

Shedding a clearer light on financial stability risks in the shadow banking system

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Summary

1. Since the credit crisis, the funding of economic activities has been shifting from banks towards less regulated entities outside the banking system or, in other words, to the shadow banking system. This shift relates to the stricter regulation of banks, which has resulted *inter alia* in the creation of alternative credit platforms such as crowd finance and credit unions. The low interest-rate environment has also played a significant role in this process. This has spurred a search for yield, with one of the results of this being a rapid growth in funds investing in debt securities.
2. Shadow banks may represent a welcome source of finance alongside bank lending, particularly in Europe, where the economies rely heavily on banks. By improving businesses' access to various sources of finance, shadow banks increase the extent to which the economy can absorb shocks.
3. It is important in this respect, however, to closely monitor any new risks to financial stability that may be building up. This is why the Financial Stability Board (FSB) is coordinating a worldwide project to identify developments in shadow banking from year to year. This year, a new risk-based framework was introduced; this sheds a clearer light on the extent of and risks involved in shadow banking, including in the Netherlands.
4. Within the new FSB framework, the Dutch shadow banking system has total assets of EUR 207 billion, and is thus significantly smaller than previously thought. Indeed, it is ten times smaller than the Dutch banking system. The securitisation activities have declined substantially and the measure set for shadow banking is now more effectively targeted on activities with bank-like risks not falling under banking supervision. Around 1% of the worldwide shadow banking system falls within the Dutch jurisdiction.

5. The composition of the Dutch shadow banking system has changed since the credit crisis. The total assets of securitisation vehicles, for example, have decreased by over 40%, while those held by investment funds have increased by over 60%. A limited part of the Dutch investment funds is vulnerable to short-term redemptions by investors – i.e. open-ended investment funds – *and* invests either directly or indirectly in bonds and loans. The decline in securitisation vehicles and the rise of investment funds is a global trend in the shadow banking system.
6. There are indications of reduced liquidity in certain parts of the financial markets, mainly because banks have provided less support to the bond market since the credit crisis. Investment funds' business model is vulnerable to the drying-up of liquidity in the financial markets. Decisions by investors to redeem their investments in certain funds can force funds to sell assets in less liquid markets and, therefore, at substantial discounts. This can reinforce price falls in the financial markets, certainly if funds are highly leveraged. These risks apply not only to funds in the shadow banking system, but also to equity funds.
7. Price falls in the financial markets triggered by a large-scale run on investment funds – which is a conceivable scenario in the event of a change in sentiment on the financial markets – can result in losses for Dutch financial institutions. Banks, insurers and pension funds may then suffer losses on their direct investments in equities and bonds, while their margin and collateral commitments on derivative positions may also increase. Price shocks may also increase funding costs, particularly of banks. Lastly, banks and insurers may be forced to provide liquidity support to their related investment funds.

8. Fund managers have to take account of reduced market liquidity in the way they manage their risks. Supervisors can further limit the risk of a large-scale run by applying existing tools from a macroprudential perspective. This can be done by:
- i) More accurately identifying and limiting leverage internationally;
 - ii) Increasing macro-economic consistency between fund managers' stress tests by imposing uniform requirements;
 - iii) Giving more direction to the use of tools designed to discourage investors from redeeming their investments in funds; these can include redemption fees, restrictions on redemptions ('redemption gates') and temporary suspensions of redemptions by funds;
 - iv) Reducing funds' participations in other investment funds by designating these participations as less liquid or imposing specific concentration limits.

These activities will benefit from international coordination between supervisors because investment funds can easily move to countries with less stringent supervisory regimes.

9. Although the tightening of supervision since the credit crisis has already substantially reduced the risks posed by securitisation vehicles, supervisors must continue to closely monitor developments in order to ensure that any new systemic risks are identified in good time.
10. Their relatively limited size means that finance companies outside the banking system and alternative credit platforms do not currently present any risk to financial stability. These credit providers are increasing the diversity of the finance landscape and reducing the economy's reliance on bank finance. Making these parties into reporting agents will allow better monitoring of future developments.

1. Introduction

The credit crisis clearly showed that vulnerabilities can build up in the financial system outside the supervisory perimeter. There are financial parties lending to businesses, households and government authorities via various channels in the shadow of the regular banking system. Since the credit crisis, supervision of some parts of this shadow banking system – particularly securitisation vehicles – has increased, with the result that the risks involved in these activities have now been identified and are being limited by the imposition of stricter rules. At the same time, however, there has been a sharp worldwide increase in the size of less regulated parties, particularly investment funds. It is important that supervisors monitor developments in the shadow banking system and take action in good time to deal with any possible build-up of new risks to financial stability.

The shadow banking system is highly diverse and continually changing. Securitisation vehicles played a major role in the build-up of systemic risks outside the supervisory perimeter in the period leading up to the credit crisis. These parties packaged up loans, which were then sold on to investors. The systemic risks increased because the risk profile of the loans that were divided up and packaged was higher than it initially appeared, while the risks spread throughout the system. Supervision of securitisation vehicles has, however, been tightened since the credit crisis. In addition, the demand for complex securitised investments has declined, which means that the amounts and systemic risks involved in these products have decreased.

Investment funds, however, have undergone a development in the opposite direction in recent years, with many of them now performing activities that involve bank-like risks such as liquidity and maturity transformations, as well as leverage. The size of these various funds, which may be bond, real estate or hedge funds, has increased sharply around the world. A specific feature of shadow banking is that the investment fund sector also contains structures with several layers between the investor and the ultimate recipient of the bond or loan. Funds invest, for example, in other funds, and this creates what are referred to as funds-of-funds. Just like securitisation vehicles, the funds-of-funds structure increases the interconnectedness of and lack of transparency in the financial system. This means there is a higher chance that investors may underestimate risks and that shocks to the system will quickly ripple out internationally.

Proper risk management will help transform shadow banking into a shock-resistant form of market finance. The latter represents a welcome source of finance for the economy alongside bank finance.² Studies also show that economies recover faster after a crisis if businesses can switch quickly from bank to market finance.³

Following a previous study examining the Dutch shadow banking system in 2012,⁴ this study details the current size of the shadow banking system and the risks involved. It is based on the new shadow banking framework set out by the FSB and which reflects the risks involved in the various roles played

2 Dutch Social and Economic Council [SER], *Verbreiding en versterking financiering MKB*, 2014. Government's response to the SER report, 2 February 2015. AFM, *Crowdfunding – Naar een duurzame sector*, December 2014.

3 For a recent overview of literature, see Bijlsma, Veldhuizen & Vogt, *Een wereld zonder banken? Marktfinanciering en bankfinanciering in perspectief*. CPB Policy Brief 2015/14.

4 See Broos, Carlier, Kakes & Klaaijzen, *Het schaduwbankwezen: een verkenning voor Nederland*. DNB Occasional Studies Vol. 10, No. 5, 2012.

by financial institutions in the credit intermediation process. This framework shows the Dutch shadow banking system to be significantly smaller than previously estimated. Nevertheless, this latest, more detailed focus has also highlighted risks that on a global level can translate into risks for the Dutch financial system.

2. Dutch shadow banking system smaller than previously thought

The Dutch shadow banking system (EUR 207 billion) is significantly smaller than previous estimates suggested. Around 1% of the worldwide shadow banking system falls within the Dutch jurisdiction, according to the new, more risk-based measure of shadow banking by the Financial Stability Board. The composition of the Dutch shadow banking system has changed since the credit crisis. The total assets held by open-ended investment funds have increased substantially, while those held by securitisation vehicles have decreased sharply.

2.1 Risk-based framework for shadow banking

Since 2011, the Financial Stability Board (FSB) has been coordinating a worldwide project to identify the size of and risks involved in the shadow banking system. An important step was taken in 2015 with the introduction of a new, more risk-based framework for shadow banking.⁵ This new framework limits the inclusion of institutions without shadow banking risks and, in this way, sharpens the focus on those institutions that may contribute to the build-up of risks to financial stability.

Shadow banking is the system of credit intermediation involving entities and activities outside the regular banking system. The new FSB framework refines this broad definition so that non-banks (with the exception of insurers and pension funds) are considered part of the shadow banking system only if they:

⁵ Data from 26 countries, including the Netherlands, were used in this framework, as referred to in the recent FSB Global Shadow Banking Monitoring Report (published in November 2015). These countries represented 90% of the total financial assets in the world at the 2014 year-end.

- i) are part of a credit intermediation chain;⁶
- ii) are not subject to bank or comparable financial supervision; and
- iii) perform activities entailing bank-like risks such as liquidity and maturity transformation risks, and leverage.

Financial institutions that meet these criteria are then subdivided into five economic functions (EF) that can involve bank-like risks to financial stability (Table 2.1).

The starting point for the analysis of the shadow banking system is the 'Other Financial Intermediaries' (OFI) sector. This sector comprises all financial institutions except banks, insurers and pension funds. The vast majority of the Dutch OFI sector (96% at the 2014 year-end) falls outside the shadow banking system (see Annex A). These OFIs perform financial activities that have little to do with credit intermediation or are subject to financial supervision. Risks to financial stability are managed in the regular supervision of these institutions.

6 A 'chain' has at least one link between the party issuing the bond or providing credit and the ultimate holder of the bond or the borrower. In the case, for example, of a corporate bond in which investors invest directly, there is no credit intermediation chain. Such a chain does exist, however, in the case of a bond held on a fixed income fund's balance sheet and in which investors participate.

Table 2.1 Economic functions within FSB shadow banking framework

Economic function	Definition	Typical entity types
EF1	Management of collective investment vehicles with features that make them susceptible to runs	Fixed income funds, mortgage funds, money market funds, hedge funds
EF2	Loan provision that is dependent on short-term funding	Finance companies, leasing companies, credit unions
EF3	Intermediation of market activities that is dependent on short-term funding or on secured funding of client assets	Broker-dealers
EF4	Facilitation of credit creation	Financial guarantors
EF5	Securitisation-based credit intermediation and funding of financial entities	Securitisation vehicles

Source: Financial Stability Board, 2015.

2.2 New face of shadow banking

The Dutch shadow banking system (EUR 207 billion) is significantly smaller than previous estimates suggested (see Figure 2.1).⁷ This means that around 1% of the worldwide shadow banking system falls within the Dutch jurisdiction. The FSB's 2015 *Global Shadow Banking Monitoring Report* shows the Netherlands to have a 2% share of global shadow banking. However, in contrast to this study, the FSB also includes funds on joint account of pension administration organisations in the shadow banking system (see Box 2.1). The top six countries for shadow banking are the United States (40%), United Kingdom (11%), Ireland (8%), China (8%), Germany (7%) and Japan (7%).⁸

The composition of the Dutch shadow banking system has changed since the credit crisis. The total assets held by open-ended investment funds have increased substantially (+63%), while those held by securitisation vehicles have decreased sharply (-41%). Both these trends are in line with developments in the shadow banking system around the world.

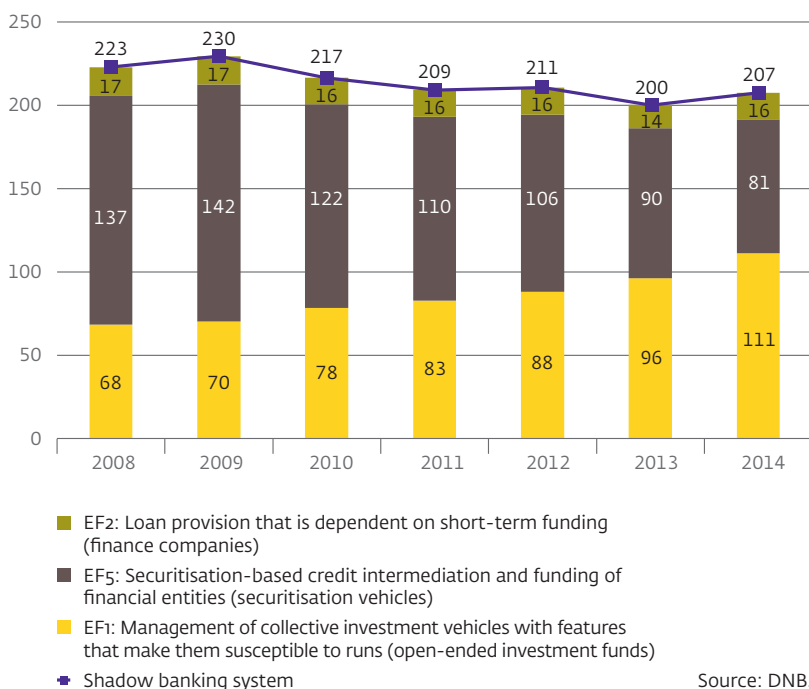
Open-ended investment funds that invest directly or indirectly in bonds and loans, with total assets of EUR 111 billion, currently comprise the largest category in the Dutch shadow banking system (Figure 2.1). Unlike closed-ended funds, open-ended funds allow investors to redeem their investments

7 See Broos, Carlier, Kakes & Klaaijzen, *Het schaduwbankwezen: een verkenning voor Nederland*. DNB Occasional Studies Vol. 10, No. 5, 2012; Kerste, Baarsma, Weda, Rosenboom & Rougoor, *Uit de schaduw van het bankwezen*, Social and Economic Council Research, 2013. These studies report the size of the Dutch shadow banking system to be EUR 1000 billion and EUR 1500 billion respectively. The main difference with these earlier studies is that, in the new risk-based FSB framework, entities that are subject to consolidated prudential bank supervision are not seen as being part of the shadow banking system. This covers the majority of the securitisation vehicles, finance companies and financial SFIs (see Annex A for more details on these entities).

8 FSB, *Global Shadow Banking Monitoring Report*, november 2015.

Figure 2.1 Total assets in Dutch shadow banking system by activity, 2008-2014

x EUR billion (year-end figures)



at any time.⁹ This business model is vulnerable to a run (see Section 3). The risk of a run does not relate to the risk of losses suffered by investors, but rather to the possible implications for financial stability. It should be

⁹ Subsequent references to investment funds mean open-ended, not closed-ended funds. Closed-ended funds are not exposed to the risk of a run.

noted that the total size of investment funds in the Netherlands is many times larger than the part covered by the definition of shadow banking. Equity funds, closed-ended funds and funds on joint account of pension administration organisations, for example, are excluded (see Box 2.1).

Box 2.1 Majority of Dutch investment funds not part of shadow banking system

Assets held by the Dutch investment fund sector amounted to EUR 728 billion at the 2014 year-end (Figure 2.2). Most of these investment funds are not part of the shadow banking system. Equity funds and funds investing directly in real estate are not included in the FSB shadow banking framework as these funds do not invest in debt securities. Closed-ended investment funds are also not part of the shadow banking system because investors cannot quickly redeem their investments in these funds.

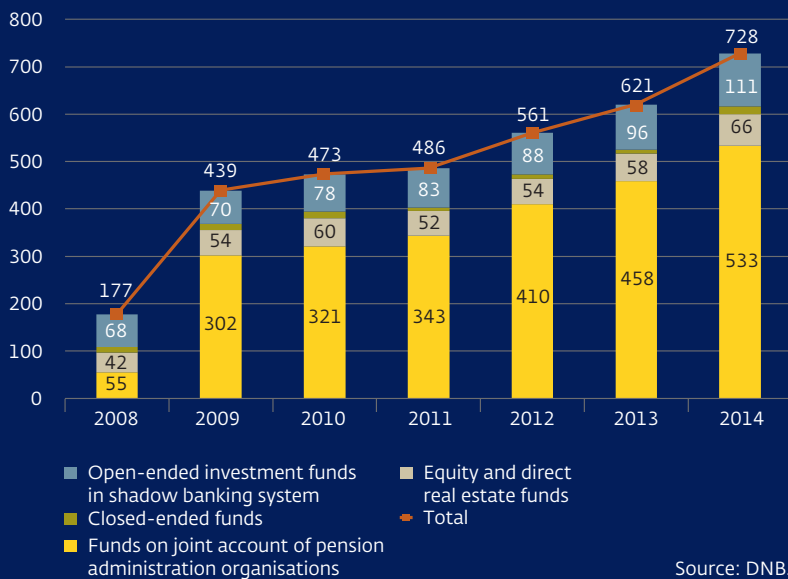
In this study, funds on joint account of pension administration organisations are also classified as being outside the shadow banking system (Figure 2.2). Large pension fund administrators such as APG and PGGM have set up investment funds, and smaller pension funds have joined these funds. These pension administrators have a common investment objective and, by combining the sums they invest, are seeking *inter alia* to reduce their asset management costs.

The structure of these exclusive funds means the risk of a run is almost nil. The main sponsor, for example, holds a comfortable majority of the participations (over three quarters of the assets on average).

In addition, the number of other participants is usually limited to three or four pension funds. These participating pension funds can redeem their investments in these exclusive funds by offering their participation to the fund manager. In practice, their reasons for wishing to redeem their investments are not normally driven by movements in prices, but by long-term changes in the fund's strategic investment policy.

Figure 2.2 Limited share of Dutch investment fund sector is part of shadow banking system

x EUR billion (year-end figures)



Source: DNB.

Despite the sharp decline, [securitisation vehicles](#) still represent a substantial share (EUR 81 billion) of the Dutch shadow banking system (Figure 2.1). Securitisation vehicles package loans and then split them up for trading via bond issues. Many of these securitisation vehicles have been set up by foreign parties and, unlike most of the securitisation vehicles in the Netherlands (EUR 262 billion), are not subject to prudential supervision on Dutch banks (see Section 4).

[Finance companies](#) comprise a relatively small part of the Dutch shadow banking system (EUR 16 billion). These companies provide credit, which may involve short-term funding. This means that they are certainly exposed to bank-like risks (see Section 5). Nevertheless, most of the finance companies in the Netherlands are owned by a bank and subject to bank supervision, and so are not part of the shadow banking system.

There are also growing numbers of [alternative credit platforms](#), such as crowdfunding and credit unions. These initiatives bring those requiring credit into contact with those able to provide it and may represent a welcome source of finance for small and medium-sized businesses. Given that alternative credit platforms facilitate activities involving bank-like risks and are subject to little if any supervision, they are regarded as part of the shadow banking system. In terms of financial stability, however, credit platforms are not currently significant (see Section 5).

Lastly, the FSB shadow banking framework distinguishes entities in the third and fourth economic functions that are not relevant for the Dutch shadow banking system. Broker-dealers (EF₃) in the Netherlands – i.e. investment firms trading in equities, currencies, derivatives and bonds for their own account and taking the risks onto their balance sheets – are subject to a comparable form of prudential supervision (CRD IV) as banks, and are

therefore not part of the shadow banking system. Supervisors nevertheless have to monitor developments in this sector very closely, particularly high-frequency traders' use of computer algorithms.¹⁰ The total assets held by such broker dealers in the Netherlands is modest (EUR 6.4 billion). The Dutch shadow banking system also does not comprise any entities that facilitate the creation of credit, as referred to in the fourth economic function in the FSB framework. These include, for example, financial guarantors that issue credit default swaps. These parties are mainly active in the United Kingdom and the United States. Dutch insurers do not offer this type of insurance on any large scale.

¹⁰ High-frequency traders can contribute to market volatility and amplify price shocks.

3. Strong growth in investment funds creates new risks

Investment funds have grown rapidly in recent years all around the world. The risk of large-scale redemptions from such funds has increased owing to the reduced market liquidity. 'Herd behaviour' by investors can trigger market shocks that represent a risk to financial stability. Fund managers have to take account of reduced market liquidity in order to limit this risk. Applying existing policy tools from a macroprudential perspective can further increase investment funds' resilience to shocks.

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3.1 Rapid worldwide growth in investment funds

The total assets held by investment funds have rapidly increased since the credit crisis. This also applies in respect of investment funds that invest directly or indirectly in bonds and loans, and that are therefore part of the shadow banking system. These funds comprise fixed income funds, funds-of-funds,¹¹ mortgage funds, money market funds, hedge funds and other funds (see Figure 3.1), and they have increased by an average of 10% a year in the past three years. Investment funds considered part of the worldwide shadow banking system have grown even faster at an annual average of 12%.¹²

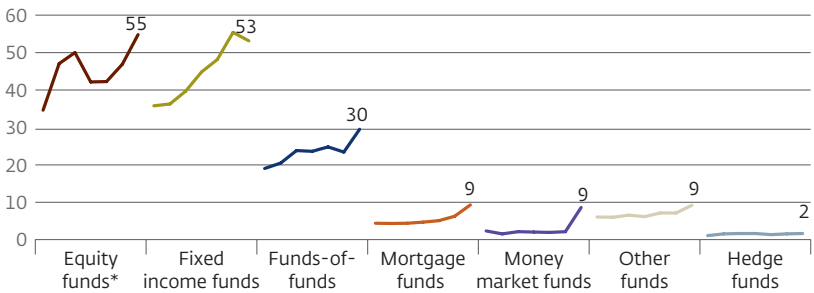
There are various reasons for the rapid growth in investment funds. Stricter regulations, for example, have made it more difficult for banks to lend to the private sector. This has prompted a shift in credit intermediation towards less regulated market participants, including investment funds. An example of this can be seen in the increase in the number of mortgage funds investing in residential and business mortgages, primarily for pension funds.

¹¹ These are funds that invest more than half of their assets in other funds.

¹² FSB, *Global Shadow Banking Monitoring Report*, November 2015.

Figure 3.1 Development in total assets held by open-ended investment funds, 2008-2014

x EUR billion (year-end figures)



* Equity funds are excluded from the definition of shadow banking as they do not invest in debt securities.

Source: DNB.

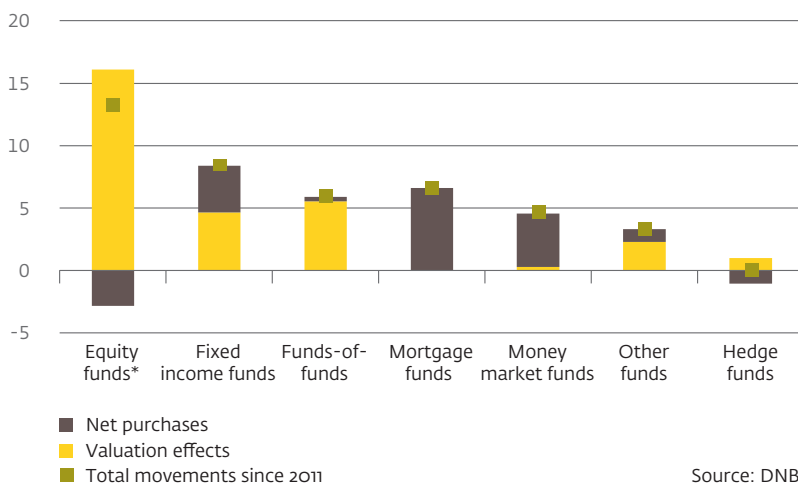
In addition, the currently exceptionally accommodative monetary policy is also playing a role. This has created a financial climate conducive to the issuing of bonds. The fact that monetary policy is squeezing risk-free returns is also inducing investors to take higher risks.¹³ These efforts to generate a return are also reflected in the increasing amounts being allocated to investment funds, and this can potentially create a bubble.¹⁴ The considerable share of funds' growth that is attributable to valuation effects can be seen as writing on the wall in this respect. Half of the growth in investment funds in the Dutch shadow banking system since 2011, for example, is attributable to valuation effects. There is considerable variation, however, from one type of investment fund to another, with the increase in total assets held by funds-of-funds being almost entirely attributable to valuation effects (Figure 3.2).

13 DNB, Overview of Financial Stability, autumn 2015

14 DNB, Overview of Financial Stability, spring 2015

Figure 3.2 Net purchases and valuation effects of open-ended investment funds from 2011 to year-end 2014

Movements since 2011 x EUR billion



* Equity funds are excluded from the definition of shadow banking as they do not invest in debt securities.

The past shows that rapid growth in financial intermediation can go hand-in-hand with an underestimation of the underlying risks and the build-up of systemic risks. This raises the question of whether the rapid growth in investment funds represents a risk to financial stability.

3.2 Potential systemic risk of large-scale run on investment funds

Large-scale redemptions constitute the primary systemic risk by open-ended investment funds.¹⁵ These funds allow investors to redeem their investments at short notice. If investors decide to redeem their investments in such funds in response to a change in sentiment in the financial markets, this can result in fire sales of securities in illiquid markets. These fire sales will put further downward pressure on falling asset prices, and this in turn could induce other investors to sell. Investment funds' use of derivatives or securities financing transactions to create synthetic leverage can further reinforce this process (see Box 3.1).

Box 3.1 Synthetic leverage of investment funds may amplify market shock

By using synthetic leverage investment funds can hold positions that exceed the value of investors' participations in the fund many times over. A fund can, for example, use derivatives or securities financing transactions (SFTs) to create exposures that are reliant on the future value of underlying assets not held by the fund. A market shock can reduce this value, and this in turn results in higher margin and collateral commitments for the fund. These higher commitments can then force the fund to liquidate investments, thus further reinforcing the market shock.

¹⁵ The ECB regards liquidity spirals for investment funds, which can be triggered by large-scale redemptions by investors or increasing margin commitments, as one of the four most significant risks to financial stability in the euro area. The ECB emphasises that this potential systemic risk has increased during the past six months (see ECB, Financial Stability Review, November 2015).

The extent of investment funds' synthetic leverage is not visible on their balance sheets because these show only the market value of the derivative portfolio and the SFTs. Following the introduction of the AIFM Directive,^{*} fund managers in Europe now have to report on their use of leverage. Initial reports show that some Dutch fund managers, too, make considerable use of leverage. National supervisory authorities are currently working within the European Systemic Risk Board to obtain a macro-picture, based on the new data, of European asset managers' use of leverage. That will give the supervisory authorities a better understanding of the risks and allow them to decide whether it will be appropriate to apply a macroprudential leverage limit.

* Alternative Investment Fund Managers Directive.

Although losses are for investors' account and risk, large-scale redemptions can trigger market shocks that in turn result in losses for financial institutions.¹⁶ Assets held by Dutch banks, insurers and pension funds, for example, include direct investments in equities and bonds on which the institutions can incur losses. Although these investments are limited in the case of the Dutch banks (only 12 per cent), the investment portfolios of pension funds and insurers are considerably larger. Derivative positions may also result in extra margin and collateral requirements. On the liabilities side, market shocks may lead to higher funding costs. This channel is particularly relevant for banks as insurers and pension funds make no or only limited use of market funding.

¹⁶ Financial Stability Committee, *Gevolgen van de langdurig lage rente en ontwikkelingen in het schaduwbankwezen* [Report of discussions on consequences of long-term low interest rates and developments in the shadow banking system], 3 November 2015.

In addition, investment funds are often part of a financial group to which a Dutch bank and/or insurer belongs. In periods of stress, this inter-connectedness can be reflected in the provision of liquidity support to investment funds, such as to securitisation vehicles during the credit crisis. Banks and insurers can decide to provide this liquidity in order to prevent reputation and funding risks. This liquidity support can limit investment funds' fire sales of assets, but may also act as a contagion channel for banks and insurers. This risk is also an issue in other European countries as almost all the large asset managers in Europe are part of a bank or banking group.¹⁷

3.3 Reduced market liquidity increases investment funds' liquidity risk

The liquidity risk for investment funds has increased in recent years because of reduced liquidity, particularly in the bond markets.¹⁸ There are indications, for example, that there is less liquidity in the corporate bond market than before the credit crisis, while even the government bond market has seen recent periods of reduced liquidity (*Treasury bond flash crash* in October 2014; *Bund Tantrum* in April/May 2015). One of the main causes of the reduced market liquidity is that banks have been scaling down their market-making activities. This has made it more difficult to link buyers and sellers, particularly in traditionally less liquid markets. Reduced liquidity increases the risk of large-scale redemptions as fire sales are more likely to trigger price shocks. Lower market liquidity also increases the chance of contagion between financial markets, with the result that sharp price falls in, for example, less liquid corporate bond markets can also cause prices in other markets to fall.¹⁹

¹⁷ ECB, *Financial Stability Review*, May 2015.

¹⁸ DNB, *Overview of Financial Stability*, autumn 2015. The FSB also recently drew attention to the rise in short-term risks relating to market liquidity and asset managers' activities; see FSB, *Meeting of the Financial Stability Board in London on 25 September*, Press release September 2015.

¹⁹ IMF, *Global Financial Stability Report*, April 2015.

As the investment fund sector is highly diverse, the actual risk of redemptions varies from fund to fund. This risk depends, for example, on the risk profile of the investment strategy, the fund's liquidity management and the investment horizon of the fund's participants. Dutch pension funds and insurers are the largest participants in Dutch investment funds. These institutional investors hold over 90% of the assets invested in Dutch funds, and over 70% of the participations in funds belonging to the Dutch shadow banking sector. This large share reduces the risk of large-scale redemptions in periods of stress because pension funds and insurers have a long-term investment horizon and are also able to sit out a downturn in the market.²⁰ In addition, the fact that Dutch pension funds rebalance their investment portfolios – buying securities when prices are low and selling them when prices are high – means their activities can help stabilise market shocks.²¹

Despite differences between individual investment funds, the main risks of the specific types of investment funds can be identified, with the result that fixed income funds and funds-of-funds would seem particularly vulnerable in the current market climate.

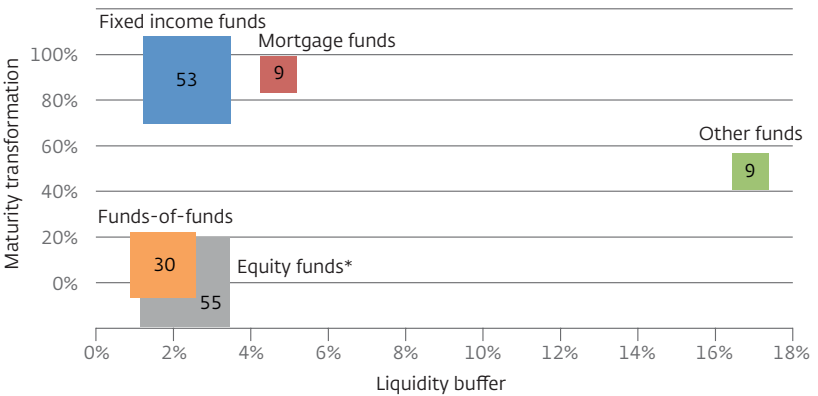
Fixed income funds invest in debt securities issued by governments and companies and, with assets totalling EUR 53 billion, represent the largest group of investment funds in the Dutch shadow banking sector. These funds have limited liquidity buffers and are highly active in maturity transformations (Figure 3.3). Given the currently reduced liquidity in the secondary markets, this makes them vulnerable to a run. The average

20 Ondanks de langere beleggingshorizon zijn er ook aanwijzingen voor procyclisch investeringsgedrag van verzekeraars tijdens de kredietcrisis en Europese schuldencrisis (Duijm en Steins Bisschop, nog te verschijnen).

21 Bikker, Broeders en De Dreu (2010); De Haan en Kakes (2011); Steins Bisschop, Boermans en Frost (nog te verschijnen).

Figure 3.3 Liquidity buffer and maturity transformation of open-ended investment funds (2014 year-end)

%; 'Bubble' x EUR billion



Maturity transformation = (long-term assets – long-term liabilities)/ total assets. Liquidity buffer = deposits and other liquid assets/ total assets. Money market funds are excluded as no detailed information is available on these funds' balance sheets. Hedge funds are also excluded as the number and size of these funds is very limited.

* Equity funds are not covered by the definition of shadow banking as they do not invest in debt securities.

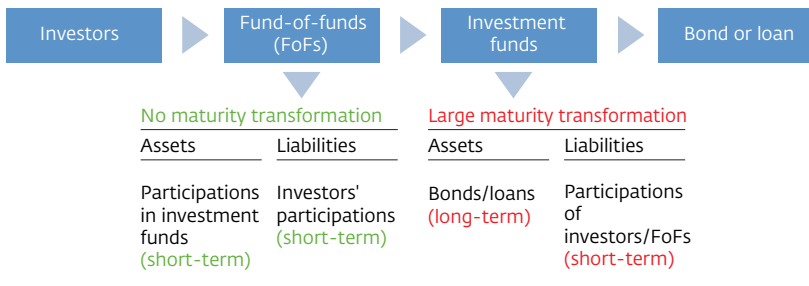
Source: DNB.

maturity transformation is 89%; in other words, 89% of these funds' assets comprise long-term bonds that have been funded by short-term financing in the form of investor participations. The average liquidity buffer they can draw on before they are forced into fire sales to fund investor redemptions is limited at only 2.4% and, despite the increased liquidity risk, there has been no increase since 2008 (2.7%).

Funds-of-funds invest primarily in other investment funds. They represent an easy way for investors to obtain access to a wide range of funds, thus helping to diversify their investment risks. Since the credit crisis, funds-of-funds' share of the investment funds in the Dutch shadow banking sector has fluctuated around 30%. In absolute terms, however, they have increased substantially in size, with a rise from EUR 19 billion in 2008 to EUR 30 billion at the 2014 year-end (Figure 3.3).

As funds-of-funds constitute an extra link in the chain between investors and end-investments, they contribute to the risk of redemptions in periods of stress. This is because the extra link masks the extent of maturity transformation (Figure 3.4), and this contributes to the illusion of liquidity in stress-free periods. Although it appears that money can be withdrawn quickly, investors in the fund-of-funds will not get their money back if one of the ultimate investment funds is unable to liquidate its positions. In the event of stress, therefore, the funds-of-funds' maturity transformation will prove to be greater than indicated in Figure 3.3. In addition, funds-of-funds have the lowest liquidity buffers (Figure 3.3), and they increase the complexity and reduce the transparency of the credit chain.

Figure 3.4 Fund-of-funds act as extra link in credit intermediation chain



Mortgage funds invest in residential and business mortgages, and their numbers have grown in recent years. Assets under management, for example, have increased by EUR 4.2 billion since 2012. Although mortgage funds still have a very limited share of the total Dutch mortgage market in percentage terms, they are growing rapidly.

The risk of investors wanting to redeem their investments in these open-ended mortgage funds is high in the event of stress in the real estate market because these funds invest in illiquid residential and business mortgages. Although most of the investors are pension funds and so have a long-term investment horizon, the fund managers are independent asset managers rather than pension administration organisations, and there is therefore a risk of a run. The structure of an open-ended investment fund is generally hard to align with investments that are structurally illiquid.

Over half of the '**other funds**' consist of overlay funds, with the remainder comprising a few mixed funds (which invest in bonds *and* equities), commodity funds and funds focusing on sustainable investments in 'green' projects and micro-credit. Overlay funds seek to hedge the interest rate risk (i.e. rising obligations at a time of falling interest rates) of pension funds and insurers. This means that these funds have large derivative portfolios consisting primarily of interest swaps.

Their large-scale use of derivatives means that overlay funds have to hold considerably more liquid assets than ordinary fixed income funds. They need cash in order to arrange interest swaps (initial margin) and so that they can deposit capital if the market value of their interest swaps falls (as a result, for example, of rising capital market interest rates). The central clearing and settlement office will then require the overlay fund to provide collateral. This explains the relatively high liquidity buffers shown in Figure 3.3 for

other funds; these are needed in order to cover for overlay funds' higher liquidity risks.

Institutional investors use overlay funds to increase/reduce the interest-rate sensitivity of their obligations, without their having to buy/sell government bonds for the relevant maturity. The advantage of this synthetic leverage is that it leaves the investors with more money to invest in other investments. The downside of this synthetic leverage, however, is that it makes the fund more volatile than ordinary fixed income funds.

Money market funds invest in short-term debt instruments, such as bonds with short-term maturities, money market paper and fixed-term deposits. Their investors are often institutional investors, such as pension funds, insurers, investment funds and treasurers at large corporates, which use money market funds for temporary surplus cash balances or for diversification purposes. Money market funds are an alternative to bank deposits and, through their interconnectedness with other financial institutions, play a central role in the shadow banking system's network. Cash flows move in and out of these funds in line with the amounts that institutional investors receive or have to pay as collateral for derivatives, and in line with the risk perception and liquidity in the markets.

Money market funds with fixed nominal target values are exposed to the risk of a run if investors start doubting whether the funds can guarantee the nominal principal.²² This risk is considerably less relevant in the case of money market funds with a variable net asset value as the value of these funds can be less than the invested capital. The Dutch money market funds, with assets of around EUR 8.6 billion, are relatively small and usually have

²² These structures are referred to as having a constant net asset value (CNAV).

a variable net asset value. The sector is growing, however, because insurers are increasingly using money market funds as a way of managing their liquidity themselves.

Hedge funds are a special type of investment fund. A typical feature of their business model is the aim to generate absolute returns (in contrast to relative returns, such as outperforming an index). Another feature of hedge funds is that they have fewer fixed rules governing their investment techniques and use leverage, derivatives and long and short positions. As hedge funds operate relatively high-risk investment strategies, they can certainly contribute to market shocks and to the risks of a run. The size of the Dutch hedge fund sector, at EUR 1.6 billion, is very limited, however.

3.4 Macroprudential use of existing tools can reduce run risk

The European AIFM Directive, which applies to most Dutch investment funds, came into force in July 2013.²³ Under these regulations, fund managers are allowed to use various tools to deal with large-scale redemptions from a fund. This enables them to reduce the pressure of redemption requests from investors in periods of stress by charging redemption fees, restricting the extent of redemptions ('redemption gates') or temporarily suspending redemptions. As well as these tools for use in periods of stress, fund managers

²³ AIFM stands for *Alternative Investment Fund Managers*. Limited numbers of Dutch funds are covered by the UCITS (Undertakings for Collective Investment in Transferable Securities) Directive. This directive, which dates back to 1985 and was most recently revised in 2011, focuses on offers of securities to retail investors. Unlike the AIFM Directive, the UCITS Directive imposes strict *quantitative* requirements on investment funds' liquidity management, investment policy and leverage. UCITS are not allowed, for example, to invest more than 5% of their net asset value (NAV) in a single investment product. Their ability to use leverage is also limited because they are allowed to take on loans for only up to a maximum of 10% of their total assets, and then only for a short term and not for investment purposes. Leverage through the use of derivatives (i.e. synthetic leverage) is limited to a maximum of 1 x NAV.

have to have liquidity management systems that are appropriate for their fund's investment strategy, redemptions policy and liquidity profile. Managers also have to perform stress tests to check the liquidity risk of the investment funds.

Despite these stricter regulations, it is important to further develop the supervision on investment funds and to set quantitative requirements for funds covered by the AIFM Directive. Existing tools need to be used in a more internationally coordinated way so as to reduce the risk of a large-scale run on open-ended funds and to increase their resilience.²⁴ Supervisors can contribute to financial stability by:

1. Limiting the use of leverage

Investment funds can use leverage to expand their positions. In the event of stress, this can increase losses and procyclically reinforce market shocks. The AIFM Directive gives supervisors powers to impose macroprudential leverage limits. In order to establish the desirable level of any such limit, the extent of leverage (and particularly synthetic leverage) needs to be properly understood in 2016 on an international scale.

2. Setting uniform standards for stress tests

How stress tests are performed is currently left to fund managers' discretion. This allows them to assume that they will respond to market shocks more quickly than their competitors; stress tests can then come out (too) positively and give funds (too) little cause to tighten their risk management. Supervisors must improve the consistency of stress tests by setting uniform standards and thus identifying risks more accurately.

²⁴ Macroprudential policy can restrict systemic risks, but has so far focused primarily on banks. See ESRB, *The ESRB Handbook on Operationalising Macro-prudential Policy in the Banking Sector*, March 2014.

3. Providing direction on the use and timing of redemption fees, gates and suspensions

The risk of damage to their reputation makes it unattractive for individual funds to impose redemption fees, gates or suspensions. Supervisors can restrict this 'inaction bias' by giving advance direction on the use and timing of these tools and by setting preventive minimum requirements. A coordinated approach of this nature also reduces the risk of large-scale redemptions by reducing the first-mover advantage available to the investors who are the first to want to redeem.

4. Limiting funds' participations in other investment funds

Funds-of-funds increase the interconnectedness between investment funds, while also reducing the transparency of the credit intermediation chain. This helps to create an illusion of liquidity in stress-free periods. Supervisors can reduce the impact of the funds-of-funds structure within the current regulations by classifying participations in other funds as less liquid or by setting explicit concentration limits on funds' investments in other funds.

International coordination of developments in and the use of macro-prudential policy instruments is important as investment funds can easily move beyond national borders (*regulatory arbitrage*). The risks involved can also have a worldwide impact via price shocks on financial markets. This means that supplementary policy focusing only on Dutch investment funds will not be very effective. The substantial growth in the sector is one of the reasons why the Financial Stability Board is seeking to obtain a clearer picture of whether investment funds can withstand acute market stress and how they can be made less vulnerable to a sudden outflow of entrusted funds.

4. Clearer picture of securitisation vehicles since the credit crisis

Securitisation vehicles played a major role in the credit crisis. Since then, the securitisation market has shrunk substantially in size because investors have redeemed their investments. Regulation and supervision have also become stricter. Higher capital charges now apply, while the capital required also increases in line with the complexity of the securitisation. The securitisation risks in Dutch financial institutions' balance sheets are also more visible. A quarter of the securitisation vehicles are in the Dutch shadow banking sector; these comprise securitisations that have mainly been set up by foreign parties. In view of the sharp decrease and stricter regulations, the financial stability risks presented by these securitisations are currently limited. DNB is closely monitoring developments so as to ensure any new systemic risks are promptly identified and will take action, if required.

4.1 Securitisation risks now visible in balance sheets

Many securitisations in the Netherlands primarily involve mortgage loans. Banks sell packages of mortgage loans to securitisation or special purpose vehicles ('SPV'). The SPV securitises these loans, i.e. packages them together and converts them into tradable securities via bond issues (Residential Mortgage-Backed Securities, or RMBS). These debt securities are divided into tranches with varying risk profiles, with the tranches that have the lowest credit rating being the first to absorb the losses. In this way, securitisation vehicles can be seen as links in the credit chain that, just like banks, provide maturity and liquidity transformation, while also adding leverage to the system.

Securitisation vehicles contribute to financial stability risks in various ways. They can facilitate the funding of long-term, illiquid assets by short-term

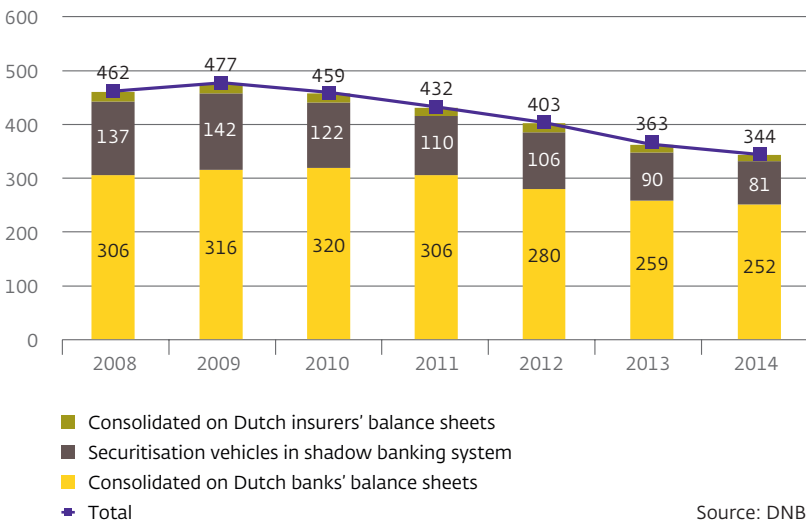
loans and thereby contributing to excessive maturity transformations and leverage. SPVs that issue complex, non-transparent structures involving packaged and repackaged loans have become the symbol of the credit crisis.

Regulation and supervision of securitisations have been tightened since the credit crisis. Higher capital charges now apply to securitisations, and these increase in line with the complexity of the securitisation. Issuers, such as banks and insurers, now also have to hold at least 5% of the transaction in their own books (the 'skin in the game') so that they, like investors, are also exposed to risk. Lastly, banks (and insurers) that use SPVs to issue securitisations have to consolidate these SPVs on their balance sheets, while they are now allowed to take the underlying loan portfolio off their balance sheet only under strict conditions. The main condition in this respect is that the supervisor has to determine whether there is a 'significant risk transfer'; in other words, the credit risk must not be allowed to revert to the bank. As a result, the majority of the securitisation vehicles of banks and insurers are subject to supervision. This is illustrated by the fact that EUR 263 billion of the total SPV assets of EUR 344 billion are included in the consolidated balance sheets of financial institutions. In other words, over three quarters of the securitisations in the Netherlands are not part of the shadow banking sector (see Figure 4.1).

Stricter regulations, both for issuers of and investors in securitisations, mean new securitisations on average comprise fewer risks than previously. The stricter capital requirements applying to securitisations, for example, create an incentive for vehicles to opt for structures that are as simple as possible. Complex securitisations, such as the resecuritisations that caused such problems in the credit crisis, have become highly unattractive. The risks involved in securitisations have also been reduced by the requirement for investors to conduct a proper credit assessment of their investments in securitisations.

Figure 4.1 Sharp reduction in total assets of securitisation vehicles since credit crisis

x EUR billion (year-end figures)



4.2 Steady decrease in securitisation vehicles with higher risk profile

A quarter of the Dutch securitisation vehicles (EUR 81 billion) are part of the Dutch shadow banking system; these have mainly been set up by foreign parties.²⁵ These are the several hundred smaller SPVs with a foreign originator and mainly foreign underlying assets. These 'foreign' SPVs are part of the Dutch shadow banking sector because they are not subject to supervision in

²⁵ Foreign originators issue securitised loans via Dutch SPVs because of the attractive business climate (see DNB, 2012).

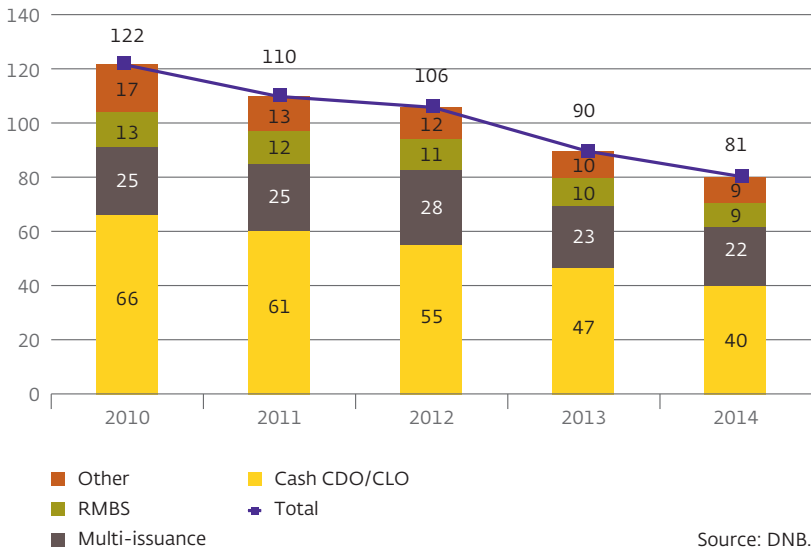
the Netherlands and there is insufficient information about the extent of their supervision abroad.

This means that the size of the shadow banking system has been conservatively estimated because the risks represented by these SPVs may be subject to regular supervision elsewhere.

The structure of these SPVs is often more complex, and the risks in the underlying assets would seem larger than the Dutch financial institutions' securitisations. The 'foreign' SPVs are often collateralised loan or debt obligations (CLOs and CDOs) and multi-issuance vehicles (Figure 4.2).

Figure 4.2 Types of securitisation vehicles in Dutch shadow banking system

x EUR billion



Source: DNB.

Although [collateralised loan obligations and debt obligations](#) are the largest category, they have almost halved in volume from EUR 66 billion in 2010 to EUR 40 billion in 2014. The underlying assets in CLOs or CDOs are corporate loans and bonds with lower credit ratings. The fund manager buys these bank loans or debts and then treats them in the same way as asset-backed securities

Loans are packaged together and structured on the basis of risk profiles. The SPV then issues debt instruments. The creditors first hit by losses on the underlying loans are those in the tranche with the lowest credit rating. In line with the international trend, this asset class is declining, particularly the leveraged SPVs.

The total size of the [multi-issuance vehicles](#) in the Netherlands has shrunk from EUR 25 to 22 billion. Such vehicles issue various series of securities, with each series typically being linked to specific assets. The investor is reliant on this separate pool of assets and has no claim on other assets in the pool.

Despite the higher risk profile and complexity of the securitisation vehicles in the shadow banking system, the systemic risks currently seem limited. Regulations have been tightened, for example, while the size of the market has fallen by a substantial 41% since the credit crisis. This is in line with the worldwide decrease in investor demand for securitised investments and the limited activity in the securitisation market.

However, although regulations have been tightened and securitisation vehicles now represent smaller amounts, it is important that supervisors remain alert to new developments in the securitisation market. The international exchange of information, such as through the Financial

Stability Board, can help to ensure that new risks are promptly identified and communicated. The US securitisation market seems, for example, to have moved out its trough, while the risks in the new products that are being offered are difficult to estimate in advance. An example of this is the 'Reo to Rental'; this is a new form of securitisation, where the interest payment on the bond issue is generated from rental income rather than from interest on loans granted.

Lastly, various initiatives have been launched to try to breathe new life into the securitisation market as part of the European Commission's action plan for a European capital market union. These proposals are all aimed at simple, transparent and standardised securitisations. These three criteria reduce cash-flow uncertainty, with the result that securitisations that meet these requirements will attract lower capital charges than more complex securitisations.²⁶ This recognises how simple, transparent and standardised securitisations contribute to the funding of activities that support the real economy.²⁷

26 On average, all securitisations will attract increasingly higher capital charges than under the current regulations. The increase for simple, transparent securitisations (STS), however, will be more limited. The risk weighting for an AAA Dutch RMBS will, for example, rise from 7% under the current regulations to 15% under the new regulations if the STS conditions are met. If, however, the transaction does not meet the STS conditions, it will attract a risk weighting of 20%.

27 See also the joint response of the Ministry of Finance, the Authority for the Financial Markets and DNB to the consultation document on securitisation – *Response of the Netherlands, European Commission consultation document on an EU framework for simple, transparent and standardised securitisation*, 13 May 2015.

5. Finance companies and alternative credit platforms do not currently pose a stability risk

Finance companies provide credit – usually consumer credit or leasing contracts – but, unlike banks, do not take deposits. The vast majority of these companies belong to a bank and are subject to supervision. Alternative credit platforms bring those requiring credit into contact with those able to provide it, and their numbers are increasing. These platforms are helping to make the finance landscape more diverse and to reduce the economy's reliance on bank finance.²⁸ Their relatively limited size means that, like finance companies, these credit platforms do not currently represent any risk to financial stability. It is nevertheless important that finance companies and alternative credit platforms become reporting agents so that the risks can be more effectively monitored.

5.1 Finance companies often part of bank

Finance companies provide various forms of credit, including ordinary loans, hire purchase arrangements and revolving credit via credit cards and customer loyalty cards. Financial lease companies, specialised mortgage companies, factoring companies and municipal credit banks are all types of finance companies. These companies fund themselves within the financial group to which they belong or arrange external funding in the market. If their funding comprises short-term loans, finance companies can contribute to the maturity transformation risk, while they also increase the leverage in the system.

The total assets of Dutch finance companies amount to around EUR 158 billion. Based on conservative estimates, 90% of the finance companies are owned by a bank and so are subject to supervision.

²⁸ DNB, *Perspective on the structure of the Dutch banking sector*, June 2015.

Finance companies that are part of the shadow banking system are relatively limited in size (estimate: EUR 16 billion), which means the risks to financial stability are modest. However, making finance companies into reporting agents will enable developments and risks to be more effectively identified and monitored.

5.2 Limited extent of alternative lending

Since the credit crisis there have also been growing numbers of alternative credit platforms, such as crowd finance and credit unions.²⁹ Crowd finance is a form of crowd funding. The broad-ranging term 'crowd funding' is used to refer to large groups of investors wanting to invest in businesses or projects, either by means of equity or debt. The term 'crowd finance' is used to describe such investments if they are based on loans (as opposed to equity). In the case of the shadow banking sector, only 'crowd finance' is relevant as these platforms may then be a link in the credit intermediation chain.

What credit unions and alternative platforms have in common is that they bring those needing credit into contact with those able to provide it. Internet sites and social media are often the virtual market place where those needing credit can promote investment projects that have not been able to be financed (or fully financed) via the regular bank channels. These initiatives may represent a welcome source of finance for small and medium-sized businesses, which often need to borrow only relatively small amounts.³⁰

In the Netherlands, crowd finance is by far the most important form of crowd funding. Research by the AFM found that, at the 2014 year-end, fewer than

29 Other forms of crowd funding involve donations or project support in exchange for non-financial returns.

30 Social and Economic Council, *Verbreiding en versterking financiering MKB*, 2014.

10% of these platforms were based on equity, while over 90% were based on loans.³¹ Although the amount of finance provided by platforms is growing rapidly, the total amounts provided are still small. Business loans provided via crowd finance in 2014, for example, totalled EUR 51.1 million, while credit unions provided a total of EUR 2.4 million.³²

In terms of financial stability, the activities of Dutch credit platforms are not of any significant size.³³ However, financial innovation is making these platforms increasingly effective at linking the demand for and supply of credit, and that promotes disintermediation. The success of such platforms in, for example, the United States and United Kingdom has not gone unnoticed by banks. Banks in those countries are increasingly investing in these credit platforms. Systemic risks can arise if the market for finance via credit platforms continues to grow rapidly and becomes more and more interconnected with the regular financial system.

The big test for these platforms in the Netherlands will be around 2020, when many of these loans, which have an average term of 5 years, are due to be repaid. That is when investors will be in a better position to assess these platforms as an investment. If investments via platforms prove successful in terms of repayments and returns, this could act as a driver of this new form of finance. DNB is in favour of introducing compulsory reporting for these platforms so that developments in and the role played in the economy by this new form of finance can be properly understood. At the same time, this will also enable new risks to be promptly identified.

³¹ AFM, *Crowdfunding – naar een duurzame sector*, December 2014

³² Douw & Koren, *Crowdfunding voor ondernemers*, 31 March 2015; World Council of Credit Unions, *Statistical Report 2014*.

³³ DNB conducted a thematic examination in 2015 of the impact of technological innovation on the financial sector. The findings of this examination will be published in early 2016.

Annex A. Institutions within Dutch OFI sector that are not part of shadow banking system

The 'Other Financial Intermediaries' (OFI) sector is the starting point for the analysis of the shadow banking system. This sector comprises all financial institutions except banks, insurers and pension funds. Most of the Dutch OFI sector (96% at the 2014 year-end) is not part of the shadow banking system. These institutions perform activities that have little to do with credit intermediation or where the risks to financial stability are managed through the regular supervision of these institutions.

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Institutions within the OFI sector are considered to be part of the shadow banking sector if they meet three conditions. The institution must:

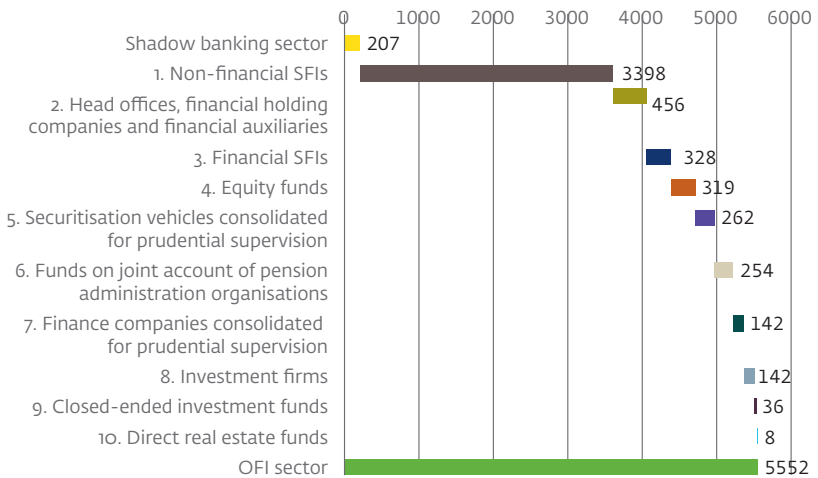
- i) be part of a credit intermediation chain
- ii) not be subject to bank or comparable financial supervision, and
- iii) perform activities with bank-like risks such as liquidity and maturity transformation, and leverage.

OFIs that do not belong to the shadow banking sector (see Figure A.1) are:

1. **Non-financial SFIs** (special financial institutions; EUR 3398 billion) that are owned by foreign multinationals and channel financial flows between group companies via the Netherlands. These institutions are not involved in credit intermediation outside their group of non-financial corporations.
2. **Head offices, financial holding companies and financial auxiliaries** (EUR 456 billion). Head offices and financial holding companies have controlling interests in their subsidiaries and so can control and direct them. Their assets consist primarily of participating interests and loans to other group companies, particularly Dutch banks and insurers that are

Figure A.1 Dutch OFI sector at 2014 year-end

x EUR billion



Source: DNB.

included in the consolidated supervision. Financial holding companies are mainly holding companies of non-financial companies that are not part of a credit intermediation chain. In addition, there are financial auxiliaries, such as advisers, intermediaries, custodians and stock exchanges; these play an important role in the provision of services, but do not themselves provide financial intermediation.

3. **Financial SFIs** (EUR 328 billion) are part of a foreign financial institution, often a bank or insurer. Like non-financial SFIs, these institutions mainly provide funding to companies within their group. These parties arrange only limited amounts of external funding, which is then consolidated

into the long-term borrowings of their foreign parent. These entities are consequently subject to financial supervision abroad.³⁴

4. **Equity funds** (EUR 319 billion) do not invest in debt securities and so are not part of the shadow banking system. Real estate funds that invest (indirectly) in the shares of real estate companies are included in this category.
5. **Securitisation vehicles consolidated for prudential supervision** (EUR 262 billion) are securitisation vehicles owned by Dutch banks and some insurers and are included in these groups' consolidated balance sheets. These securitisation vehicles are subject to bank or comparable supervision and are not part of the shadow banking system.
6. **Funds on joint account of pension administration organisations** (EUR 254 billion). For these exclusive funds, the risk of a run is almost nil. Only pension funds participate in these funds. Usually, one large pension fund is by far the main participant in such a fund, along with a limited number of smaller pension funds.³⁵ Participating pension funds can offer their investments for sale to the fund manager. There is no acute risk of a run, however, as funds' reasons for wishing to redeem their investments in these cases are not normally driven by prices at any one time, but rather by long-term changes in their strategic investment policy.
7. **Finance companies consolidated for prudential supervision** (EUR 142 billion) provide a wide range of credit products, including

³⁴ In a few cases, the parent is a financial holding company; it is then assumed that relationships between the holding company and the companies held by the holding company are monitored as part of the regular supervision process.

³⁵ On average, the main sponsor holds over three quarters of the assets.

consumer credit and mortgages. Financial lease companies, factoring companies and municipal credit banks are all included in this category. The finance companies consolidated for prudential supervision belong to banks and so are not part of the shadow banking system.

8. **Investment firms** (EUR 142 billion) consist of asset managers, securities intermediaries and own-account traders. These institutions are covered by a comparable prudential supervision framework (CRD IV) to that of banks and so are not part of the shadow banking system. They include, for example, the APG Treasury Center, which has total assets of EUR 133 billion and is fully consolidated in the ABP pension fund balance sheet. This Treasury Center was set up to simplify operations and to reduce transaction costs for APG investment funds and explicitly does not have a profit target of its own.
9. **Closed-ended investment funds** (EUR 36 billion) are not vulnerable to a sudden outflow of participations (i.e. a run) as investors cannot redeem their participations on demand. As there is no risk of a run, closed-ended investment funds, including private equity funds, are not part of the shadow banking system.
10. **Direct real estate funds** (EUR 8 billion)³⁶ invest directly in real estate ('bricks and mortar') and not in financial assets such as participations in other real estate funds or debt instruments. As a result, they are not part of the shadow banking system.

³⁶ Just like all the other amounts specified, this refers solely to the value of the financial assets. Amounts invested in real estate are therefore excluded.

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