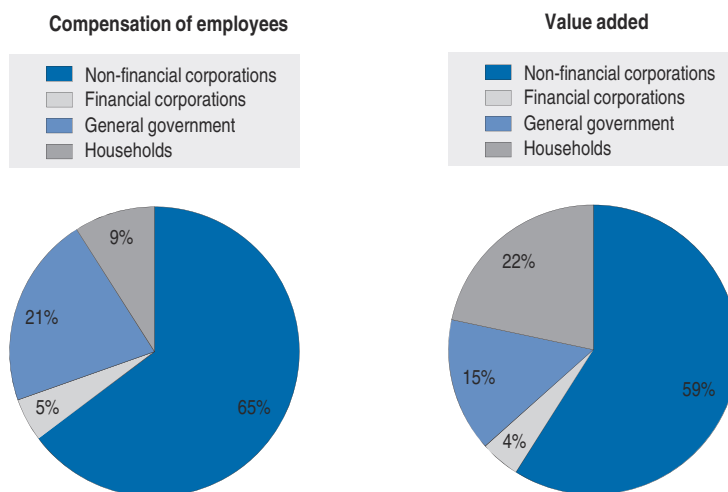


Source: Eurostat (2017), National Accounts (including GDP) (database), <http://ec.europa.eu/eurostat/web/national-accounts/data/database>.


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The direct contributions of the financial sector to the production of goods and services in terms of valued added and compensation of employees is generally much smaller; for example, it is about 5% in the Euro Area (see Figure 3.3).

Figure 3.3. **Sector shares in total value added and total compensation of employees, Euro Area, 2016**



Source: Eurostat (2017), National Accounts (including GDP) (database), <http://ec.europa.eu/eurostat/web/national-accounts/data/database>.

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Value added generated by financial corporations can, to a large extent, only be measured indirectly. Financial corporations sell some of their services by charging explicit service fees for certain financial transactions (for example, brokerage fees). However, the core activities of financial intermediaries are typically not covered by explicit fees. A financial institution like a bank accepts deposits from creditors wishing to receive interest on funds and lends them to debtors whose funds are insufficient to meet their financial needs. The bank thus provides a mechanism to allow the first unit to lend to the second. Each of the two parties implicitly pays a fee to the bank for the service provided: the depositor pays by accepting a rate of interest lower than a “reference rate” of interest, while the debtor pays by accepting a rate of interest higher than the “reference rate” of interest. The exact methods to be used for this indirect measurement of financial intermediation services have been debated for decades, and raised renewed concerns after the 2007-09 economic and financial crisis, when output and value added of financial corporations increased because of the larger spread between the interest rate on loans and the interest rate on deposits.²

Given these measurement issues and the apparent low direct contributions of the financial sector to the real economy, the financial sector was for a long time neglected in economic analysis. Macroeconomic models typically just assumed that financial markets and financial intermediaries efficiently channelled funds from savers to investors. However, the outbreak of the 2007-09 economic and financial crisis highlighted the importance of financial intermediation for the functioning of the economy, and it became evident that a better understanding of the financial sector was needed. Furthermore, the activities of issuers of asset-backed securities, hedge funds and other so-called shadow banks are thought to have contributed to obfuscating the build-up of risks in the financial sector (see Box 3.2 for more details). However, little information on these other financial institutions was available, and interest increased in particular in these financial institutions outside the traditional banking sector. With the implementation of the revised international statistical standards (SNA 2008, BPM6, ESA 2010) between 2012 and 2014, more detailed and internationally comparable data on financial institutions outside the deposit taking corporations' subsector became available. This chapter uses this newly developed information, amongst other things, to provide an introduction to the different financial institutions and how they interact with other sectors of the economy.

2. The Central Bank

A central bank is “the national financial institution that exercises control over key aspects of the financial system” (SNA 2008, paragraph 4.104). Among these key aspects are the issuance and management of the currency of a country or – in the case of a monetary union – a group of countries; the maintenance of the internal and external value of the currency; and holding of all, or part, of the international reserves of the country. The primary objective of most central banks is to maintain price stability, which generally means setting a target for inflation. Some central banks also have the responsibility of acting in support of full employment and economic growth.

Central banks typically enjoy a large degree of independence and autonomy when exercising their main activities. David Ricardo identifies three pillars through which such independence is guaranteed:³

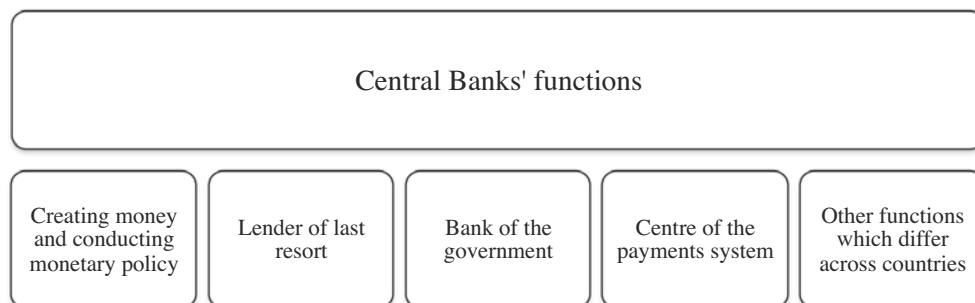
- institutional separation between the powers to create and to spend money;
- inhibition of monetary funding to governments; and
- an obligation to justify the central bank's monetary policy measures.

However, over time, essentially during the period of the Great Depression and in the aftermath of the collapse of the gold standard, several countries did not apply these principles and their central banks primarily acted in response to

fiscal requirements, providing funds to the government. Only later in the 20th century did governments prioritise the independence of central banks to guarantee the fulfilment of central banks' main objective of price stability. Nowadays, the majority of countries have central banks that are designed to be independent from governments.

Overall, the objectives and functional roles of central banks have evolved over different periods, in response to changing economic and financial situations of countries.⁴ The main functions of a modern central bank are: creating money and conducting monetary policy; lender of last resort; bank of the government; and centre of the payments system. Examples of other relevant functions for some central banks are supervision and financial stability functions. Each one of the main functions is briefly discussed below.

Figure 3.4. **Summary of central banks' functions**



Creating money and conducting monetary policy

In most countries, the central bank is responsible for controlling the flow of money to commercial banks and controlling the “cost of money” through determining the money supply. Central banks are the only suppliers of banknotes and bank reserves. By controlling the amount of money in circulation, central banks can influence economic activity and pursue the goal of price stability. This is evidenced by the Quantitative Theory of Money, which shows that inflation corresponds to the difference between the growth of nominal money stock and economic growth. This relationship is illustrated in the following equations:

$$M \times V = P \times T \Leftrightarrow m + v = \pi + y$$

$$\text{Given } v = 0, \quad \pi = m - y$$

Where:

- M is the nominal stock of money
- V is the velocity of money
- P is the price level
- T is the volume of economic transactions
- m is the growth in the nominal stock of money

v is the growth in the velocity of money

π is the inflation rate

y is economic growth

To achieve their goal of price stability central banks may also use the Fisher Principle that expresses the relation between the behaviour of nominal and real interest rates:

$$i = r + \pi^e$$

Where: i is the (nominal) interest rate

r is the real interest rate (i.e. the interest rate adjusted for inflation)

π^e is the expected inflation rate

In this context, the monetary policy can influence the real inflation rate by controlling the growth of the nominal money stock or by controlling the nominal interest rate.

In pursuing their monetary policy goals, the majority of central banks have the following tools: defining the reference interest rates; conducting open market operations; and defining minimum reserve requirements. The central bank can influence key interest rates by setting the reference rate at which the domestic banks can borrow from the central bank. These rates determine the domestic banks' cost of borrowing and indirectly influence the interest rates charged to borrowers, which encourages or discourages the economic agents from borrowing. Such actions affect the money supply in the economy, which should be compliant with the objective of maintaining price stability. This process represents the more traditional mechanism of monetary policy transmission.

In order to pursue the objective of price stability, central banks can also perform open market operations, which involve the central bank buying or selling debt securities in the market. In some countries, these operations only involve government debt, but in general it can involve any kind of securities. In specific situations, central banks may also adopt non-standard measures of monetary policy, such as the purchase of government debt in secondary markets. By buying securities the central bank can increase the money supply. Selling securities will have an opposite effect and will lead to a decrease of the money supply. See Box 3.1 for more details on these non-standard measures adopted by central banks.

Moreover, commercial banks are often subject to minimum reserve requirements, which are set by the central bank and thus can serve as another monetary policy instrument. This reserve ratio, defined as a percentage of the liabilities, has a direct impact on the amount of reserves to be held by each commercial bank in deposit at their central bank accounts, and consequently also affects the amount of money supply.

Box 3.1. Non-standard measures adopted by central banks

As a consequence of the 2007-09 economic and financial crisis and the ensuing low inflation levels, central banks faced extra challenges in meeting their respective price stability objectives. In fact, in order to achieve the desired core objectives of financial stability and targeted inflation, central banks had to resort to non-standard measures. These measures, which constituted unconventional ways of boosting inflation, consisted of the purchase of assets by central banks, mainly government bonds, leading to an increase in the amount of money in the financial system, thus fostering an improvement in the lending conditions in the real economy. The rationale underlying this action is that lowering banks' funding costs and credit spreads will translate into looser financing conditions for final borrowers in the economy. This is also referred to as quantitative easing (QE).

In spite of the aforementioned benefits, these non-standard measures bear some risks for the central banks who adopt them, namely the possibility of the existence of potential losses on the purchased securities and the potential creation of conditions for high inflation, due to the injection of money in the economy. Nevertheless, the measures have been implemented by the Bank of Japan (in the 1990s), the Bank of England, the US Federal Reserve (both in 2008), and the European Central Bank (in 2009).

In the case of Japan, it faced a financial crisis during the 1990s and had to use the monetary policy channel to provide assistance to financial institutions and financial markets, and to act as lender of last resort. However, the monetary policy of the Bank of Japan was often criticised for not being aggressive enough, thus leading to a long term financial crisis.

In order to give a quick response to the economic and financial crisis that affected Europe in 2007-09, the ECB decided to complement its regular monetary policy operations and gradually implement a wide range of unconventional measures. The main objectives of these measures were to inject liquidity in the markets and in financial institutions, in order to stimulate new lending to the real economy and enhance the functioning of the monetary policy transmission mechanism, to create conditions for ensuring market liquidity, and to avoid a deflationary period in the Euro Area. Chronologically and concisely, the ECB took the following measures:

- 2008: increased the frequency and size of its longer-term refinancing operations (LTRO);
- 2009: implemented the first programme of covered bonds purchase (CBPP1);
- 2010: introduced the securities markets programme (SMP);
- 2011: implemented the second programme of covered bonds purchase (CBPP2);

Box 3.1. Non-standard measures adopted by central banks (cont.)

- 2014: created the longer-term refinancing operations (TLTRO), the third programme of covered bonds purchase (CBPP3), and the asset-backed securities purchase programme (ABSPP);
- 2015: increased the scope of purchases of government debt with the Public Sector Purchase Programme (PSPP); and
- 2016: purchased corporate bonds within the corporate sector purchase programme (CSPP).

Lender of last resort

The central bank also has the role of assisting commercial banks with emergency liquidity assistance in case of immediate liquidity problems. Due to this function, central banks are often referred to as “lenders of last resort”. With this function, central banks can safeguard liquidity and provide financial accommodation to banks, also preventing a possible collapse of the banking system. The latter is important in order to prevent a bank run, caused by liquidity problems in one bank, which could lead to loss of confidence in the banking system as a whole. Nevertheless, this role can create a conflict of interest between the central bank’s policies and the safeguarding of financial markets, and may also lead to moral hazard with banks assuming that their deposits will be guaranteed by the central bank. Emergency liquidity assistance is usually provided in exchange for eligible securities or bills as a guarantee.

Bank of the government

In some countries the central bank has the function of being the bank of the government, which means that the central bank carries out the banking business of the government, such as managing the government’s accounts with their cash balances, providing loans and advances to governments, accepting receipts and making payments on behalf of the government, and acting as a consultant on specific government issues.

Moreover, within their responsibilities, central banks can directly purchase government debt in order to support government policies. This process, also referred to as the monetisation of debt, aims to provide funding to the government and, consequently, causing an increase of money supply in the economy. However, often central banks are prohibited by law from directly financing their governments.

Centre of the payments system

Since the central bank is the monetary authority and the entity responsible for currency issuance, it is at the centre of payment systems, which means that the central bank is responsible for providing and overseeing mechanisms for the payment, clearing and settlement of monetary transactions in the economy. Generally, the term “payment system” includes the set of instruments, intermediaries, procedures, rules, processes and interbank fund transfer systems responsible for facilitating the circulation of money in a country or between countries with the same currency. The central bank must keep economic agents confident about the safety and reliability of the payment systems in order to ensure a regular functioning of the financial system and the maintenance of financial stability.

Central bank’s integration within the financial accounts and balance sheets

The balance sheets of a central bank follow the conventional structure of financial accounts and balance sheets, being divided into assets and liabilities and distinguishing the same types of financial instruments. Compared to commercial banks, the main differences concern the holding of monetary gold and the issuance of currency. Although the structure of a central bank balance sheet may differ across countries, it is possible to generalise the structure, as shown in Figure 3.5.

Figure 3.5. **Stylised central bank balance sheet**

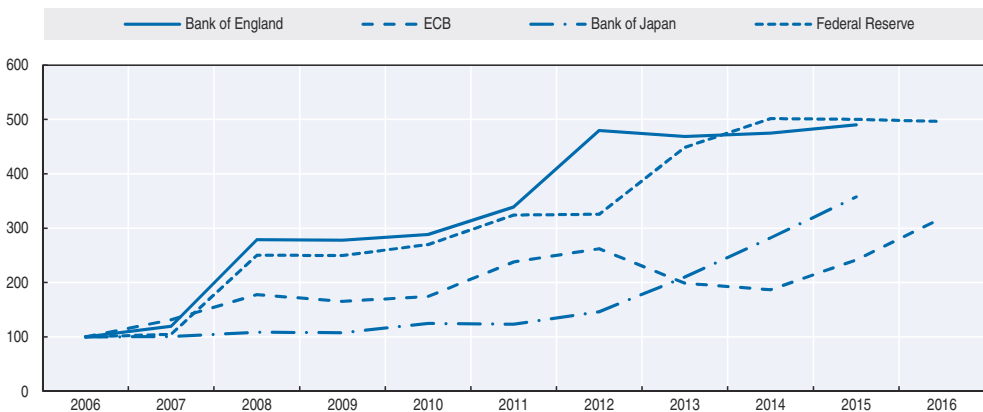
Assets	Liabilities
Monetary gold and SDRs	Currency
Deposits	Deposits
Debt securities	Equity
Other assets	

The main components on the asset side of a central bank’s balance sheet include deposits with banks, first and foremost related to the liquidity-providing

operations of the central bank to the financial system, as well as the debt securities, held for monetary policy purposes. The remaining significant elements on the asset side are monetary gold, defined as the gold to which monetary authorities have title and which is held as a reserve asset, and special drawing rights (SDRs), defined as reserve assets created by the IMF that are held by central banks and certain international agencies. On the liability side, currency (banknotes issued by the central banks that are in circulation) and deposits (mainly related to commercial bank reserves and general government deposits) represent the main items, while the equity component completes the typical structure.

An analysis of a central bank's balance sheet can provide very useful insights on the central bank's monetary policy stance. This is particularly evident by observing the impact of the 2007-09 economic and financial crisis on the balance sheets of the central banks (see Figure 3.6). In response to the crisis, some central banks engaged in large-scale asset purchase programmes (see Box 3.1), showing an increase in the share of debt securities and also an increase in the overall size of the balance sheets. The assets of the US Federal Reserve, for example, increased by around 25% of GDP from 2007 to 2014. The ECB's total of assets also increased, due to the acquisitions of securities under the asset-purchase programmes and the enlargement of liquidity-providing monetary policy operations. These policies allowed central banks to ease credit conditions and inject liquidity into the financial system.

Figure 3.6. **Central bank balance sheets – total assets**
2006 = 100



Source: ECB (2017), Eurosystem Consolidated Statement (database), <https://sdw.ecb.europa.eu/browseTable.do?node=9691294>; OECD (2017a), "Financial Balance Sheets, SNA 2008 (or SNA 1993): Consolidated stocks, annual", OECD National Accounts Statistics (database). <http://dx.doi.org/10.1787/data-00719-en>; and Bank of England (2017), Bankstats (Monetary and Fiscal Statistics) (database), www.bankofengland.co.uk/statistics/Pages/bankstats/2017/may.aspx.

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Finally, a central bank is obviously treated as a resident unit of the relevant country. However, some particularities arise when it comes to monetary unions. For example, in the case of the European Monetary Union, the ECB is not treated as a resident in any of the member countries of the monetary union, but is treated as a resident of the monetary union as a whole. Additionally, the currency issued by the Eurosystem is only considered as a liability of the resident national central bank to the extent of its notional share in the total issue. The latter share is calculated based on the population and GDP of the respective countries.

3. Deposit-taking corporations apart from the central bank

Deposit-taking corporations apart from the central bank (hereafter referred to as deposit-taking corporations) are by far the most important type of financial intermediaries in almost any financial system. The defining feature of deposit-taking corporations is their engagement in financial intermediation by accepting deposits (or other financial instruments that are a close substitute for deposits) as their main funding source. Deposit-taking corporations also issue other types of financial liabilities, but these will typically play a lesser role as a percentage of total liabilities.

Deposit-taking corporations coincide to a large degree with what are commonly known as “banks”. The traditional business of banks is to take deposits from the public, provide loans to households and businesses, and facilitate the making of payments between economic agents. Entities with a traditional banking business model are typically known as “commercial banks”. Depending on local regulations, a wider set of intermediation activities may be undertaken by commercial banks. Some larger banks, for instance, have a strong presence in capital markets, including market-making and investment banking activities such as helping to raise funds in those markets for their clients. These banks are typically referred to as “universal banks”.

Commercial banks and universal banks are the most predominant form of deposit-taking corporations in most countries. Other more specialised entities which are also deposit-taking corporations are merchant banks (specialised in trade finance), mortgage banks (specialised in real estate finance), rural banks (providing banking services in remote or agricultural areas), and credit unions (a model of banking whereby placing funds with the union entitles the fundholder to become a member and partial owner), among others. All these entities, however, are still characterised by being mainly funded by deposits, or close substitutes of deposits.

The institutional setting of deposit-taking corporations

Deposit-taking corporations are very different from other financial corporations. On the liability side, they issue a large proportion of instruments

perceived to be both liquid and capital certain, such as short-term bank deposits. However, their asset side is dominated by more risky, largely illiquid assets, such as loans to customers. Their ability to perform such large-scale maturity and risk transformation owes to some key features of their institutional framework. The most important of these are a strict regulatory and supervisory regime, the existence of deposit insurance schemes, access to central bank refinancing and implicit government guarantees.

Deposit-taking corporations are subject to a strict regulatory regime compared to other financial intermediaries, including stronger capital and liquidity requirements. They are also subject to strict oversight by supervisory authorities, to whom they regularly report data much more comprehensive than ordinary financial reporting. The supervision often includes on-site inspections. As key actors in the payment system and, especially, as the main issuers of most money-like liabilities in the economy, banks also pose systemic risks that justify close scrutiny by authorities. Conversely, bank deposits are perceived to be as capital certain as currency to a large degree due to such strict regulation. In a sense, bank regulation could be viewed as a co-ordinating device that, together with deposit insurance, ensures that bank deposits are accepted as money by the public notwithstanding the asset structure backing those liabilities.

Regulations for banks are the object of international co-ordination efforts under the auspices of the Basel Committee on Banking Supervision (BCBS). International co-ordination is required because jurisdictions could obtain an unfair advantage in attracting international banking business by being too lax on the amount of capital required from banks, as equity is typically the most costly form of liability for banks.⁵ The BCBS sets international standards on bank supervision (known as the “Basel Accords”) that regulate the minimum amount of capital and other requirements needed for an entity to operate as a bank.⁶

Trust by the public in bank deposits is further reinforced by means of deposit insurance schemes. Historically, deposit insurance was introduced mainly to reduce the possibility of bank runs. In a bank run, a cascade of deposit withdrawals occurs due to adverse news about a bank in particular or the health of the banking system as a whole. Bank runs are self-reinforcing as more depositors demand to be reimbursed before the bank’s small fraction of assets kept as liquid reserves runs out. The highly interconnected nature of the banking system may quickly promote contagion from one institution to the next, making many bank-runs systemic.

Deposit insurance breaks the self-reinforcing cycle of bank runs by preventing them to take hold in the first place. Deposit insurance guarantees that depositors will be reimbursed, usually up to a maximum amount per depositor and bank, even in the case of bank failure. The maximum amount is

usually set up so as to cover most retail deposits. Since most depositors perceive that their money is not at risk, the incentive for panic withdrawals is reduced or altogether eliminated.

Deposit-taking institutions are also often privileged by having direct access to central bank refinancing. In fiat money systems, i.e. money systems in which the intrinsic value of currency is not equal to the denoted value of the currency (or the denoted value is not exchangeable to an equivalent amount of a commodity such as gold), the central bank does not face any limit on the amount of currency or bank reserves it may create, and it is therefore always able to provide funding to banks that are short on liquidity so long as they are considered solvent (see also Section 2, “Lender of last resort”). Having access to central bank funding further strengthens a deposit-taking institution’s promise of par redemption (redemption at face value), even under tight conditions in private money markets.

Finally, deposit-taking institutions often benefit from an implicit government guarantee. A guarantee is implicit when there is no formal commitment on the part of the government to repay the bank’s creditors in case of its failure, but these creditors perceive that the institution will not be allowed to fail because it is too large or systemically important. Implicit guarantees, real or perceived, may provide a further measure of stability to the financial system. However they might also constitute an unwanted subsidy by taxpayers to banks, which then face a lower cost of funding than would otherwise be the case, thereby distorting an efficient allocation of capital. In addition, implicit guarantees may in some cases be destabilising when the government itself is not in a strong financial position and the weakness of banks and the weakness of the sovereign end up reinforcing each other.

Deposit-taking corporations as issuers of monetary liabilities

Deposit-taking corporations supply the reference financial asset in the economy: money. Money is defined as including currency in circulation (coins and banknotes, typically issued by the central bank), short-term bank deposits (issued by deposit-taking corporations), and often also other short-term instruments similar to deposits. Currency in circulation typically represents only a small proportion of total money holdings, so that quantitatively most money in an economy is issued by deposit-taking corporations in the form of bank deposits.⁷ A more precise definition of monetary aggregates and their relationship to the corresponding items in the financial accounts and balance sheets can be found later in this section.

In supplying bank deposits, deposit-taking corporations respond to the demand for money arising from economic agents. One important source for this demand is a deposit-taking corporation’s ability to make payments and manage

cash flows efficiently and securely by holding transferable deposits. Economic theory often refers to this demand as emanating from a “transactions motive”. Depository corporations are typically the sole suppliers of transferable deposits. These are central to the smooth operation of the payment system, as most payments in a modern economy operate by way of a transfer of funds, or equivalent operations such as direct debit, cheque or draft, between transferable deposits.

Perhaps counterintuitively, customers’ transferable deposits are one of the most stable sources of funding for banks. Individual transferable deposits are immediately redeemable on demand, but in aggregate, the overall quantity tends to be quite stable. This is because one agent’s withdrawal is typically another agent’s receipt from/into transferable deposits. Thus, the need to be able to effect payments efficiently yields a fairly stable demand for transferable deposits, at least in the medium run.

Many economic agents also prefer to hold at least part of their financial wealth in liquid, safe assets that can be redeemed at par on demand, or within a reasonably short period of time. For instance, agents may expect interest rates to rise in the future, and therefore postpone investment in bonds or other interest-rate sensitive assets (“speculative demand”), or they may have a degree of risk aversion that limits their desire to hold riskier and/or less liquid assets (“portfolio demand”, “precautionary demand”). This demand is often satisfied by holding more bank deposits than what is required for making payments.

Both for transactions and for other reasons, a large part of money demand is effectively captive to the supply of deposits by deposit-taking corporations. This stems to a large degree from the institutional setting in which banks operate, in which the ability to issue liabilities with all the desired characteristics of liquidity and capital certainty is typically restricted to banks.

To reflect the role of deposit-taking corporations as the main suppliers of monetary liabilities, many countries define monetary aggregates as encompassing only liabilities issued by this sector, together with currency in circulation which is a liability of the central bank. Table 3.2 below shows the definition of monetary aggregates for the Euro Area, together with the link to instruments distinguished in the financial accounts and balance sheets, which – in all cases but currency in circulation and money market fund share/units – are liabilities of deposit-taking corporations.

Monetary aggregates measure the money in circulation in the economy, and are defined according to different degrees of closeness to the most liquid monetary liability, i.e. currency in circulation. The narrowest of money measures, M1, includes currency itself plus overnight deposits, as the latter can typically be converted into currency on sight. M2 also encompasses certain forms of bank deposits (such as term deposits and deposits redeemable after a

Table 3.2. **Monetary aggregates and financial instruments in the financial accounts and balance sheets in the Euro Area**

Liability	Subsector	Financial accounts item	M1	M2	M3
Currency in circulation	Central bank	Currency	X	X	X
Overnight deposits		Mostly transferable deposits	X	X	X
Deposits redeemable at notice of up to 3 months		Other deposits		X	X
Deposits with an agreed maturity of up to 2 years	Deposit-taking corporations (in the EU, monetary financial institutions other than the central bank and MMFs)	Other deposits		X	X
Repurchase agreements		Other deposits			X
Debt securities issued with a maturity of up to 2 years		Short-term debt securities and long-term debt securities with original maturity of less than 2 years			X
Money market fund shares/units	Money market funds	Money market fund shares			X

particular period of notice) that, although not immediately convertible into currency, can be liquidated within a reasonable period of time (usually defined as within two years). M3 is the broadest measure of money and includes financial products that, although they are not strictly speaking short-term bank deposits, function as close substitutes to these. For instance, according to the ECB definition, these include money market fund shares/units, repurchase agreements that are a liability of an MFI, and debt securities issued by banks with a maturity of less than two years.

Deposit taking corporations as main suppliers of credit and core to the transmission mechanism of monetary policy

Deposit-taking corporations are also central to the financial system as the main providers of credit to households and businesses. This is inextricably linked to their ability to raise large amounts of funds in the form of deposits. The deposit and loan business of commercial banks reinforce each other, making banks key for the flow of funds from those with excess saving to those seeking funds to finance investment projects. Mechanistically, one could think that any addition to bank deposits allows banks to grant new loans. But it is equally true that a decision to grant credit on the part of a bank automatically creates a new bank deposit. Thus, economists have long argued, in different forms, over whether the provision of credit creates money, or whether, inversely, the availability of money leads to additional supply of credit.

The canonical illustration of a “money first” interpretation is the so-called “money multiplier” model. The money multiplier quantifies how any exogenous addition to base money (e.g. an increase in bank reserves due to a

central bank open market operation) is multiplied up by the banking system to a much larger amount of new broad money (such as deposits in commercial banks). Specifically, the model postulates a multiplying factor of $1/r$, where r represents the reserve ratio (see Section 2). Thus, for a reserve ratio of 10%, an addition to central bank money will lead to a growth in banks deposits ten times as large.⁸ Money comes first in this view because the initial trigger leading to a cascade of money creation is assumed to be an increase in the money base.

A “credit first” view would contend that the money multiplier model is misleading because it assumes that banks face a binding restriction to lending explained by the reserve ratio. In reality, banks may first face many other restrictions before insufficient central bank reserves. For instance, a lack of profitable lending opportunities, insufficient capital, the stance of macro-prudential policy, willingness and ability to take out loans by borrowers, collateral valuations, and others, are more likely to play a role in determining the amount of credit in equilibrium. The amount of bank deposits created by the economy follows more or less passively from such an equilibrium in the credit market,⁹ regardless of increases in base money.

Irrespective of which view is a better description of reality, the transmission of monetary policy to the real economy typically requires that bank balance sheets are in a healthy state. A weak capital position, for instance, might make banks unwilling to make new loans even to solvent customers with profitable investment projects. A reduction of short-term rates by the central bank may well increase the amount of such projects, but these may not be undertaken due to lack of funding by banks. Asset purchase programmes by the central bank may be more successful in bypassing an impaired banking system. Nevertheless, they also have much less than their desired effect if bank balance sheets are compromised, especially when credit to small businesses and households is key for monetary policy transmission. Economists speak often of an “impaired transmission mechanism” in these situations. The unwillingness or inability of banks to provide credit to solvent customers is often referred to as a “credit crunch”.¹⁰

Deposit-taking corporations from the perspective of the financial accounts

In this section we examine some of the features of deposit-taking institutions from the perspective of the financial accounts and balance sheets for the sector. Table 3.3 presents summarised figures for the balance sheets of other depository corporations in OECD countries. Loans, representing 53% of total assets, are by far the main item on the asset side of banks’ balance sheets. Bank loans are made to businesses, households, and, less importantly, local and state governments. Some loans may also be made to non-bank financial intermediaries. Loans granted by banks are typically illiquid, since the bank cannot in most cases require repayment from the borrower at short notice. In addition, unlike debt securities, loans are not easily tradeable on secondary

markets – quite often not tradeable at all.¹¹ Loans, therefore, contribute most significantly to the maturity mismatch between assets and liabilities inherent to the banking business – the mismatch of illiquid assets mostly funded through the issuance of monetary liabilities.


Table 3.3. Financial account balance sheets of other depository corporations in OECD countries*, 2015

Median percentage of the balance sheet total

	Assets	Liabilities
Financial net worth		0.9
Financial instruments	100	99.1
Currency and deposits	20.3	66.3
Currency	0.4	0.0
Transferable deposits	4.9	29.5
Other deposits	11.4	42.4
Debt securities	14.3	11.1
Short-term debt securities	9.4	1.6
Long-term debt securities	15.1	9.0
Loans	53.4	2.8
Short-term loans	9.4	0.0
Long-term loans	37.2	0.4
Equity and investment fund shares/units	3.1	7.4
Equity	2.6	6.8
Listed shares	0.6	2.2
Unlisted shares	2.2	1.9
Other equity	0.4	0.7
Investment fund shares/units	0.2	0.0
Financial derivatives and employee stock options	0.8	1.0
Other accounts	2.4	2.2

* Data analysed correspond to 20 OECD countries for which complete financial account balance sheet of the sector was available. It should also be noted that the details do not necessarily add up to the (sub)totals, because median shares have been used for each separate line.

Source: OECD (2017a), "Financial Balance Sheets, SNA 2008 (or SNA 1993): Non-consolidated stocks, annual", OECD National Accounts Statistics (database), <http://dx.doi.org/10.1787/data-00720-en>.

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As illustrated in Table 3.3, currency and deposits, comprising 20.3% of total assets, follow as a distant second to loans within the asset portfolio of banks. Transferable deposits, which allow banks to effect payments without delay, make up 4.9% of total assets. Banks keep transferable deposits as a liquidity buffer, e.g. to satisfy withdrawals from clients, as well as any imbalances between payments made and received by the banks' customers. Transferable deposits held by banks are typically deposits with other banks, including those with the central bank. Since both central bank reserves and inter-bank deposits receive a smaller remuneration compared to other investments, banks will normally minimise these to an amount compatible with prudential liquidity

management and supervisory regulations. Other deposits (11.4% of total assets) comprise deposits that are not considered transferable because they are not immediately available to make payments. This may include reverse repurchase agreements, margin payments related to derivative positions, and non-negotiable certificates of deposit. The counterparty of these positions is often another bank. Banks also keep small amounts of currency in the form of coins and banknotes (0.4% of total assets) to satisfy the needs of their clients, for instance withdrawals from ATMs, or banknotes deposited by businesses that receive payments from customers in this form.

Deposit-taking corporations also invest in long-term debt securities, representing 15.1% of total assets. In many countries these will be issued primarily by the central government and by other banks, with a smaller role for corporate securities and asset-backed securities. Some of these securities are tradeable in reasonably liquid markets. In addition, certain securities can also be pledged as collateral in private repurchase agreements and/or in refinancing operations with the central bank, in both cases giving access to liquid funds. However, the amount that can be obtained immediately by the bank from liquidating a security varies according to market circumstances. In other words, liquidity comes at the expense of capital certainty.¹²

On the liability side, the main source of funding for deposit-taking corporations are overwhelmingly deposits, comprising 66.3% of the balance sheet total. Most of these are deposits placed by customers, followed by inter-bank deposits and, depending on the operational framework for monetary policy, deposits resulting from central bank refinancing operations. A substantial part of deposit liabilities (29.5% of the balance sheet total) are transferable deposits. This means that more than a quarter of all bank liabilities are withdrawable on demand, compared to only 4.9% of assets being redeemable on the same terms. In addition, other deposits, comprising 42.4% of the balance sheet total, will typically include a substantial amount of deposits which, though not redeemable on demand, have much shorter maturities than most of the claims within the banks' loan portfolio.

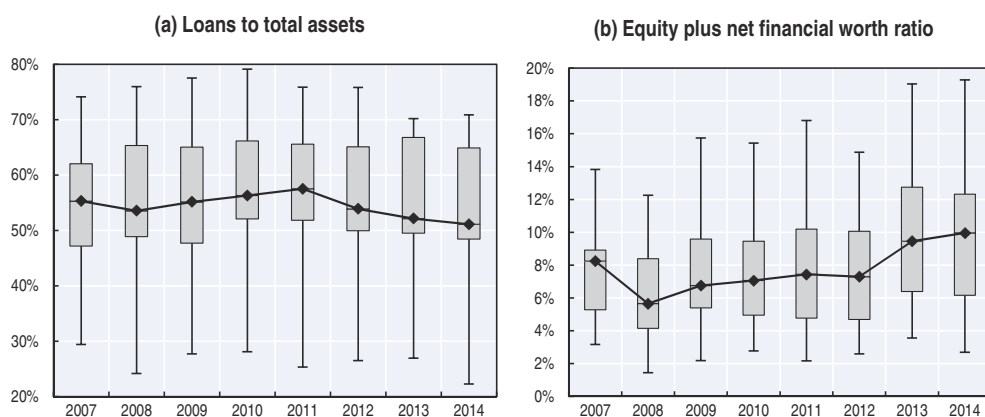
Long-term debt securities also play a significant role, comprising around 9% of the balance sheet total. These are typically purchased by other banks and by institutional investors such as investment funds, insurance corporations and pension funds. Depending on regulations, banks may also reserve special tranches or specific issues to place directly with retail clients, including households. This permits banks to offer these clients a better remuneration than through an insured deposit. In return, the customer assumes an increased risk, as bank debt liabilities are not covered by deposit insurance.

Equity and net worth, jointly considered, represent 8.3% of the balance sheet total of deposit-taking corporations. Equity and net worth are considered

here jointly because they provide a measure more directly related with bank capital than equity alone. Although there are many different ways of defining bank capital, from the financial accounts' perspective, both equity and net worth represent the ability of deposit-taking corporations to absorb losses under adverse scenarios.

Figure 3.7 depicts recent trends in some key ratios in deposit-taking institutions in OECD countries. The left part (a) shows the evolution of the ratio of loans to total financial assets over time. Contrary to what could be expected after the lending boom that took place in many OECD countries from approximately 2003 to 2007, loans as a percentage of total assets tended to increase rather than decrease in its aftermath (2007-11). One possible explanation is that banks' customers made ample use of lending commitments established prior to the 2007-09 economic and financial crisis, drawing down facilities such as credit lines in anticipation of an expected tightening in the supply of bank loans. Another potential driver in some jurisdictions was a tighter supervisory enforcement of the rules regulating asset de-recognition. As a result, securitised loans that were recorded off-balance sheet within the shadow banking system were brought back onto banks' financial statements unless the respective securitisations met strict criteria.

Figure 3.7. **Some key ratios of deposit-taking institutions across OECD countries, 2007-14**



Note: Based on the set of all OECD countries for which all required data were available. The graph indicates: black line – median of the ratio; lower and upper edges of the grey boxes, first and third quartiles; edges of the grey lines, maximum and minimum ratio observed. The equity ratio is defined as the sum of equity and net financial worth over total assets. Source: OECD (2017a), “Financial Balance Sheets, SNA 2008 (or SNA 1993): Non-consolidated stocks, annual”, OECD National Accounts Statistics (database), <http://dx.doi.org/10.1787/data-00720-en>.

StatLink  <http://dx.doi.org/10.1787/888933588193>

In turn, between 2011 and 2013, deleveraging pressures on banks' balance sheets became more apparent. Special vehicles were set up in many jurisdictions to help banks wind-down bad loan portfolios from their balance

sheets. Although often referred to as “bad banks”, these vehicles are usually not classified in the deposit-taking corporations’ sector. Instead, given their unique constructions, they are recorded as part of the other financial intermediaries or the government sector, depending on the level of government support received by the vehicle. As a result, significant amounts of loans were transferred out of the deposit-taking corporations and into the other financial intermediaries or the general government sectors.

The right part of Figure 3.7(b) plots the equity plus financial net worth ratios of deposit-taking corporations across OECD countries from 2007 to 2015. The effect of the 2007-09 economic and financial crisis at its height on bank capital can be seen clearly in 2008, where the median ratio was reduced by more than 200 basis points. Emergency recapitalisations followed in many countries, with ratios partly recovering over the period 2009-11, albeit with larger dispersion across countries. In the second phase of the crisis in 2012, with attention increasingly focused on banks and sovereigns in the Euro Area, bank capital suffered further setbacks. Over 2013-14, a new wave of recapitalisations allowed banks to increase their equity capital. At the same time, positive developments in financial asset prices led to a growth in bank profits, allowing banks to further cushion their capital position by increasing retained earnings. A significant recovery of the ratios over 2013-14 can be observed as a result of these additions to equity and financial net worth.

Finally, a commercial bank will typically use financial derivatives to hedge unwanted risks in the course of running its business. For instance, a mortgage bank that primarily invests in loans paying a fixed interest rate may be funded by liabilities paying mostly floating rates. In order to better balance receipts and outlays, the bank may wish to swap some of its fixed-interest receipts in exchange for floating-interest flows. In addition to hedging their own portfolios, banks may also offer derivative contracts to corporate and government customers. In doing that, banks will usually try to hedge these positions in order to avoid a short or long position that poses too much risk. The outstanding market value of derivatives at a typical bank is not particularly large. Nevertheless, the presence of large banks acting as international derivatives dealers in few countries creates a significantly skewed distribution of the value of banks’ positions in derivatives across OECD countries.¹³

4. Money market funds

Money market funds (MMFs) are collective investment institutions whose purpose is to invest in short-term liquid assets, such as bank deposits, repurchase agreements, short-term debt securities and/or securities close to maturity, as well as securities issued by other money market funds. Their main liabilities are investment fund shares (or units) that represent a participation in the collective investment.

The fund shares issued by MMFs are considered to be close substitutes for deposits because the investment strategy of the fund is to repay the shares on request at a value that approximates the yield offered by a short-term deposit. Unlike deposits, however, money market fund shares are not usually issued with a guarantee of capital certainty. Potential capital losses are, however, generally small due to the limited exposure of the fund to interest rate and credit risk.

As they are not bank deposits, money market fund shares are not covered by deposit insurance schemes. This also implies that issuers do not face the costs of contributing to the (potential) expenses of such schemes, potentially offering a yield advantage to investors, especially in an environment of high short-term interest rates. Partly due to this, corporate treasurers have often been keen investors in money market funds. In addition, money market funds allow large corporations to diversify the counterparty risk associated with large cash holdings.¹⁴

Since the 2007-09 economic and financial crisis, money market funds have received some attention from a financial stability perspective as potential amplifiers or initiators of runs on money markets. Money market funds are important providers of funding in these markets, yet their reaction to market events may be very different to that of other players such as banks. Although not explicitly capital-certain, the funds are typically seen by investors as ensuring at least par redemption. This expectation might make the funds too reactive, being more likely to quickly shift investment into the safest of assets at the smallest hint of a disturbance in money markets. Frequent disclosure obligations also play a role by making investors immediately aware of any problems in a fund's portfolio before they can be addressed – in opposition to a bank where these would only be known to supervisors.¹⁵ As a result, investors may also be more likely to initiate a run on the fund's shares. A run on large MMFs may propagate in the form of mounting difficulties for the issuers of commercial paper and other money market instruments, because the funds are unable or unwilling to renew their investments.

**Box 3.2. The transformation of the banking sector
and the 2007-09 economic and financial crisis**

Financial crises are unavoidable. They have happened since the start of economic and financial history. The reason is that a key function of financial institutions is to deal with risks, and risks come with the possibility of financial failures. The current financial system started in the mid-17th century, when London goldsmiths transformed their business from purely safekeeping excess gold, silver or money for wealthy people, to issuing payable bills accepted as a means of exchange, under the promise of being redeemed at short notice. With this transformation, the goldsmiths widened their business opportunities

Box 3.2. The transformation of the banking sector and the 2007-09 economic and financial crisis (cont.)

enormously, but they also assumed higher risks. In fact as soon as there was a rumour that any of the goldsmiths (or the people to whom the goldsmiths lent money) was in financial difficulty, there was the possibility of “a run on the goldsmith” by people demanding their deposited valuables back.

Trust and financial soundness of banks and other institutions is, therefore, very important for a financial system. Similar to what happened from time to time in London’s Lombard Street in the mid-17th century, bank runs may happen when depositors lose their trust in the safety of the banks where they have deposited their money. A distinctive cause of the 2007-09 economic and financial crisis is related to lending to “sub-prime borrowers”, particularly in the US housing market. Doubts about the creditworthiness of these loans and the corresponding risk exposures (sometimes via asset backed securities, as discussed below) led to mistrust, or as a minimum to a lack of clarity, around the financial situation of banks. As a consequence of this situation, banks and other institutions stopped rolling over short-term lending, and all banks had to turn to the central bank to borrow the liquidity they needed. This made central banks to become the only lender in the market.

More generally, risks in the financial systems are of very different types. In addition to solvency risk, the two most important risks are credit and liquidity risk, which were also at the heart of the 2007-09 crisis. Credit risk refers to the possibility that the lender does not get back what he lends. In February 2014, for example, the Spanish banking system owned non-performing loans amounting to 13.6% of total outstanding loans. This presented high solvency risks for the relevant banks. Similar high risk exposures were also evident in the United States and many other countries. The second form of risk, liquidity risk, refers to a situation where a financial institution cannot pay out to its customers, because there are no lenders in the market willing to lend them the additional resources needed for payouts, irrespective of the solvency of the borrower.

The government, often via the central bank, attempts to control and manage the above risks for the financial sector and the economy at large with financial regulation. While key for a well-functioning financial sector, financial regulation can, however, give rise to additional costs for financial institutions, for example, when banks have to maintain additional reserves to meet regulations designed to mitigate credit risk. This was a main reason behind the rapid development of less regulated institutions in the 1990s and 2000s, when the belief in “market efficiency” became popular. The deregulatory trend allowed new players in the financial markets, e.g. investment banks or hedge funds. These institutions were lightly regulated, mainly because they did not issue deposits. However, as these institutions offered close substitutes for

Box 3.2. The transformation of the banking sector and the 2007-09 economic and financial crisis (cont.)

deposits, they exerted additional competition on traditional banks. These and other forms of “shadow banking” have consequently increased tremendously, in particular in the United States where they nowadays represent more than half of the financial system. In Europe the size of the shadow banking sector is slightly smaller, representing one-third of the financial system.

In the late 20th and early 21st century, not only did new financial institutions come into the market, but new financial products were also designed and introduced. In fact, financial innovation accelerated enormously during the 1990s and the 2000s. Some of the most important financial innovations fall within the general phenomenon of securitisation. Securitisation describes the transformation of bank loans into securities, after having being split and bundled into tranches, allowing banks to finance loans via those securities, not just by deposits. Securitisation also allows banks to eliminate the credit risk that they had with the particular debtor whose loan has been securitised. The resulting securities are called asset-backed securities (ABS), or mortgage-backed securities (MBS) if the securitised loan is a mortgage. The holders of these securities face the credit risk of non-payment of the loan, which originates from a bank lending money to a household, e.g. for buying a house or a car.

The appearance of new financial players and new financial products triggered the transformation of the traditional banking business from the “originate-to-keep” model to the “originate-to-distribute” model. In the traditional model, banks had to control both credit and liquidity risk on their long-term loans portfolio. The new originate-to-distribute model, however, is formed in a way that eliminates the incentives to monitor the underlying loans which back ABS/MBS securities. Apart from banks, many other institutions are involved in this “originate-to-distribute” model; mainly institutions from the shadow banking system, like money market funds, investment funds, hedge funds, and investment banks.

Credit agencies also played an important role in the 2007-09 economic and financial crisis as they had the responsibility to assess (with strict independence) the credit risk of the ABS/MBS securities. Final investors in these types of assets were other financial institutions, investment funds, insurance companies and pension funds, households and non-financial corporations. In the case of the US, most of the investors were non-resident. As ABS/MBS were often re-securitised into new asset-backed securities, and as many investors were involved in the process of financing these types of securities, it could easily occur that ultimately a risk-averse final investor would unintentionally lend to a “subprime-borrower” in another country, certainly in a situation where credit agencies provided an artificially inflated credit rating of the relevant financial products (as discussed below).

Box 3.2. The transformation of the banking sector and the 2007-09 economic and financial crisis (cont.)

Some blame the new “originate to distribute” banking model as a key source of the crisis. They argue that the traditional banking system was well regulated with respect to the assets, liabilities and own reserves banks had on their balance sheets, while the operations the very same banks were doing off-balance sheet were poorly regulated. They argue that, when a bank shifts a loan off its balance sheet through securitisation, the risks introduced by that loan shift away from the eye of regulators and supervisors, as the ABS move to the de-regulated part of the financial system, that is, the shadow banking system. Timothy Geithner, at the time the President of the US Federal Reserve Bank of New York, declared in 2008 that by 2007 shadow banking had reached in the United States an estimated USD 10.5 trillion in assets/liabilities, while the regulated banking system’s assets/liabilities totalled USD 10 trillion. At that time, the main types of shadow banks were hedge funds and investment banks (which included the “big five investment banks”: Lehman Brothers, Bear Stearns, Goldman Sachs, Morgan Stanley and Merrill Lynch).

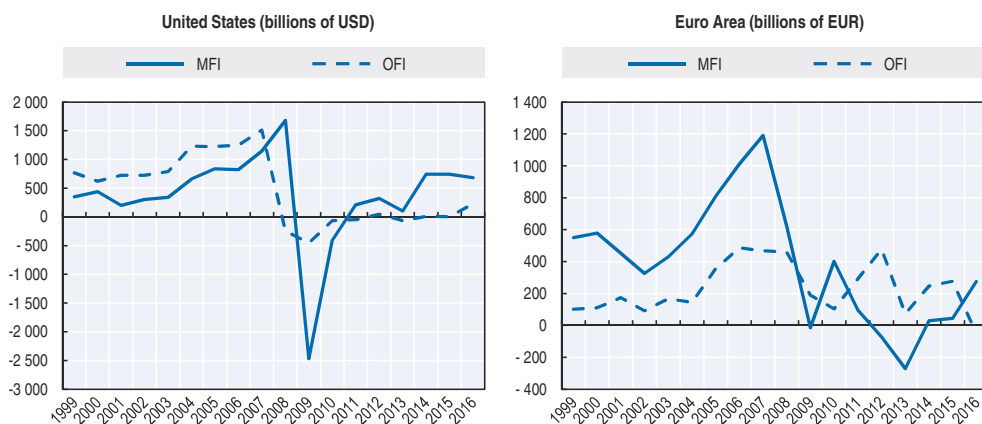
In the new “originate-to-distribute” model, self-regulation by the agents involved was more important than ever. This role was expected to be played by credit agencies, i.e. Moody’s, Standard and Poor’s, and Fitch, which together covered 95% of the credit rating market. However, these credit agencies failed to assess the actual credit risk borne by securities related to sub-prime mortgages. A key problem was related to the rating of products produced by the “originate-to-distribute” agencies, who were also the credit agencies’ customers. It can be argued that the credit agencies had a vested interest to underestimate the credit and liquidity risk of such financial instruments, as they relied upon those who wanted to sell the relevant securities, thereby undermining their supposed independence.

Finally, it may be argued that the “originate-to-distribute” model has heightened the excessive dependence of the whole financial system on the wholesale or inter-bank money market. All types of institutions (but prominently hedge funds) finance their acquisition of assets, which include long-term non-liquid loans, by short-term borrowing that needs to be rolled over. For example, to finance a five-year bond, a financial institution depending on a one month interbank borrowing needs to roll over that borrowing sixty times. However, if the money market becomes unstable, the roll-over may not take place, forcing the bondholder to sell the bond in a situation where many others will also start to sell. Strong falls in prices will follow (known as a “fire sale”), which will generate high losses, and may turn an initial liquidity crisis into a solvency crisis.


5. The increasing role of other financial institutions (OFIs)

The strong growth of financing prior to the 2007-09 economic and financial crisis through less regulated financial institutions outside the banking sector is generally linked to the move to the so-called “originate-to-distribute” model (see Box 3.2), as evolved in particular in the United States. In this model, a large part of the loans portfolio of banks was securitised. Already in the 1980s in the United States other financial institutions (OFIs) became the largest net investor in loans ahead of banks. In the Euro Area, banks remained the main lenders until 2009, when monetary financial institutions (MFIs) started to reduce their loan portfolios; see Figure 3.8. To better understand these developments it is important to know what types of institutions are grouped under the OFI heading, and why some of them have played such an important role, in particular in the run up to the 2007-09 economic and financial crisis.

Figure 3.8. **Net transactions in loans for MFIs and OFIs in the United States and the Euro Area, 1999-2016**



Source: US Federal Reserve (2017), National Accounts (database), www.federalreserve.gov/apps/fof/FOFTables.aspx; and ECB (2017), National Accounts (database), <http://sdw.ecb.europa.eu/browse.do?node=9691262>.

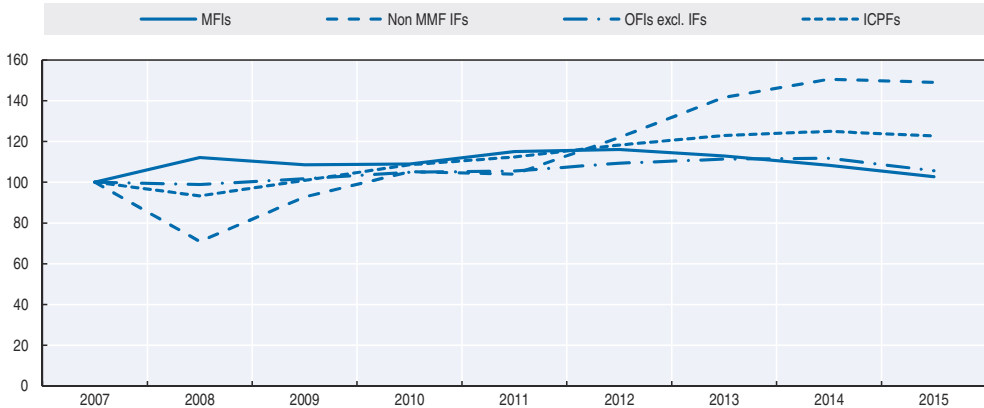
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Other financial institutions (OFIs) are defined as financial institutions other than MFIs, insurance corporations and pension funds in the 2008 SNA. As discussed in Section 1, in most OECD countries, OFIs are the second largest group of financial corporations, typically after MFIs and before insurance corporations and pension funds (ICPFs). In some countries, e.g. the United States,¹⁶ OFIs' combined balance sheets are even larger than those of MFIs; see Figure 3.9. OFIs can generally be further divided into Non-MMF investment funds (IFs) and OFIs excluding IFs. OFIs excluding IFs are a very heterogeneous group of institutions. An overview of the types of institutions is provided in Table 3.1. For the OECD as a whole, the available data shows that OFIs grew faster than MFIs since the 2007-09

economic and financial crisis, more in particular since mid-2011. This faster growth was mainly driven by investment funds, although other OFIs grew faster as well; see Figure 3.9.¹⁷


Figure 3.9. **OFI balance sheet developments compared to MFIs and ICPFs, OECD countries,* 2007-15**

Total liabilities, 2007 = 100



* This figure only includes OECD countries for which data are available for all subsectors and years.

Source: OECD (2017a), "Financial Balance Sheets, SNA 2008 (or SNA 1993): Non-consolidated stocks, annual", OECD National Accounts Statistics (database), <http://dx.doi.org/10.1787/data-00720-en>.

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Non-MMF investment funds (IFs)

The continued growth of the OFI sector can be broadly explained by the increasing specialisation of the financial industry. This is most evident in the large variety of Non-MMF investment funds (IFs) which offer a myriad of investment products for all types of investors, from individual savers to large institutional investors. Investment funds are collective investment schemes that raise funds by issuing investment fund shares (or units), and invest these funds in the financial markets or in real estate. This model allows an investor to invest in predefined sets of assets of their choosing, such as debt securities, shares of a particular sector, or "trackers" that follow the developments of a particular stock market index. Investors can choose between actively managed investment portfolios or passive funds following a specific market.

Most IFs raise funds exclusively by issuing investment fund shares. In the case of so-called "open-end" funds the value of the investment fund shares reflects on a one-to-one basis the value of the funds' investments, i.e. the IF is not "leveraged". In the case of closed-end funds, a limited number of shares are being issued which are subsequently traded on the stock market, as a consequence of which there may be a difference between the fund's assets and the value of the shares issues by the fund. Exceptions from this simple IF

financing model are hedge funds which may incur substantial amounts of other liabilities such as loans. This additional financing allows hedge funds to purchase more assets – the fund gets “leveraged”. As a consequence, the value of hedge fund shares reacts more than 1:1 to the value of the funds’ investments. Leverage can be further increased by taking positions in financial derivative contracts, as they require small initial investments compared to the potential gains and losses. This is called synthetic leverage.

The names and definitions for the various types of investment funds differ across countries. Generally the more leveraged (“riskier”) funds are called hedge funds, in particular if they involve high minimum investments, de facto restricting them to institutional investors and very wealthy individuals. As hedge funds are not marketed to the public at large, they tend to be less regulated than other investment funds. In many countries, the more regulated non-leveraged investment funds are called mutual funds. In the financial accounts of the United States, this term is restricted to open-end funds, while closed end funds and exchange traded funds (ETFs) are shown separately.

Other financial intermediaries

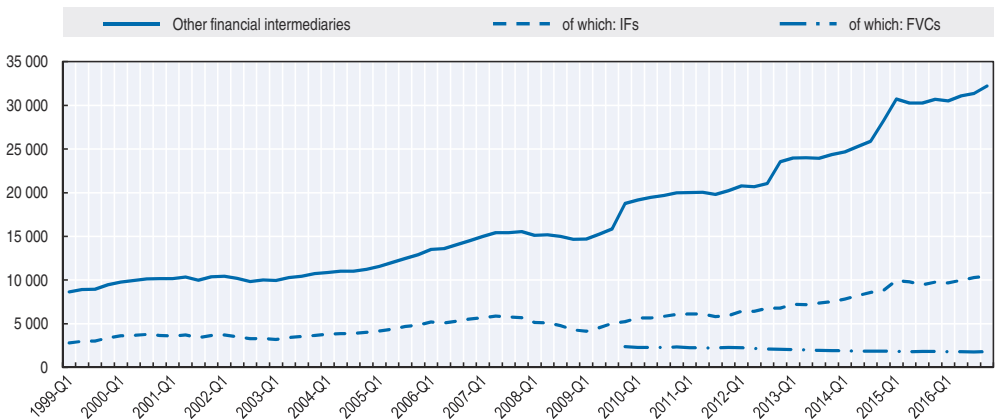
The OFIs excluding IFs include, amongst others, “other financial intermediaries”, consisting of specialised branches. They typically raise funds from savers and lend these funds to the public or invest them in markets, but they are not deposit taking institutions, investment funds, insurance corporations, or pension funds. Other financial intermediaries include, for example, financial corporations engaged in the securitisation of assets, security and derivative dealers, financial corporations engaged in lending, and other specialised financial corporations. Generally, these institutions are less regulated and their economic and financial importance differs widely between countries. Data sources for these institutions also tend to be less developed and less harmonised, as a consequence of which statistics are often based on indirect information from, for example, security markets or counterparty sector information (e.g. loans by monetary financial institutions). For most OECD countries, other financial intermediaries are grouped together with financial auxiliaries and captives (as discussed below), and referred to as other financial institutions excluding investment funds.

The financial corporations engaged in asset securitisation were particularly linked to the rapid growth of financing outside the regulated banking sector. Securitisation companies are created to purchase assets, such as portfolios of loans originated by an MFI or another lender. They finance the purchase of these assets by issuing asset backed securities (ABS). In doing so, they increase the liquidity of the original holders of the assets, and they allow the purchasers of the ABS to invest in a specified pool of assets. The practice of banks to move loans off their balance sheets via securitisation, in particular in

the United States, led to the rapid growth of securitisation companies. The US Federal Reserve classifies these institutions into two separate sectors: Issuers of Asset-Backed Securities (ABS) and Agency- and Government Sponsored Enterprises (GSE)-Backed Mortgage Pools.¹⁸ In the Euro Area, financial vehicle corporations (FVCs) engaged in securitisation transactions were less important in the lead-up to the 2007-09 economic and financial crisis. Since the crisis the importance of FVCs has further decreased; see Figure 3.10.

Apart from financial corporations engaged in asset securitisation, in many countries little information currently exists on the other types of financial intermediaries. This gap in data availability was recognised by the G-20, and was the reason why a recommendation was included on “shadow banking” in the G-20 Data Gaps Initiative;¹⁹ see also Chapter 10. Because of their increased importance, it is understood that more information is needed on the various subgroups within the other financial intermediaries sector and it is expected that more detailed information will become available in the future. Preliminary findings for the Euro Area indicate that security and derivative dealers are the largest subgroup of other financial intermediaries excluding FVCs. In the United States, the main types of other financial intermediaries are finance companies, security brokers and dealers, and funding corporations.

Figure 3.10. **Balance sheet developments of other financial intermediaries, investment funds (IFs) and financial vehicle companies (FVCs) in the Euro Area, 1999-2016**
Total liabilities, Billions of EUR



Source: ECB (2017), Financial Vehicle Corporations (database), <https://sdw.ecb.europa.eu/browse.do?node=9691119>; and OECD (2017a), “Financial Balance Sheets, SNA 2008 (or SNA 1993): Non-consolidated stocks, annual”, OECD National Accounts Statistics (database), <http://dx.doi.org/10.1787/data-00720-en>.

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Captive financial institutions and money lenders

Captive financial institutions and money lenders are defined as institutional units, for which most of either their assets or liabilities are not

transacted on open markets. They do not channel funds from one part of the public to another part of the public, and are thus not considered as financial intermediaries. They either raise funds from the public but only channel them to an enterprise group, or they receive funds from one individual household, enterprise, or enterprise group and invest the funds in the financial markets on their behalf. Examples of the latter are trusts and money lenders. Trusts receive funds from individual households or families and invest the funds in the financial markets. Similarly, money lenders use their own funds, i.e. they do not raise funds from the public to lend to creditors.

An example of units whose assets are not transacted on open markets are Special Purpose Entities (SPEs, also referred to as conduits) that raise funds in open markets – e.g. by issuing debt securities – but which lend exclusively to a parent corporation or an enterprise group. If such entities are resident in the same country as their parent corporations they are generally not considered as a separate institutional unit, but as an artificial subsidiary which is consolidated with the parent company. However, SPEs are often concentrated in a few financial centres in the world and are thus often not resident in the same country as their parent. In this case, they are recorded as separate institutional units in the country where they are located. For the countries in which they reside, often for tax reasons, the balance sheet totals of these entities may be very significant, whereas in most other countries they will be negligible. Similarly to SPEs, holding companies issue shares and their assets consist mainly of the equity of a group of subsidiary corporations.²⁰ Holding companies are generally treated as separate institutional units, as they are generally owned by multiple shareholders.²¹

The recording of non-resident SPEs and holding companies as separate financial institutions was introduced with the change-over to the new international statistical standards (notably the 2008 SNA and BPM6) to have a clearer separation between financial and non-financial corporations, allowing for a better analysis of the financing and investments of these sectors. This separation implies, for example, that financing raised by SPEs or holding companies is allocated to the financial corporations' sector. Such a recording is particularly important for countries that host financial centres attractive to SPEs and holding companies, such as Ireland, Luxembourg and the Netherlands. However, the financing raised by these institutions often has little connection to their resident economy.

Financial auxiliaries

Financial auxiliaries facilitate financial transactions between third parties without becoming the legal counterpart, for example as brokers or consultants. They therefore do not put themselves at risk and their financial

positions tend to be small. The only type of financial auxiliaries which may have substantial financial positions are head offices with financial corporation subsidiaries.

6. Insurance corporations and pension funds

Insurance corporations and pension funds provide financial services associated with five types of activities: non-life insurance, life insurance and annuities, reinsurance, social insurance schemes, and standardised guarantee schemes. This subsector, however, does not include obligatory insurance schemes, like protection against unemployment, illness and invalidity, medical expenses and retirement, which are provided and controlled by the government. These social security schemes, and the funds operating them, are treated as part of the general government.

Paragraph 6.176 of the 2008 SNA provides the following guidance regarding insurance corporations and pension funds:

“All these schemes lead to redistribution of funds, which are recorded in either the secondary distribution of income account or the financial account. For non-life insurance and standardised guarantee schemes, most of the redistribution takes place between different units in the same period. Many client units pay relatively small policy premiums or fees and a small number of them receive relatively large claims or payments. For life insurance, annuities and pension schemes, the redistribution is primarily, though not entirely, between different periods for a single client. In fulfilling their responsibilities as managers of these funds, insurance companies and pension funds are involved in both risk management and liquidity transformation, the prime functions of financial institutions.”

The activities carried out by insurance corporations are mainly related to the pooling of risk, but life insurance and pension schemes are also related to long-term investment, as discussed below.

Insurance corporations

In exchange for a periodic payment, known as a “premium” or “contribution”, the policyholder buys protection against the occurrence of certain negative events or, as in the case of some life insurance products similar to long-term saving, the right to a payment of either a lump sum or a monthly income in a given future period of time. With products related to risk events, the premium is calculated according to the risks involved (i.e. the larger the underlying risk, the higher the premium) and a certain profit for the insurance corporation. Nevertheless, the premium is usually smaller than the financial risk of possible future losses that may occur to the policyholder from the

materialisation of such an event. Insurance companies are able to engage in such practices due to the pooling of risks, consisting of aggregating a diversified and uncorrelated group of insurances, mitigating each other's risk through dispersion and the so-called law of large numbers.

From a broader perspective, insurance has a significant social and economic role, as it allows a generally risk adverse society to take on some risks due to the fact that they know any negative events will be fully or partially covered. For the insurance companies, the meticulous calculation of insurance premiums is crucial for the success of its business. According to the nature of the covered risks, insurance can be split in two large types: non-life insurance (including re-insurance) and life insurance. In life insurance the risks are related to death or life events like retirement, while the other risks are covered by non-life insurance.

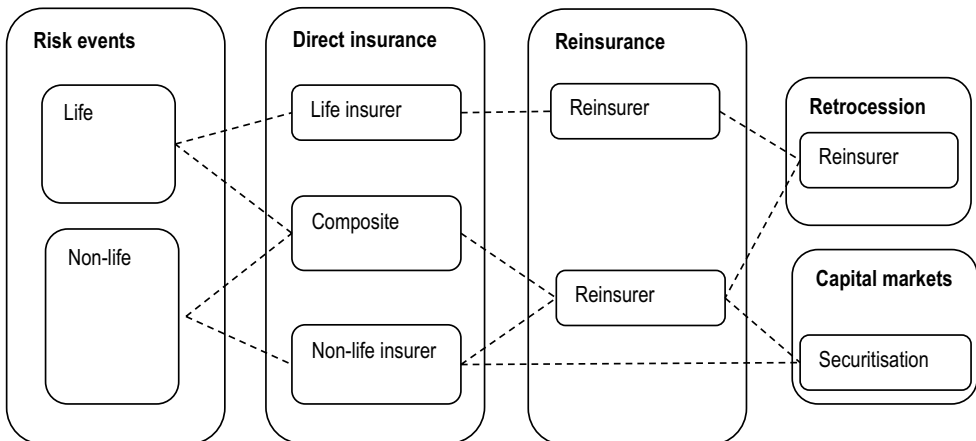
Non-life insurance including reinsurance

Risks covered by non-life insurance include motor vehicles accident protection, income protection against certain events such as invalidity, medical expenses, credit default and suretyship, financial loss and others. Due to the nature of the covered risks, non-life insurance and economic activity are highly interconnected. First of all, insurance boosts economic activity, allowing entrepreneurs to develop by calming fears of negative sudden events that might ultimately damage the business activity and by permitting a shift of financial funds held against potential losses to new projects and investments, hence promoting the business' growth. By being insured, businesses are also more likely to get better conditions when seeking credit and other sort of financial support, because the insurance protection mitigates some of the risks involved in the businesses' activities. Similarly, households will not need to set aside funds to protect themselves against uncertain future events that may seriously affect their assets or their future income.

From the perspective of financial accounts and balance sheets, non-life insurance corporations are not very significant. On the liability side, the prepayments of premiums and reservations made to meet outstanding insurance claims are recorded under "non-life insurance technical provisions", which is considered an asset of the policy holders. The counterpart for transactions and positions in this instrument is not that easy to assess, since the collected information does not have the required detail on the exact counterparts of prepaid premiums and the outstanding claims. Usually, it is assumed that this is more or less proportional to the stratification of the policy holders. Other transactions and positions relate to "provisions for calls under standardised guarantees". One example of such activity is export credit guarantees, where the insurer acts as the guarantor.

A special type of insurance is reinsurance, through which the insurance business itself can get coverage and protection for the risk of loss. Figure 3.11 shows how direct insurance and reinsurance are connected within the insurance business. As illustrated, insurance companies cover the risks of the original policyholders, through what is commonly called direct insurance, regardless of their line of business (life, non-life or composite). However, insurance companies may transfer part of the risk taken via reinsurance, which can be done through either reinsurance companies (the risk is transferred in exchange for a fee, similar to the payment of a premium), or Special Purpose Vehicles via securitisation (see Section 5 above). Reinsurance is also applicable to reinsurers, but in this case it is called retrocession. The activity of reinsurance is heavily concentrated in a few countries, such as Switzerland and the United Kingdom.

Figure 3.11. **The insurance business – a workflow example**



Life insurance

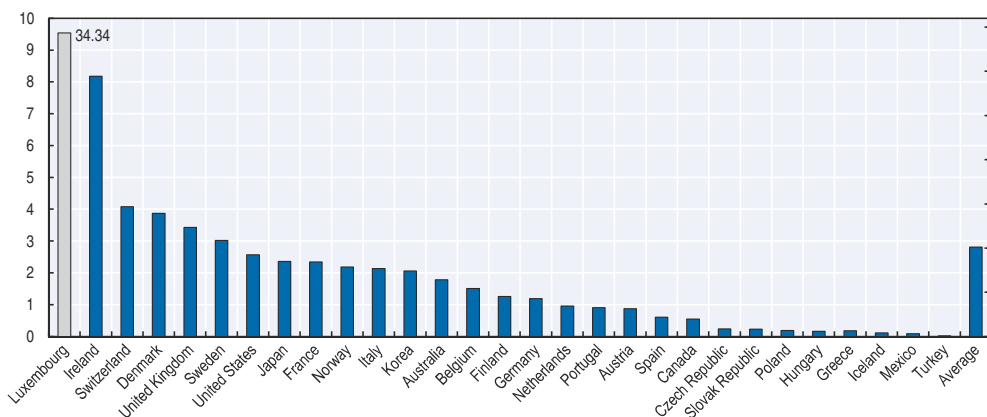
As stated previously, life insurance covers risks related to death and certain life events such as retirement. Different from pension schemes and social security schemes provided by government, life insurance is taken out on an individual basis. The policy holder periodically pays a premium, which – after the insured event occurs – leads to a stream of future benefits (annuities) or a lump sum. The insurance corporation invests the premiums received to cover the future payments. As such, life insurance offers financial investment products, competing hand in hand with more or less similar products offered by other financial corporations, such as banks and investment funds. Good examples of products similar to financial investments offered by life insurers

are unit-linked products, in which there is a full or partial transfer of the investment risk from the insurer to the policyholder. The investment is done through the purchase of units and the investor is able to choose the level of investment risk by selecting the underlying investments which compose the unit-linked policy, ultimately determining its future cash value. This type of investment product is closer to collective investment vehicles than to conventional insurance policies.


Given the similarity with other investment products, the payments of premiums are not recorded as expenditures for the policy holders in the current accounts. Instead, these payments, after a deduction of the costs (and profit margin) made by the insurer, are treated as a financial transaction leading to the building up of entitlements, which are recorded as an asset of the policy holder and as a liability of the insurance corporation, under the heading “life insurance and annuity entitlements”. Investment income that the insurance corporations earn on the assets accumulated through the investment of the premiums and that they allocate to the policy holder, is recorded as an income of the policy holder, under “investment income attributable to life insurance policy holders”. This income is subsequently added to the entitlements as well. Correspondingly, benefits are not treated as income, but as a run-down of entitlements.

Figure 3.12 presents the life insurance business in a number of OECD countries. The density of life insurance, as shown in Figure 3.12, is measured as the average (life) insurance spending per capita in a given country. Countries where the density is higher are countries where life insurance products are more used as alternative investment products. Often, the differences in density may be related to certain income tax regulations for these products, or the

Figure 3.12. **Density of life insurance in OECD countries, 2015**
Average life insurance spending per capita (in thousands of USD)



Source: OECD (2017b), OECD Insurance Statistics (database), <http://dx.doi.org/10.1787/2307843x>.

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presence/absence of collective insurance, either through government or pension funds.

Life insurance products and pension schemes have become increasingly important over the past years; this is partly related to an ageing society. In OECD countries, life expectancy increased 5.2 years from 1993 to 2013 (OECD, 2016a) and, within the same period, fertility ratios have decreased from 1.81 to 1.67 (OECD, 2016b). As a consequence of these developments, the old-age-dependency ratio, i.e. the number of persons aged 65 and more relative to the number of individuals aged 20 to 64, will increase, thus jeopardising the sustainability of pay-as-you-go social security pension systems. In this context both individual life insurance and pension funds become a relevant and highly encouraged alternative to complement retirement income. More discussion on the relationship between the ageing society and financial accounts and balance sheets is presented in Chapter 9.

Pension funds

Similarly to (individual) life insurance, pension schemes also aim to provide income and financial relief, mainly in the event of retirement, complemented by other benefits in the case of death and/or disability. However, different from (individual) life insurance, pension funds relate to so-called “social insurance schemes” in which i) participation is obligatory, either by law or under the terms and conditions of employment; ii) the scheme is a collective one for the benefit of a designated group of workers; and/or iii) an employer makes a contribution to the scheme. As noted before, if these schemes are operated by government, they are considered as social security and recorded as part of the transactions and positions of government, unless they relate to (partially) funded employment-related pension schemes. However, if they are arranged by, for example, employers for their employees, usually designated pension funds are set up, which are then recorded in the financial corporations’ sector. In some countries, these pension funds also include separated schemes for government employees. Because of the ageing society, these funds are growing in importance.

Pension funds basically pool assets which are accumulated by investing the premiums or contributions paid by the employees, and/or on behalf of them, by the employers, with the purpose of financing future pension benefits. There are two main types of pension schemes, based on the guarantees they provide to their members: defined benefit schemes and defined contribution schemes. But there are also hybrid types, somewhere in between defined benefit and defined contribution schemes. In a defined benefit scheme, the benefit is determined in advance, for example as a fixed percentage of salary, and the contributions are calculated in order to ensure this benefit. Implicitly this means that the risk falls upon the pension manager/sponsor (often the employer), who is responsible to ensure that the accumulated assets are sufficient to cover the future payments

of benefits, although in some countries this responsibility is shared between the employer, the employees and the retirees. In a defined contribution scheme, only the contributions made to the fund are determined up front. The benefits arising from these contributions will depend on the performance of the accumulated assets, so that the entitlements are fully matched with the underlying assets' performance, hence transferring the risk from the pension sponsor to the contributor. This is an important difference. If, for example, life expectancy increases, in the case of defined benefit schemes, the contributions would have to increase to pay for the extra years in retirement. However, in the case of defined contribution schemes, contributions would not change and less money per year in retirement will be available.

Nowadays, the trend in pensions' activity is tilted towards defined contribution schemes, thus transferring the risk to the employee. Many factors can be identified as contributors to this shift: the problems related to an adequate accounting for and prediction of the pension liabilities; increased workforce mobility; demographic changes; and financial markets' behaviour, especially in periods of low long-term interest rates.

The above distinction of pension schemes is also very relevant in terms of recording in the national accounts. In a defined benefit scheme, the entitlements due to the employee at a certain point in time are based on the net present value of the estimated future stream of pension benefits (calculated according to actuarial information), using a certain discount rate. In a defined contribution scheme, the entitlements are calculated as the amount of contributions made to the scheme plus any gains or losses incurred from the pension fund's investment of these contributions. The total claims of households related to these pensions are recorded under the financial instrument "pension entitlements". In the case of defined benefit schemes, the shortfall of the accumulated assets of the pension funds, as compared to the pension entitlements, are recorded as "claims of pension funds on pension managers". As a consequence, pension funds normally have a zero net worth, although as discussed previously, in some countries the responsibility for the shortfall is not always evident, and there may be an alternative accounting. All of this is discussed in more detail in Chapter 9.

Box 3.3. The role of insurance and pension funds as institutional investors

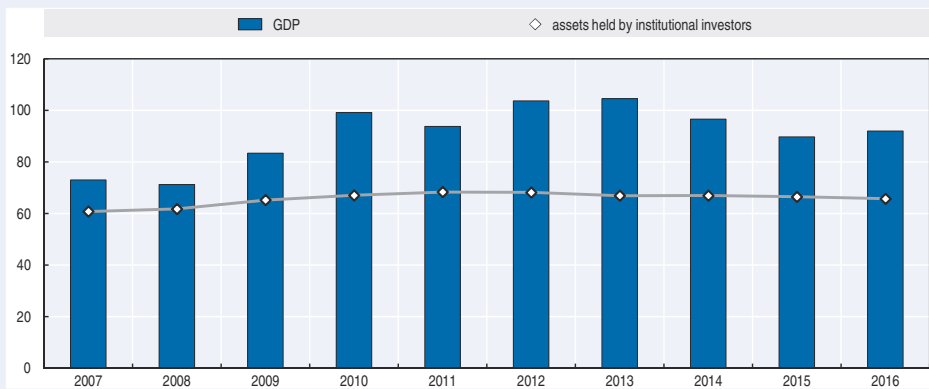
Insurance corporations and pension funds have an important role as institutional investors. According to the OECD definition, institutional investors (investment funds, insurance companies and pension funds) are major collectors of savings and suppliers of funds to financial markets. Figure 3.13 offers an overview of total assets held by insurance corporations and pension funds in OECD countries between 2007 and 2016. The share of

Box 3.3. The role of insurance and pension funds as institutional investors (cont.)

insurance corporations and pension funds in the assets held by institutional investors increased from slightly more than 60% at the end of 2007 to around 68% at the end of 2010 and 2011. Since then it decreased to 66% at the end of 2016. In terms of percentage of GDP, the OECD average of the accumulated assets of insurance corporations and pension funds increased from 73% at the end of 2007 up to 105% at the end of 2013, with a low of 71% at the end of 2008, right after the economic and financial crisis (see also Keelley, Brian et al., 2010).

Figure 3.13. Total assets held by insurance corporations and pension funds in OECD countries, 2007-16

Percentage of GDP and percentage of total assets of institutional investors



Source: OECD (2017a), "Institutional investors' assets and liabilities", *OECD Institutional Investors Statistics* (database), <http://dx.doi.org/10.1787/c4292928-en>.

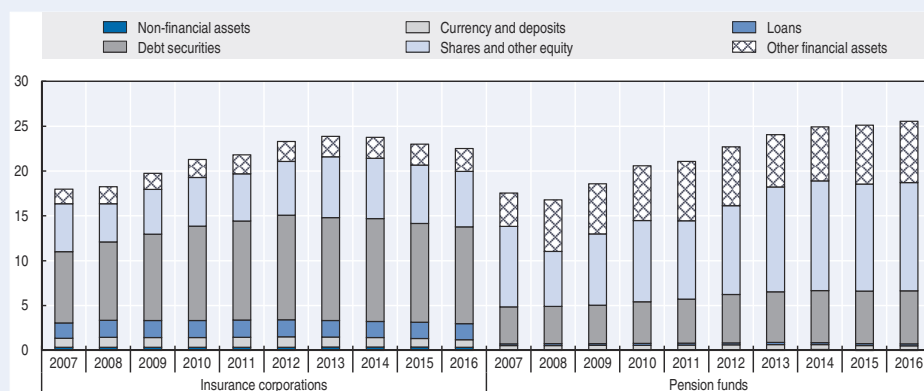
StatLink  <http://dx.doi.org/10.1787/888933588136>

The analysis of the composition of insurance corporations and pension funds' investments by instrument in Figure 3.14 shows that the majority of assets consist of debt securities, and shares and other equity. Non-financial assets (e.g. real estate) and loans are less popular investment categories.

Besides having the need to invest contributions or premiums, insurance corporations and pension funds have another very interesting feature: their investments' long-term maturity. Since most of their liabilities have a very long-term maturity, especially in the case of life insurance and pension funds, these institutions tend to match their liabilities' maturity on the assets side. This long term investment has an important role as a counter-cyclical and stabilising factor on the financial markets. Della Croce et al. (2011) identify the special characteristics of these investments as "patient counter-cyclical capital", because these investors typically hold assets for a long period of time or until maturity; "engaged capital" given that they are responsible asset owners, who closely monitor a companies' management; and "productive capital" since their investments drive competitiveness and economic growth.

Box 3.3. **The role of insurance and pension funds as institutional investors** (cont.)Figure 3.14. **Composition of assets held by insurance corporations and pension funds in OECD countries,* 2007-16**

Trillions of USD



* This figure only includes OECD countries for which data are available for all subsectors and years. Australia, Portugal and the United Kingdom are excluded for the whole period, while some other countries are excluded for part of the period covered.

Source: OECD (2017), "Institutional investors' assets and liabilities", *OECD Institutional Investors Statistics* (database), <http://dx.doi.org/10.1787/c4292928-en>.

StatLink  <http://dx.doi.org/10.1787/888933588155>

7. Analysing the financial corporation sector

The analysis of the financial sector focuses on the sector's role in channelling funds from savers to investors, and in particular on the efficiency and the resilience with which this central function is performed.

Advantages of a comprehensive presentation of the financial sector

While there has been a long history of comprehensive analysis of the traditional banking sector, the 2007-09 economic and financial crisis has shown that developments in other financial institutions can have large repercussions on banks, financial markets and also the economy as a whole. Given the large number and variety of financial institutions and their interactions, comprehensive coverage is difficult, but missing financial transactions and positions of some institutions may preclude detecting the build-up of problems early enough to attempt corrective action. For instance, the American International Group (AIG) was historically an insurance corporation in the United States, but in the years leading up to the 2007-09 economic and financial crisis it had built up an enormous book of financial derivatives positions, which were not appropriately reflected in financial statistics.

The financial accounts and balance sheets, compiled according to the 2008 SNA, amongst others aim to provide a framework for a comprehensive and consistent coverage of the financial sector. The harmonised classification of financial institutions and financial instruments is essential in that this classification allows combining many different data sources in a single statistical product, and facilitates comparison across the sub-sectors of the financial system on a harmonised basis. Crucially, for some of the actors included in the “other financial institutions” subsector, the financial accounts and balance sheets are, in many countries, the only source of official statistical data. While direct data sources often do not exist for all types of financial institutions, the combination of indirect sources, such as security holdings statistics derived from custodians and counterparty sector information from other statistics, are used by the compilers of financial accounts and balance sheets to close data gaps.

Due to data limitations, the financial accounts and balance sheets may not always allow identifying the precise type of financial actors involved in financial transactions. However, the financial accounts’ comprehensive and homogeneous treatment of all financial subsectors and instruments, irrespective of the specific level of subsector detail attainable, still makes them a useful tool for further analysis. For example, it may not be possible to separately identify central counterparties, i.e. institutions that provide clearing and settlement services for trades in foreign exchange, securities, derivatives, etc. However, large amounts of transactions within the subsector “other financial institutions”, which correspond to activity in the repurchase agreement market, may be assumed to be associated with one or more central counterparties rather than, for example, a financial auxiliary.

Cross-country comparability

The relative size of the financial sub-sectors varies considerably across countries, as shown in Figure 3.1. A given financial function may be performed by different types of institutions in different countries, depending on regulatory or other national circumstances. Focusing on individual subsectors when comparing a certain part of the financial system across countries can therefore be misleading. For instance, home mortgages may be granted exclusively by banks and retained on their balance sheets in some countries, whereas in other countries non-banks may originate loans and/or banks may predominantly sell them to asset-backed security issuers. In the latter cases, the credit market for residential real estate could be highly misrepresented by focusing solely on banking statistics. Financial accounts and balance sheets therefore facilitate international comparisons because they allow the analyst to cover the whole financial system using a single data source, thereby strengthening the analysis in the presence of country-specific market characteristics.

Aggregate leverage and equity ratios of the financial sector and sub-sectors

Capital and leverage ratios of individual entities or financial groups are core measures used by supervisors of banks and other financial institutions throughout the world. Macro-prudential oversight, in turn, relies upon similar ratios calculated at the aggregate level as part of the toolkit to monitor the strengths and vulnerabilities of the financial system as a whole. The financial accounts and balance sheets often provide the most direct route for the monitoring and analysis of aggregate leverage and equity ratios over time and across countries. Especially for subsectors outside of deposit taking corporations, for which other statistical sources are often inadequate, financial accounts and balance sheets are often the only choice available. Since the aggregate capital position of the financial system may also play an important role in the transmission mechanism of monetary policy, such measures are also of interest to monetary authorities.

A leverage ratio for a sector or a subsector would be typically computed as total debt over total assets; in turn, an equity ratio is usually defined as total liabilities in the form of equity instruments over total assets.²² Whilst it is possible to compute these ratios for the overall financial system, each sub-sector may have particularities that require some adjustments to these general definitions. For instance, in the Euro Area, the MFI sector includes both deposit taking institutions and money market funds. A question arises as to how to treat the liabilities of money market funds to compute the ratios for the overall MFI sector. Although money market shares may be able to absorb losses, pressure on their value may trigger runs on short-term claims within the financial system (see also Section 4). Consequently it may be preferable to treat them as short-term debt, if one would want to encompass the vulnerability of the financial system to such runs. For insurance corporations and pension funds, unit-linked life insurance technical reserves and defined contribution pension liabilities should not be considered as debt-like obligations in computing leverage, as all the risk associated with the under-performance of the corresponding assets lies with the respective policyholders. In contrast, liabilities derived from defined benefit pensions may be considered as a form of leverage. Finally, non-MMF investment funds (with the notable exception of hedge funds) should generally not be considered to contribute to leverage within the financial system, since their assets are funded by shares and units which are akin to equity.

Financial inter-linkages between sectors

Both academics and policymakers acknowledge the importance of monitoring sectoral balance sheet developments, notwithstanding some neglect prior to the 2007-09 economic and financial crisis. This has spurred the

development of financial accounts and balance sheets as a key tool for the analysis of the financial sector. One particular aspect, fundamental to analysing the financial sector using the financial accounts and balance sheets, is the availability of “from-whom-to-whom” (FWTW) information. Financial accounts and balance sheets including such details reveal the financial interlinkages between the financial sector and the other sectors in the domestic economy and the Rest of the World, as well as those among the different financial subsectors.

Perhaps the best known example of the importance of sectoral interlinkages can be found in the Euro Area in the 2009-12 period. Banks in some Euro Area countries were holding increasing amounts of domestic government debt. Doubts about the solvency of these governments eroded the market value of these debt instruments, putting stress on banks’ balance sheets. Markets started to question the solvency of the banks as well, hampering their access to funding. Bank distress raised the expectation of a costly government intervention in the financial system, and a feedback between bank and sovereign credit risks (which was termed as a “diabolic loop”) ensued. In this episode, standard financial accounts and balance sheets would only have shown that the banking sector was holding increasing amounts of marketable debt. FWTW accounts would have shown the amounts of banks’ debt holdings issued by the government sector, thereby revealing the part of the portfolio directly responsible for the “diabolic loop”.

Inter-sectoral financial linkages are now considered a fundamental ingredient of policy analysis by central banks and authorities responsible for macro-prudential policy, especially since monetary policy and financial stability are increasingly viewed as mutually interdependent. Networks of linkages at the sectoral or subsectoral level are sufficiently simple to compile and monitor on a regular basis from a set of FWTW financial accounts and balance sheets. Scenarios where a given shock to the financial system is propagated from one sector to another in successive rounds are easily constructed from FWTW data. These scenarios are increasingly used in the construction of stress-test exercises for banks and other financial institutions, as well as for macro-prudential resilience tests of the system as a whole. Additionally, network theory provides synthetic measures that characterise the centrality of a given sector or subsector in the financial system for a particular function, such as financial intermediation, with both macro-prudential and monetary policy applications. These are also easily derived from a system of FWTW accounts.

Key points

- Financial intermediaries play an important role in monetary and economic analysis because of their role in channelling funds from savers to investors. There are many different categories of financial intermediaries: central banks, deposit-taking institutions, money market funds, non-MMF investment funds, insurance corporations, pension funds, and other financial intermediaries.
- Central banks' objectives and functional roles can differ over time and across countries. However, the most common functions of a central bank can be defined as follows: money creation and monetary policy conduction, lender of last resort, bank of the government, and centre of the payment system. Examples of other relevant functions for some central banks are supervision and financial stability functions. Recently, the typical structure of a central bank balance sheet has changed as a result of the monetary policies to avoid deflationary pressures, leading to non-standard measures of purchasing securities.
- Deposit-taking corporations, commonly known as banks, are defined by accepting deposits as their main funding source and are by far the most important type of financial intermediaries in almost any financial system. Deposit-taking corporations are strictly regulated due to the mismatch between their liquid and capital-certain liabilities (deposits), and their more risky and illiquid assets (loans to customers). Deposit-taking corporations also serve as the main suppliers of money to the economy, and the main suppliers of credit to households and businesses.
- In the late 20th and early 21st century, new financial institutions came into the market, and new financial products were designed. It can be argued that the new “originate-to-distribute” banking model, and the increased use of securitisations, led to the 2007-09 economic and financial crisis. These changes also led to an increased role for other financial institutions.
- Insurance corporations and pension funds streamline the economy by mitigating social and economic risks, gathering resources from their clients, and having a noteworthy role as institutional investors.
- Financial accounts and balance sheets, compiled according to the 2008 SNA, provide a framework for comprehensive and consistent coverage of the financial sector. The harmonised classification of financial institutions and financial instruments is essential in that this classification allows the combination of many different data sources in a single statistical product, and facilitates comparison across the sub-sectors of the financial system on a harmonised basis. As such, financial accounts and balance sheets, including FWTW information, provide a powerful tool to monitor and analyse risks and vulnerabilities building up in the financial system.

Notes

1. For details on financial corporations and the measurement of the relevant flows and stocks, reference is made to *Financial Production, Flows and Stocks in the System of National Accounts*, United Nations and ECB, 2015; and the special feature “The financial sector in the new national accounts framework” in *Financial Integration in Europe*, ECB, April 2015.
2. See, for example, Colangelo, A. and R. Inklaar (2009), “Measuring the Output of the Banking Sector: Shortcomings of the Current European Methodology and New Perspectives”, and M. Niederkorn, “Banking on Lean – A Practitioner’s View on Productivity in European Banking”, published as Chapters 7 and 5, respectively, in: Balling, M., E. Gnan, F. Lierman and J.-P. Schoder, *Productivity in the Financial Services Sector*, SUERF Study 2009/4, Larcier, Vienna.
3. Derived from a speech by Salvatore Rossi, Senior Deputy Governor of Bank of Italy, on the “Monetary policy and independence of central banks: the experience of the European Central Bank in the global crisis”.
4. See, for example, Goodhart (2010) for a good description on the evolution of central bank’s role.
5. Investors demand a higher return to hold a riskier asset such as equity than, for instance, bank senior bonds or a deposit. The return for the investor is a cost for the bank. Tax considerations, such as the deductibility of interest expenditure, also play a role in making debt finance more attractive.
6. For more detail on the Basel accords, see <https://www.bis.org/bcbs/index.htm>. It should be noted that under the latest generation of the standards, known as Basel III, requirements on liquidity and leverage have also become part of the standards, in addition to the capital requirements already contemplated in their predecessors, Basel I and Basel II.
7. Currency in circulation represented, for instance, only 9.3% of the broad monetary aggregate M3 in the Euro Area at the end of 2015.
8. Only an intuitive explanation will be offered here. The initial reserve increase leaves banks with a ratio of reserves to deposits above r . As a response, banks increase their lending to restore their ratio to reserves to deposits to r . Why would they increase their lending rather than to accept more deposits? Because it is assumed that depositors were already in equilibrium with respect to their desired money holdings prior to the central bank’s intervention. Banks therefore grant credit, thereby creating new deposits. A fraction of the new deposits needs to be added to reserves, so that banks find themselves again with a ratio of reserves to deposits larger than r . As a response, they increase lending again. By iterating this process over and over, one obtains the money multiplier $1/r$.
9. For a non-technical account of this view, see for example, Mc Leay, M., A. Radia and R. Thomas, “Money creation in the modern economy”, Bank of England Quarterly Bulletin, 2014 Q1.
10. The financial crisis of 2008 is widely acknowledged to have been followed by such unavailability of bank credit at any price.
11. Prior to the 2007–09 economic and financial crisis, loan securitisation appeared at some point to provide banks with an easy means of obtaining liquidity from their loan portfolios. However, the business model of loan securitisation as it was known then has never been restored, especially with regards easy access to liquidity. For a more detailed discussion of bank securitisation and its role in the financial crisis, see Box 3.2.

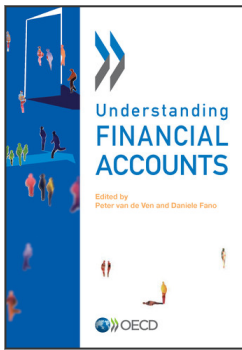
12. Long-term debt securities may suffer significant price changes in the short-term due to changes in interest rate expectations and/or the creditworthiness of the issuer. Thus, they may be liquid but they are not capital certain if liquidated before maturity. In that respect, they do not fit the definition of money that can be attributed to banks' short-term deposits. The degree of liquidity varies anyway significantly across different parts of banks' debt portfolios, as well as due to market conditions. Furthermore, large parts of the debt portfolio of banks may be designated for accounting purposes as held to maturity, preventing the liquidation of the holdings until redemption.
13. Derivatives desks in a dealer bank will typically aim to run "matched books" so that their exposure to the underlying risk (say, a change in interest rates) is as close to neutral as possible. This requires them to continuously write off-setting derivatives contracts with other dealers and with end-customers. As a result, the banks housing dealing activities carry large asset and liability positions in derivatives that closely track each other. For instance, in the case of the United Kingdom, financial derivatives represent approximately 30% of total assets and liabilities, and around 10% in France and Germany. In countries where no large dealers are known to operate, in turn, values between 1% to 2% are more common.
14. Large deposits placed by corporations in banks are effectively not insured, making money market funds more attractive from a credit risk perspective due to their diversification without the added cost of having to manage a cash portfolio in-house. Treasurers will also seek to minimise the operational risk that a temporary moratorium on withdrawals may be imposed by supervisory authorities as a protective measure for a bank facing financial difficulties.
15. See, for example, Baba, N., R.N. McCauley and R. Srichander, "US Dollar Money Market Funds and Non-US Banks", *BIS Quarterly Review*, March 2009. For a European perspective, see "Money Market Funds in Europe and Financial Stability", *European Systemic Risk Board Occasional Paper Series No. 1*, June 2012.
16. Other countries where, at the time of writing this publication, OFIs have larger balance sheets than MFIs and ICPFs are Hungary, Ireland, Korea, Luxembourg, and the Netherlands.
17. For a more detailed analysis, see for example "The role of euro area non-monetary financial institutions in financial intermediation", *ECB Economic Bulletin*, Issue 4/2016.
18. See the Financial Accounts Guide of the Federal Reserve at www.federalreserve.gov/apps/fof/FOFTables.aspx.
19. G-20 Data Gaps Initiative (DGI-II), Recommendation II.5 on Shadow Banking: "The G-20 economies to enhance data collection on the shadow banking system by contributing to the Financial Stability Board (FSB) monitoring process, including through the provision of sectoral accounts data. FSB to work on further improvements of the conceptual framework and developing standards and processes for collecting and aggregating consistent data at the global level". (*Sixth Progress Report on the Implementation of the G-20 Data Gaps Initiative*, IMF and FSB, September 2015).
20. Holding companies are defined as units that hold the assets (owning controlling-levels of equity) of a group of subsidiary corporations and whose principal activity is owning the group. They do not provide any other service to the enterprises in which the equity is held, i.e. they do not administer or manage other units (see SNA 2008, paragraph 4.54). If units that hold owning controlling-levels of equity of a group of subsidiary corporations are engaged in the management of the subsidiaries they are classified as "head offices".

21. The Task Force on Head Offices, Holding companies and SPEs, set up under the umbrella of the Inter Secretariat Working Group on National Accounts (ISWGNA) in 2013, concluded that having multiple parents/shareholders is a sufficient qualification for a unit to be treated as a separate institutional unit, and thus not to be consolidated with its owners.
22. The term equity ratio is preferred to “capital ratio” to avoid confusion with supervisory risk-weighted measures of capital adequacy – which are generally not computable at the aggregate level from the financial accounts. An equity ratio computed from the financial accounts measures equity liabilities over total assets, both at market prices. The market price of the equity of financial institutions should in principle price in elements that enhance their loss-absorbing capacity, such as retained earnings or unrealised holding gains on asset portfolios. However, it is the perception of the market about the size of these capital buffers, rather than their regulatory assessment, what drives such a ratio.

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