ANALYSIS ON THE SHADOW BANKING CONTENT OF CAPTIVE FINANCIAL COMPANIES IN LUXEMBOURG[*]

Working document in preparation of the report of the Comité du Risque Systémique on the shadow banking system

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List of abbreviations

ABCP	Asset-Backed Commercial Paper
ABS	Asset-Backed Securities
AIF	Alternative Investment Fund
AIFM	Alternative Investment Fund Manager
BCL	Banque centrale du Luxembourg
CDO	Collateralized Debt Obligation
CDS	Credit Default Swap
CSSF	Commission de Surveillance du Secteur Financier
ECB	European Central Bank
EF	Economic Function
ESA	European System of Accounts
ESMA	European Securities and Markets Authority
ESRB	European Systemic Risk Board
EU	European Union
EUR	Euro
FSB	Financial Stability Board
GAAP	Generally Accepted Accounting Principles
IMF	International Monetary Fund
ISIN	International Securities Identification Number
LBO	Leveraged Buyout Operations
MMF	Money Market Fund
OECD	Organisation for Economic Co-operation and Development
OFIs	Other Financial Intermediaries (OFIs include "*all financial institutions that are not classified as banks, insurance companies, pension funds, public financial institutions, central banks, or financial auxiliaries.*" (FSB, 2015))
RCS	Registre du Commerce et des Sociétés (Business Register)
RIAD	Register of Institutions and Affiliates Database
REIT	Real Estate Investment Trust
SHSS	Securities Holdings Statistics by Sector

SIV	Structured Investment Vehicle
SME	Small and Medium Enterprises
SOPARFI	Sociétés de Participations Financières (financial participation companies)
SPE	Special Purpose Entity
SPF	Sociétés de gestion de Patrimoine Familial (Family Wealth Mangement)
SPV	Special Purpose Vehicle
UCITS	Undertakings for Collective Investment in Transferable Securities
US	United States of America
USD	US Dollar
WAM	Weighted Average Maturity

Executive summary

The shadow banking system is defined by the Financial Stability Board (FSB) as the "system of credit intermediation that involves entities and activities outside the regular banking system". The global crisis that started in 2007 has emphasised the role of shadow banking in transmitting risks to the rest of the financial system. Against this background and the continued growth of the sector observed during the recent years, international institutions such as the FSB have advocated the need to better measure and monitor shadow banking activities in order to prevent systemic risks in the financial system.

While the regular banking system can be mainly characterised by an intermediation function involving the transformation of short-term liquid deposits into long-term illiquid loans within a unique institution, the shadow banking system is more difficult to bind. Even if it is simply defined as a system organising credit intermediation outside the regular banking system, the main difficulty in it relates to the fact that this intermediation function occurs within a long chain involving many entities and instruments. Besides the challenges raised by the complexity of these operations, the FSB has developed a well-defined methodology to assess the perimeter of the shadow banking system in a given country.

Using the FSB methodology and the granular data collected by the Banque centrale du Luxembourg (BCL), this working document investigates the shadow banking content of the most prominent non-bank financial subsector in Luxembourg, namely captive financial companies.

The preliminary findings of this working document are the following. While the broad measure of shadow banking related to captive financial companies is very large in Luxembourg according to the financial accounts statistics, the analysis of granular data based on the FSB methodology delivers a more accurate picture that points to a less important shadow banking activity than the aggregate statistics suggest. More specifically, according to the results of a narrowing down exercise applied to end-of-2014 data, over the 2 000 captive financial companies reporting to the BCL an aggregate activity of about EUR 7 000 billion, only 43 entities with a total balance sheet of EUR 50.9 billion pertain to the shadow banking perimeter. The main explanation underlying this finding is that most of the captive financial companies are set up by large resident and non-resident multinational firms to channel funds from or *via* Luxembourg to other entities of the group domiciled abroad. Another important finding is that most of the entities considered as shadow banks are structuring vehicles affiliated to alternative investment funds. In addition, quantitative risk indicators indicate a low or medium shadow banking content for these entities, thus implying a limited impact on the stability of the financial system, despite their significant activity of credit intermediation to the real economy. Finally, the analysis of Luxembourg data also highlights an important limitation for the monitoring of the shadow banking system. Indeed, most of these entities are part of international structures that go beyond Luxembourg. This specificity is reflected in the composition of their balance sheet, with loans to affiliates on the asset side, when the entity is raising funds on behalf of the shadow bank, and loans from

affiliates on the liability side when the entity is used as a special purpose vehicle by the shadow bank to invest in its target portfolio. As a result, the consolidated balance sheet structure and the underlying risks of these entities are difficult to capture in practice when companies outside Luxembourg are involved in the process.

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1 Introduction

The shadow banking system encompasses entities engaged in bank-like activities such as credit intermediation, maturity and liquidity transformation outside the regulated banking sector. As evidenced during the subprime crisis, shadow banking raises systemic risks concerns as it encourages the build-up of vulnerabilities outside the regulatory perimeter, increasing at the same time the interconnectedness across balance sheets, the procyclicality, leveraging and contagion effects within the financial system (e.g. Adrian et al., 2013).

Broad measures of shadow banking have pointed toward a continued growth of this sector over the recent years, mostly driven by the investment funds industry (European Central Bank, 2015). The key drivers underlying this trend are manifold (International Monetary Fund, 2014): (i) The deleveraging in the banking sector and the implementation of Basel III regulation translated into a retrenchment of banks from lending activities, which have moved away to non-bank entities such as hedge funds, private equity funds or insurance companies. (ii) The search for yield behaviour in a low interest rate environment led institutional investors to invest in higher-yielding assets such as leveraged loans and structured finance products in order to boost their profitability. (iii) Finally, unconventional measures of the major central banks created ample liquidity conditions in the shadow banking sector.

Against this background, the shadow banking system has gained increasing national and international attention since the start of the global financial crisis in 2007. International institutions have advocated the need to better measure and monitor shadow banking activities in order to prevent systemic risks in the financial system. In particular, the Financial Stability Board (FSB) has been publishing an annual report on shadow banking since 2009 as well as some recommendations for *"Transforming shadow banking into resilient market-based finance"*[1]. Recently, the European Systemic Risk Board (ESRB) has published a monitoring framework aimed at analysing developments in the EU shadow banking system (ESRB, 2016). Within this context, international institutions, in particular the FSB, have regularly pointed to the need of using granular data to monitor the shadow banking system. However, in practice, the perimeter of the shadow banking activities and the interconnectedness across institutions is still quite difficult to identify due to a lack of statistical sources and transparency in the financial system.

Market-based financing activities are an important component of modern financial centres, which provide the diversity of available investment vehicles allowing the development of alternative financing from the traditional banking system. In the case of Luxembourg, Undertakings for Collective Investment in Transferable Securities (UCITS) funds, alternative investment funds, securitisation vehicles and holding companies (SOPARFIs) all have the

[1] See also FSB (2013) *"Policy framework for strengthening oversight and regulation of shadow banking entities"* and FSB (2016) *"Thematic review on the implementation of the FSB policy framework for shadow banking entities"*.

possibility to engage in shadow banking activities (Buisine, 2015). Granular data collected by the Banque centrale du Luxembourg (BCL) on the financial sector provide the raw material to analyse shadow banking in Luxembourg using the methodology developed in the FSB annual report.

In order to measure the perimeter of shadow banking, the FSB suggests using a two-step approach. Within this framework, the starting point of the FSB is a broad definition of shadow banking which encompasses all entities in the non-bank financial sector except insurance companies and pension funds. This broad measure represents an upper bound from which a narrow measure can be extracted, depending on the nature of the financial institutions included in the so-called OFI (Other Financial Intermediaries) sector. In a second step, the FSB suggests narrowing down the definition of shadow banking by focusing on entities engaged in a credit intermediation process and exhibiting at the same time a systemic risk concern, due in particular to their maturity/liquidity transformation activity, their engagement in leverage strategies, and their interconnectedness with the traditional banking sector[2].

The FSB broadly evaluates the size of the global shadow banking sector to USD 80 trillion at the end of 2014, using the data provided by 20 jurisdictions and the euro area as a whole. In the case of Luxembourg, the FSB approach estimates a broad measure for the perimeter of *shadow banking* amounting to about EUR 11 trillion, or USD 13.3 trillion, at the end of 2014. Albeit these two figures are not directly comparable (by that time, the figures used by the FSB for the euro area as a whole did not include the revised figures of the Luxembourg financial accounts updated with the reporting of captive financial companies), this amount is still very impressive. However, as evidenced in the FSB annual reports, this measure largely overvalues the real size of the shadow banking system since it incorporates all non-bank activities of the financial system except insurance companies and pension funds. Luxembourg has a sizeable OFI sector, whose main components are captive financial companies and investment funds. These two components displayed an aggregate balance sheet of EUR 7 trillion and EUR 3.2 trillion respectively at the end of 2014. However, while investment funds and captive financial companies surely encompass shadow banking activities, they also comprise some financial intermediaries for which this characterisation is questionable, e.g. equity funds or financial holding companies affiliated to non-financial corporations.

Numerous studies have investigated the shadow banking activity for other countries (e.g. Pozsar et al., 2012, for the US, Broos et al., 2012, for the Netherlands, Godfrey et al., 2015, for Ireland, and the different country case studies published in the FSB annual reports). In the context of Luxembourg, Buisine (2015) provides a detailed description of the regulatory environment and the different structures available to develop shadow banking activities, while the BCL (2014) already presented an analysis of the shadow banking content of securitisation vehicles as well as

[2] This entity-based approach will be used in this report. The FSB also suggests using a market-based approach to measure the perimeter of the shadow banking. However, this approach is difficult to implement in practice given the lack of information e.g. on derivatives, repo and securities lending transactions.

some empirical works on the interconnectedness between the banking and shadow banking sectors (Buisson et al., 2013, Gossé and Smole, 2015). However, at this stage, an important analytical gap remains in Luxembourg as the shadow banking perimeter has not yet been investigated for the two most important categories of the OFI sector, namely captive financial companies and investment funds. This analytical effort is all the more important that the impressive amounts displayed for the OFI sector could uselessly feed the discussions around the nexus between shadow banking and tax-favourable jurisdictions that has often been emphasised in the literature (e.g. Rixen, 2013).

In order to fill part of this analytical gap, this working document investigates the shadow banking content of captive financial companies in Luxembourg using the entity-based approach developed by the FSB and the granular data collected by the BCL[3]. The BCL has a quarterly balance sheet and monthly security-by-security reporting which, when completed with the information available in the annual reports published in the business register, allows an analysis of the shadow banking content of these entities using indicators of credit intermediation, maturity/liquidity transformation, leverage and interconnectedness with the financial sector.

The preliminary findings of this working document are the following. According to the financial accounts statistics, the broad measure of shadow banking related to captive financial companies is very large in Luxembourg. However, the analysis of granular data based on the FSB methodology delivers a more accurate picture that points to a less important shadow banking activity than the aggregate statistics suggest. More specifically, according to the results of a narrowing down exercise applied to end-of-2014 data, only 43 entities with a total balance sheet of EUR 50.9 billion pertain to the shadow banking perimeter. The main explanation underlying this finding is that most of the captive financial companies are set up in Luxembourg for tax planning purposes, i.e. are used to channel funds from or *via* Luxembourg to other entities of the group domiciled abroad. Another important result is that most of the entities considered as shadow banks are affiliated to alternative investment funds, which are mainly located outside Luxembourg. In addition, quantitative risk indicators indicate a low or medium shadow banking content for these entities, thus implying a limited impact on the stability of the financial system, despite their significant activity of credit intermediation to the real economy. That said, the analysis of Luxembourg data also highlights an important limitation for the monitoring of the shadow banking system. Indeed, most of these entities are part of international structures, a specificity that is reflected in the composition of their balance sheet, with loans to affiliated companies on the asset side, when the entity is raising funds on behalf of the shadow bank, and loans from affiliated companies on the liability side when the entity is used as a special purpose vehicle by the shadow bank to invest in its target portfolio. Consequently, the consolidated

[3] A similar study as the one developed in this report has already been carried out for Luxembourg securitisation vehicles: *« Le périmètre du secteur d'intermédiation du crédit hors système bancaire (shadow banking) au Luxembourg - Le cas des véhicules de titrisation »* (Bulletin BCL, 2014/3, pp.48-59).

balance sheet structure and the underlying risks of these entities are difficult to capture in practice when the parent company is located abroad.

The structure of the working document is the following. Section 2 provides a conceptual background to the shadow banking system and the methodological framework that has been developed by the FSB to measure its perimeter. Section 3 briefly introduces the statistical framework underlying the construction of the financial accounts, which constitute the primary step to define a broad measure of shadow banking, namely the OFI sector. Section 4 addresses the main features and the regulatory environment of captive financial companies, and implements the FSB methodology to narrow down the shadow banking perimeter of these investment vehicles. The entities that do not fulfil the criteria corresponding to the FSB definition of shadow banking are first excluded from the scope of the study. Then, in a second step, a detailed analysis of the shadow banking content of the relevant entities is carried out based on balance sheet characteristics and quantitative risk metrics indicators. The last section concludes and paves the way for additional work on this topic in the future.

2 The shadow banking system: Definition and conceptual background

The FSB defines shadow banking as *"credit intermediation involving entities and activities outside the regular banking system"*, but other authors provide complementary definitions that emphasise different aspects of shadow banking. For example, Adrian and Ashcraft (2012) describe the shadow banking system as *"a web of specialized financial institutions that channel funding from savers to investors through a range of securitization and secured funding techniques"*. Poszar et al. (2012) put a special emphasis on the similarities and differences between the traditional and shadow banking systems explaining that they carry out similar functions but that *"shadow banks [unlike] traditional banks lack of access to public sources of liquidity such as the Federal Reserve's discount window, or public sources of insurance such as Federal Deposit Insurance"*.

This section aims at introducing a conceptual background for the empirical analysis that will be carried out in this working document. The stylised explanation provided by the literature to describe the shadow banking system that was at the centre of the subprime crisis is first presented. The methodological framework developed by the FSB to analyse more systematically the shadow banking content of the financial sector is addressed in a second step.

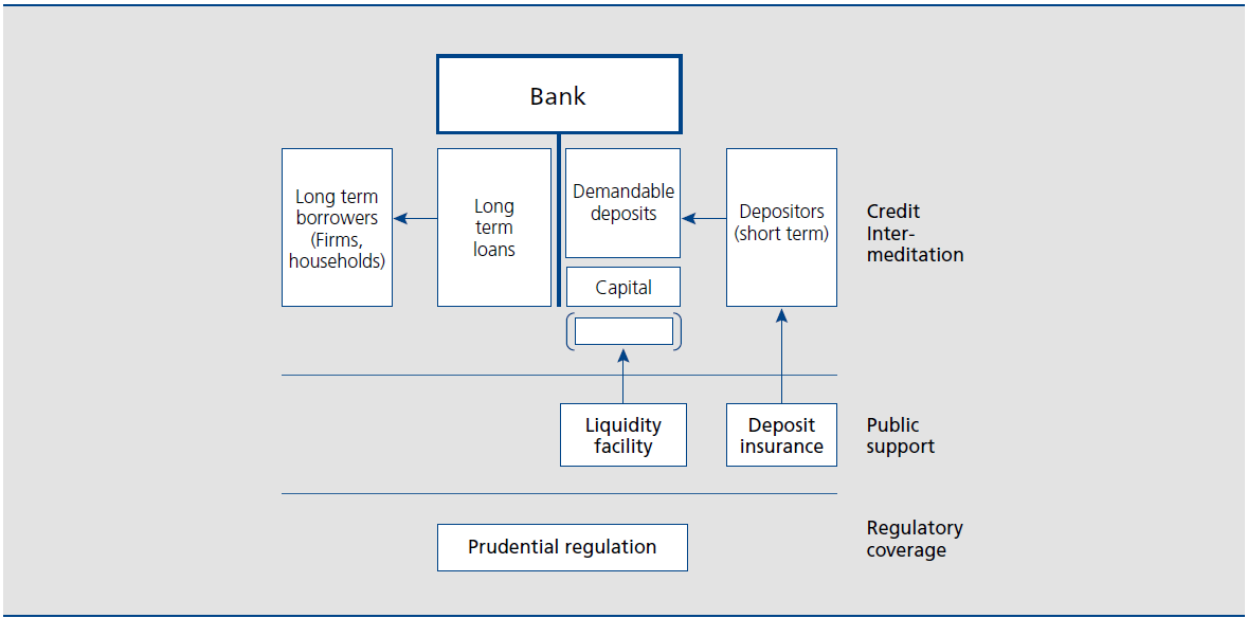
2.1 Regular banking *vs.* shadow banking

In the traditional banking system, credit intermediation between savers and borrowers is operated within the same institution. Banks take deposits, which are liquid and can be withdrawn on demand, and turn them into loans, which are less liquid and generally have long-term maturities. The maturity and liquidity transformation that characterises this credit intermediation function

enables banks to generate profit as loans are granted at a higher yield than the cost of liabilities. To ensure the soundness and the stability of the financial system, banks being highly leveraged institutions, they are legally required to hold a certain amount of capital to have a cushion against potential losses.

In order to mitigate the risks inherent to the business model operated by banks, public backstops also exist to prevent bank runs, a situation where depositors simultaneously withdraw funds, hastening a bank's insolvency and, potentially, the collapse of the financial system as a whole. To avoid this scenario, banks are supported by means of a deposit insurance, which guarantees individual accounts up to a certain amount in the event of bank failure. In addition, banks can access the central bank refinancing operations and the central bank may act as a lender of last resort, providing short-term funding to solvent but illiquid banks facing sudden withdrawals. An overview of the basic functioning of the traditional banking system is provided in Figure 1.

Figure 1: Traditional bank credit intermediation



Source: Keller (2012)

Over the past decade, financial innovations have changed the traditional banking system from an *originate-to-hold* model, where banks hold in their balance sheet the loans they have granted, into an *originate-to-distribute* model, where banks use securitisation and credit risk transfer techniques to remove part of their loan portfolio in off-balance sheet vehicles (Pozsar, 2008). The development of this shadow banking system has been driven mainly by a regulatory

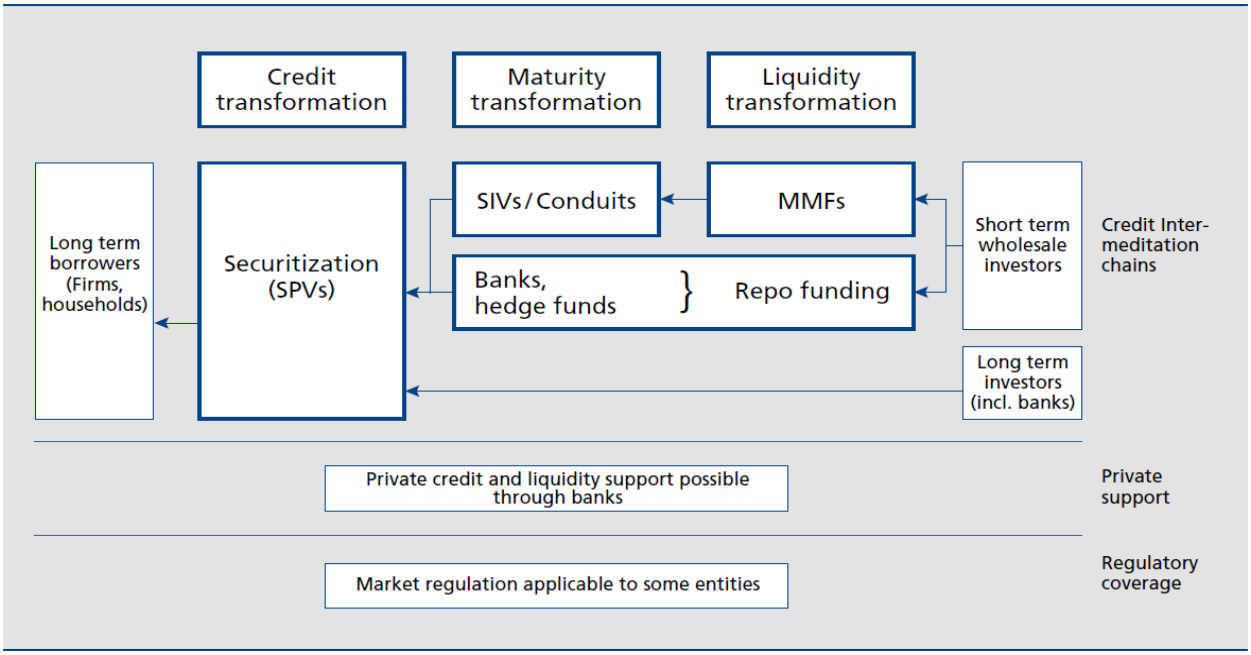
arbitrage *vis-à-vis* capital requirements, as well as increased competition with non-bank lenders and search-for-yield behavior of investors (Adrian and Shin, 2010).

Shadow banking performs the same function as traditional banking as it channels funds from lenders to borrowers, using short-term, liquid funding to supply long-term loans that are less liquid. However, a characteristic feature of financial intermediation operating through the shadow banking system is the long chain of financial institutions involved in channeling funds from the ultimate creditors to the ultimate borrowers, which constitutes a network of highly leveraged and wholesale-funded off-balance sheet vehicles.

In the *originate-to-distribute* model, credit intermediation consists in borrowing short and lending long, but loans are sold after they are originated and transformed into marketable securities by special purpose vehicles (SPVs). The aim of these SPVs is to pool a large portfolio of loans, which is then securitised into Assets-Backed Securities (ABSs), which might in turn be re-securitised into Collateralized Debt Obligations (CDOs). These structured products may be sold directly to long-term investors such as sovereign or pension funds, but the chain may well be further extended if intermediaries relying on short-term funding are involved in the process. For example, Structured Investment Vehicles (SIVs) may finance these products by issuing securities in the Asset-Backed Commercial Paper (ABCP) market, where the bulk of funds is provided by money market funds - the modern-day equivalents of bank deposits (Adrian and Shin, 2010). Hedge funds may also finance such assets by collateralised borrowing through repurchase agreements (i.e. repos) with a large commercial bank, which can in turn fund this operation by issuing commercial papers, with money market funds ultimately completing the circle as natural buyers of such short-term liabilities (Broos et al., 2012).

Overall, in the shadow banking system, the credit intermediation operates within a long chain involving different institutions and instruments, and where maturity transformation, liquidity transformation and leverage take place at different steps of the process. Thus, shadow banks can be described as financial intermediaries engaged in bank-like activities without explicit access to public backstops and operating within a less stringent regulatory framework than traditional banks (Pozsar et al., 2012). Figure 2 provides a synthetic view of the shadow banking system that was operating during the subprime financial crisis.

Figure 2: A stylised shadow banking system



Source: Keller (2012)

The credit intermediation process operated by the shadow banking system has increased the vulnerabilities of the financial system for several reasons: (i) The transfer of risk in off-balance sheet vehicles has released the credit supply conditions of the banking system and favoured the development of a bubble in the asset price market and, more specifically, in the real estate market. (ii) The reliance on short-term debt to fund illiquid long-term assets has increased the fragility of the balance sheets. The shadow banking system is vulnerable to runs as investors may stop extending the short-term funding of intermediaries, as evidenced with the run on the repo market in 2007-2008 (Gorton and Metrick, 2012). (iii) The valuation of assets at market price and the extensive use of the same collateral in different transactions have increased the leverage and procyclicality in the financial system. (iv) The lengthening of the credit intermediation chain has exacerbated the balance sheet interconnectedness between the different institutions, thereby increasing the propagation mechanisms of a negative shock within the financial system.

This stylised description of the shadow banking system has been elaborated against the background of the financial crisis. In recent years, new forms of activities involved in the credit intermediation chain have emerged (e.g. private debt funds) or have gained in importance (e.g. securities lending), partly in reaction to regulatory changes. Against this background, national and international institutions have tried to better assess developments in shadow banking activities. In particular, the FSB has developed a more general definition and a methodological framework to measure the perimeter of the shadow banking system. This approach will

constitute the basis for the empirical analysis of captive financial companies domiciled in Luxembourg.

2.2 The FSB methodological framework

The FSB defines shadow banking as *"credit intermediation involving entities and activities outside the regular banking system"* (FSB, 2015, p.1). While acknowledging that *"[i]ntermediating credit through non-bank channels can have important advantages and contributes to the financing of the real economy"*, the FSB is concerned by the fact that *"such channels can also become a source of systemic risk, especially when they are structured to perform bank-like functions (e.g. maturity and liquidity transformation, and leverage) and when their interconnectedness with the regular banking system is strong"* (FSB, 2015, p.1).

Against this background, the FSB has proposed a two-step methodology to delimit the perimeter of the shadow banking system. Starting from regular macro-statistics such as financial accounts[4], the FSB suggests using a broad measure of the shadow banking system based on the OFI sector, i.e. the non-bank financial sector except insurance companies and pension funds. This broad measure, which forms the upper limit to the shadow banking system, produces a distorted picture as it includes units that do not really engage in a non-bank credit intermediation. Even though the analytical relevance of such a broad measure may be questioned, these OFIs statistics are usually compiled based on a harmonised compilation system[5], are easily available in many countries and therefore allow a country comparison as well as the monitoring of the evolution of this subsector. But as this broad measure is not completely relevant from a shadow banking perspective, it must be downsized following an appropriate method.

Accordingly, in a top-down perspective, the FSB suggests to filter the entities that fulfil the criteria corresponding to the shadow banking definition, i.e. to identify the entities that are part of a credit intermediation chain and that do not fall within the scope of the regulated banking sector. In practice, this narrowing down process consists in sequentially excluding entities not involved in the shadow banking perimeter. This assessment is partly based on granular data, which are not always harmonised and are available in different formats. Because the narrowing down process is based on a wide range of information, a qualitative judgement is also applied to determine to which category an entity belongs. Therefore, while this process usually results in lowering the size of the shadow banking perimeter, it may not always give the same final results (Broos et al., 2012).

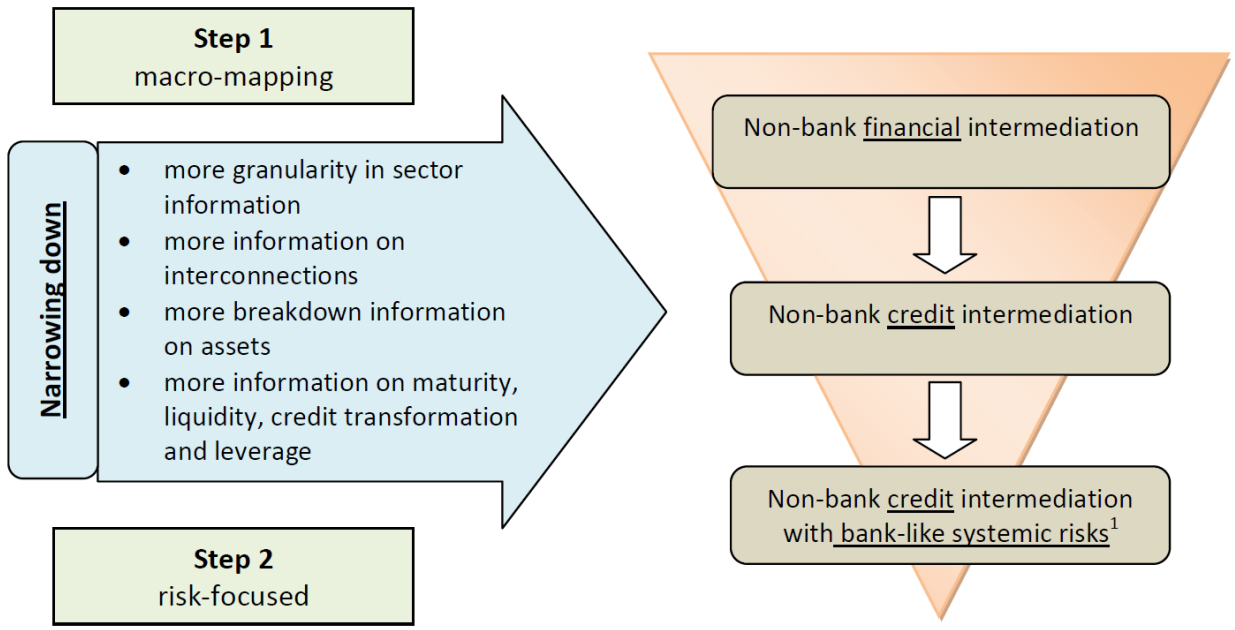
In a second step, after having investigated the different business models and filtered the entities concerned by the narrow definition of shadow banking, the FSB methodology suggests analysing in detail the shadow banking content of the entities involved in a credit intermediation chain, by focusing in particular on the different risk factors that may contribute to the build-up of risks to

[4] Financial accounts and their statistical framework are explained in section 3.1.
[5] The European System of Accounts 2010 in Europe or the System of National Accounts in other countries.

financial stability: maturity transformation, liquidity transformation, credit risk transfer techniques, leverage and interconnectedness with the traditional banking sector.

This two-step methodology is summarised in Figure 3.

Figure 3: Measuring the shadow banking system



[1] Bank-like systemic risks include maturity transformation, liquidity transformation, imperfect risk transfer and leverage

Source: FSB (2014)

To summarise, the FSB considers OFIs to be part of the shadow banking system only if they: (i) are part of a credit intermediation chain, (ii) are not subject to bank or comparable financial supervision, and (iii) perform activities entailing bank-like risks such as liquidity/maturity transformation, and leverage.

In the latest edition of the global shadow banking monitoring report, the FSB has further refined the conceptual framework and classifies shadow bank activities into five economic functions (EFs). *"[T]he economic functions approach is based on the classification of non-bank financial entities into five economic functions through which non-bank credit intermediation may pose bank-like systemic risks to the financial system"* (FSB, 2015, p.3). These economic functions are defined in Figure 4.

Figure 4: Classification by economic functions

Economic Function	Definition	Typical entity types
EF1	Management of collective investment vehicles with features that make them susceptible to runs	Fixed income funds, mixed funds, credit hedge funds, real estate funds
EF2	Loan provision that is dependent on short-term funding	Finance companies, leasing companies, factoring companies, consumer credit companies
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	Credit insurance companies, financial guarantors, monolines
EF5	Securitisation-based credit intermediation and funding of financial entities	Securitisation vehicles

Source: FSB (2015)

The FSB (2013b) describes in detail the different economic functions. Entities classified in EF1 are collective investment vehicles whose features make them susceptible to run, like regular banks. These entities include open-ended funds issuing liabilities that are redeemable at notice. Large scale redemption requests could lead these entities to engage in fire sales of assets with adverse effects for other market participants. EF2 captures lending activities relying on short-term funding and conducted by non-bank entities which are in niche markets such as leasing, factoring, consumption credit or mortgage lending companies. These entities, which engage in credit intermediation outside the regulatory perimeter, are usually characterised by a high level of maturity transformation and are highly exposed to a liquidity risk and to a change in the slope of the yield curve. EF3 refers to the intermediation of market activities that is dependent on short-term funding or on secured funding of client assets, a business model typically associated with broker-dealers and securities lending agents. The entities engaged in these activities may be exposed to considerable liquidity risks depending on their funding model. EF4 applies to institutions involved in credit enhancements and facilitating bank or non-bank credit creation. These entities, which include companies providing guarantees to the issuer or insurance contracts against a borrower's default, may create a risk of imperfect credit risk transfer and may contribute to the build-up of leverage in the financial system. EF5 refers to the securitisation process that eases credit intermediation by providing banks and non-bank financial entities with another source of funding, in particular through the transformation of loans into marketable securities. In particular, securitisation may increase the level of maturity/liquidity transformation, leverage or regulatory arbitrage in the financial system.

The narrow measure of the shadow banking perimeter defined previously requires a thorough analysis of granular data at the level of each individual entity. Data available in the framework of the statistical reporting of the BCL partly allow to delineate the shadow banking content of captive financial companies, as well as to analyse the relationships between these entities and the other entities of the Luxembourg financial sector, e.g. banks, investment funds, securitisation vehicles. These granular data collected by the BCL may be completed with other information available elsewhere when needed. Before dealing with this empirical analysis, the next section presents the broad measure of shadow banking in Luxembourg.

3 The broad measure of shadow banking in Luxembourg

According to the FSB, the broad measure of shadow banking encompasses all entities of the non-bank financial sector except insurance companies and pension funds. Within the financial accounts, this definition is associated with the OFIs sector. This section aims at presenting the statistical framework upon which the financial accounts are built and the composition of the financial sector in Luxembourg, with a brief discussion on the main components of the entities included in the OFIs sector.

3.1 The statistical framework: ESA 2010

The European System of Accounts 2010 (ESA 2010) is the European statistical framework for a systematic and detailed description of an economy set up by the European Commission (2013). In particular, this system proposes an analytical framework based on the grouping of institutional units into sectors according to their principal functions, behaviour and objectives. Six groups (or sectors) are identified in ESA 2010: (i) Non-financial corporations, (ii) Financial corporations, (iii) General government, (iv) Households, (v) Non-profit institutions serving households, (vi) The rest of the world (not a sector as such).

The financial corporation sector (or simply the financial sector) comprises institutional units which are independent legal entities, market producers, and whose principal activity is the production of financial services. These institutional units include all corporations and quasi-corporations which are principally engaged in financial intermediation and/or auxiliary financial activities.

In order to further refine the analytical framework, ESA 2010 proposes a more detailed breakdown of the main sectors. In particular, the financial sector is broken down into the following nine subsectors based on their main activity[6]: (i) Central bank (S.121), (ii) Deposit-taking corporations, which are mainly engaged in financial intermediation and whose business is to receive deposits and to grant loans and/or to invest in securities (S.122), (iii) Money market

[6] The codes in bracket are designing the subsectors as they are defined in the ESA 2010 framework.

funds (MMF), which are mainly engaged in financial intermediation by issuing investment fund shares/units and by investing primarily in money market instruments (S.123), (iv) Non-MMF investment funds (S.124), (v) Other financial intermediaries[7], except insurance corporations and pension funds (S.125), (vi) Financial auxiliaries (S.126), (vii) Captive financial institutions and money lenders (S.127), (viii) Insurance corporations (S.128), and (ix) Pension funds (S.129).

As these different institutional sectors and subsectors defined in ESA 2010 form the basis for the economic analysis, the data collection is also built around these different breakdowns. In Luxembourg, the data collection for the units classified in the financial sector is mainly organised by the BCL and the Commission de Surveillance du Secteur Financier (CSSF), the public institution which supervises the professionals and products of the Luxembourg financial sector. These two institutions collect information on financial position statements, financial transactions as well as revaluation accounts among the units of the financial sector, while the information on income statements is collected by the Luxembourg National Statistical Institute (STATEC).

In conformity with its participation in the Eurosystem, the BCL collects direct information from banks (S.122), money market funds (S.123), investment funds (S.124), securitisation vehicles (S.125) as well as insurance corporations (S.129). These institutions are subject to the regulations of the European Central Bank (ECB), which are published in BCL circulars and communicated directly to the concerned entities[8]. In particular, these institutions must report to the BCL monthly and quarterly information on statements of financial position, revaluation effects and a detailed breakdown of securities holdings. Once aggregated by the BCL, this information is further transmitted to the ECB, which then publishes statistics on the financial sector for the whole euro area.

However, a large part of the financial sector is not yet covered by a harmonised reporting in the euro area. In particular, the so-called *residual OFI sector* (namely S.126 and S.127) in the terminology of the financial accounts is very large in countries like Luxembourg and the Netherlands due to the presence of entities that engage in transactions on behalf of their parent corporations and multinational groups in order to raise finance or to facilitate intra-group transactions (see European Central Bank, 2015, ESRB, 2016). Fortunately, the BCL has recently launched a new reporting for captive financial companies (S.127) in order to improve the quality of balance of payments statistics. These captive financial companies, which constitute the bulk of the *residual OFI sector* in Luxembourg, have been sending to the BCL quarterly balance sheets and monthly security-by-security reports since 2011. Thanks to this reporting, an important statistical gap has been filled to analyse the shadow banking sector in Luxembourg based on

[7] The other financial intermediaries as defined by the ESA 2010 differ from the OFIs defined by the FSB (2015), which states that OFIs include "*all financial institutions that are not classified as banks, insurance companies, pension funds, public financial institutions, central banks, or financial auxiliaries.*"

[8] The details of the regulatory reporting are available on the BCL website at http://www.bcl.lu/en/Regulatory-reporting/index.html.

granular data at the individual level. Information on subsector S.126, which includes *inter alia* securities and derivative dealers, non-deposits institutions engaged in lending, and other Professional of the Financial Sector (Management Companies, advisors...)[9] are collected by the CSSF with a lower level of details. However, the size of this subsector, which displays an aggregate balance sheet of a mere EUR 30 billion, is less relevant given the composition of the financial sector in Luxembourg.

3.2 The composition of the financial sector in Luxembourg

Based on the financial accounts statistics, the FSB conservatively uses a broad measure as a starting point, namely 'Other Financial Intermediaries' (OFIs). This sector, which includes all financial institutions except banks, insurers and pension funds, forms an upper limit to the shadow banking system.

According to the figures displayed in Table 1, the broad measure of shadow banking in Luxembourg amounted to EUR 10 612 billion at the end of 2014. The activity of investment funds, which represented about 30% of this amount, is very important in Luxembourg, with most of the entities comprised in this sector being regulated by the Undertaking for Collective Investment and Transferable Securities (UCITS) and Alternative Investment Fund Managers (AIFM) Directives. The total assets of financial vehicle corporations, which are usually associated with an important shadow banking content, represented about EUR 140 billion in December 2014, almost 8% of the euro area market share[10]. Finally, the item 'Other', which corresponds to the *residual OFI sector*, mainly includes captive financial companies. This sector constituted the largest component of the OFI sector in Luxembourg with more than EUR 7 000 billion at the end of 2014.

[9] The list of Professionals of the Financial Sector (PFS) is available on the CSSF website.
[10] See BCL (2014) for an analysis of the shadow banking content of these entities.

Table 1: The composition of the financial sector in Luxembourg[11] (outstanding amounts, end of 2014)

	Luxembourg		Euro area	
	EUR billion	% Total	EUR billion	% Total
Banking system	**856.2**	***7.4***	**34 156.2**	***51.5***
Central bank of Luxembourg / Eurosystem	117.1	*1.0*	3 904.2	*5.9*
Banks	739.1	*6.4*	30 252.0	*45.7*
Other Financial Intermediaries (OFIs)	**10 612.0**	***91.2***	**23 094.1**	***34.9***
Investment Funds	3 432.6	*29.5*	10 446.1	*15.8*
Money Market Funds (MMFs)	*223.8*	*1.9*	*941.0*	*1.4*
Investment funds other than MMFs	*3 208.9*	*27.6*	*9 505.1*	*14.3*
Financial vehicle corporations	142.3	*1.2*	1 849.1	*2.8*
Other	7 037.1	*60.5*	10 798.9	*16.3*
Insurance corporations and pension funds	**164.7**	***1.4***	**9 011.4**	***13.6***
TOTAL ASSETS OF FINANCIAL CORPORATIONS	**11 633.0**	***100***	**66 261.7**	***100***

Source: BCL, CSSF, ECB

Note: data as extracted in April 2016.

The size of the OFI sector, i.e. the broad measure of shadow banking proposed by the FSB, is very large in the case of Luxembourg. According to this broad measure, more than 45% of the euro area shadow banking system was based in Luxembourg at the end of 2014. However, as it is the case for the Netherlands, the large size of the OFI sector in Luxembourg is mainly due to the residual component of the financial accounts, which is mostly comprised by holding and issuing companies whose main objective is to facilitate intra-group transactions or to attract external funding for their parent company[12]. Basically, most of these intermediaries should not be considered as part of the shadow banking perimeter as they do not engage in financial intermediation outside their group.

Overall, the broad measure proposed by the FSB is a very rough indicator to 'cast the net wide' and as such it should only be considered as an upper limit to the shadow banking system. The specificities of the Luxembourg OFI sector underline the importance of a thorough analysis based on granular data in order to obtain a clearer picture of the entities that are really part of the shadow banking system. The FSB suggests operating a narrowing down based on both a qualitative judgement and the development of quantitative risk indicators. Following the entity-based approach, the next section investigates the shadow banking content of captive financial companies domiciled in Luxembourg.

[11] Euro area figures for the item 'other' have been adjusted in line with the revision of Luxembourg financial accounts data for the subsector S.127, whose positions with resident counterparts are now fully reflected.

[12] See Broos et al. (2012) and Van Der Veer et al. (2015) for a presentation of shadow banking in the Netherlands, and more specifically of the shadow banking content of Special Financial Institutions (SFIs).

4 Narrowing down the shadow banking perimeter for Luxembourg captive financial companies

The aim of this section is to apply the FSB methodology to measure the shadow banking content of captive financial companies domiciled in Luxembourg, using as a starting point the database containing the entities that send a statistical reporting to the BCL. The scope of the working document covers almost 2 000 companies with an aggregate balance sheet amounting to about EUR 7 000 billion at the end of 2014. The BCL quarterly balance sheets and the security-by-security reports as well as the audited financial statements available in the Registre du Commerce et des Sociétés (RCS) constitute the main raw material used in this section to run the analysis. The information is completed in some cases with internet sources, in particular when the details of the business model or the name of the parent company are missing in the annual reports.

4.1 Narrowing down the perimeter using an entity-based approach

In a top-down perspective, the FSB methodology suggests to filter the entities that fulfil the criteria corresponding to the *shadow banking* definition i.e. to identify the entities that are part of a credit intermediation chain and that do not fall within the scope of the regulated banking sector. The aim of this section is to narrow down the list of captive financial companies pertaining to the shadow banking perimeter. A brief overview of the regulatory framework and business model of entities comprised in this sector as well as the statistical coverage of the BCL database are presented first.

4.1.1 The scope of the working document: Luxembourg SOPARFIs

Captive financial companies investigated belong to subsector S.127 in the ESA 2010 framework, namely “captive financial institutions and money lenders”. At the end of 2014, this sector comprised almost 25 000 entities in Luxembourg with an aggregate balance sheet of about EUR 8 000 billion, according to the list established by the STATEC based on the centralised balance sheet database.

While detailed information on banks, money market funds, investment funds, and securitisation vehicles were already available at the BCL, data on captive financial companies have only been collected recently for balance of payments statistics purposes under BCL Regulation 2014/17. The units concerned by this Regulation have a reporting obligation if their total assets exceed EUR 500 million. If this is the case, these units have to transmit to the BCL monthly and quarterly information on their balance sheet position, financial transactions as well as details on securities holdings (See Annex I for a detailed presentation of this reporting). At the end of 2014, almost 2 000 entities with an aggregated balance sheet of about EUR 7 000 billion were concerned by this reporting.

Regarding the units whose total assets do not exceed 500 million euro, partial financial position information is available in the RCS collected by the Luxembourg Chamber of Commerce and the STATEC regularly transmits this information to the BCL. The total assets of these remaining units amounted to less than EUR 1 000 billion at the end of 2014. For practical reasons, these units are incorporated neither in the financial accounts nor in the balance of payments statistics published by the BCL. Nor are they included in the scope of the present working document which focuses on reporting entities, thus covering almost 90% of the aggregate balance sheet of all captive financial companies established in Luxembourg.

According to BCL Regulation 2014/17, a financial company is defined as a company whose activity fulfils at least one of the following characteristics:

- investment in any company for any kind of investment;
- acquisition by subscription, purchase, exchange or any other way of securities, shares and other equity investments, bonds, receivables, certificates of deposits and other debt instruments and in general all financial instruments issued by a public or private entity;
- investment, directly or indirectly, in the acquisition and management of a real estate portfolio, of patents or other intellectual property rights whatever the nature or the origin;
- borrowing in any form;
- lending funds to its shareholders, subsidiaries, affiliated companies, and/or any other entity.

This definition fits with the entities that used to be ruled by the 1929 holding company regime, namely SOPARFIs (*Sociétés de participations financières* or financial participation companies) and SPFs (*Sociétés de gestion de patrimoine familial* or Family Wealth Management Companies), whose activities are operated in the unregulated part of the financial sector. SPFs, which have been created to meet the requirements of private banks' individual clients, are governed by the provisions of a special law (the law of 11 May 2007) and are granted a favourable tax status. The SPF is a passive investment vehicle, its objective being strictly limited to the acquisition, holding and sale of financial assets. SOPARFIs are as for them governed by the provisions of general legislation (i.e. Luxembourg company law) and qualify for the participation exemption regime. While the scope of activities that may be undertaken by SOPARFIs is not limited, their business model mainly consists of holding and financing participations in other companies. Overall, only a few SPFs have been detected in the 2 000 entities comprised in the identifying database. Consequently, the working document mainly deals with SOPARFIs.

SOPARFIs are mainly set up in Luxembourg for financial engineering and tax planning purposes. Since SOPARFIs fall under the general income tax law, they can benefit from the provisions of an extensive double taxation treaty network concluded by Luxembourg, and from

the European Union (EU) Directives on the common system of taxation applicable in the EU (such as the Parent-Subsidiary Directive and the Interest and Royalty Directive). In addition, these companies benefit in Luxembourg from a favourable regulatory environment, a highly developed corporate administration services sector, an efficient listing of securities on Luxembourg Stock Exchange, and Luxembourg's membership in the OECD and the EU. The absence of a withholding tax on interest paid, royalties and liquidation proceeds makes SOPARFIs especially effective for tax planning as part of an international structure (see e.g. Bieber et al., 2011, for details). The SOPARFI is subject to the corporate income tax, but dividends and capital gains from participating interests may also be exempted from withholding tax under certain conditions.

Because of the specific features described above, SOPARFIs are usually set up by large companies for the management of intra-group transactions. But SOPARFIs can also be used for different purposes mainly thanks to their special tax regime and the flexibility of their regulatory environment. For example, a SOPARFI can act as a Special Purpose Entity (SPE) on behalf of an Alternative Investment Fund (AIF), or directly conducts lending activities to unrelated parties (Buisine, 2015). Given that SOPARFIs can follow numerous and different financial objectives, they are perfect candidates for being part of a shadow banking chain. Against this background, there is clearly a need to shed some light on this sector and to apply a methodological framework in order to precisely disentangle the entities that may pertain to the shadow banking system.

4.1.2 Narrowing down the list of entities included in the shadow banking perimeter

In view of the one-off analysis applied to this sector, a database with the list of captive financial companies reporting to the BCL for the purpose of balance of payments statistics is set up for the reference period end-of-2014. Overall, the working document covers 1 942 entities with an aggregate balance sheet of EUR 6 961.1 billion. A sequential approach is then adopted to exclude non-relevant entities based on the criteria defined in the FSB methodology.

Most captive financial companies are run from a foreign head office and have virtually no physical presence in Luxembourg. Although the sector provides some spillover effects through the financial services industry, the direct links of these entities with the domestic economy are limited as most of the activity of the group to which they belong takes place outside Luxembourg. Overall, captive financial companies are mainly used to channel funds from or *via* Luxembourg to other entities of the group domiciled abroad. A large proportion of these captive financial companies are affiliated to non-financial groups, such as oil companies, food companies, telecom companies or pharmaceutical firms. These entities are generally pure SPEs used for tax planning and are consolidated in the balance sheet of their parent company. As a matter of fact, a substantial part of international capital flows reflected in balance of payments statistics are originated by intra-group transactions on behalf of international companies headquartered abroad.

In conformity with the FSB definition, the entities that are part of a non-financial group do not qualify as shadow banks as they are not involved in credit or financial intermediation outside their group[13]. Thus, SOPARFIs affiliated to a financial group are the most relevant entities from a shadow banking perspective, since they can operate *de facto* as banks or build up financial stability risks because of their links to banks or related financial institutions, with the channelling of funds *via* Luxembourg being a construction that falls outside the regular banking system. Accordingly, a distinction is first established between captive financial companies affiliated to a non-financial corporation and those affiliated to a financial corporation. To reach this objective, the financial statements of the 1 942 entities that were bound by the BCL reporting at the end of 2014 have been investigated in order to identify the parent company and the affiliated sector of activity. As a consequence, 1 471 entities with an aggregate balance sheet of EUR 5 975.6 billion have been excluded from the shadow banking perimeter because of their affiliation to a non-financial group.

Summing up, the business model of the entities affiliated to a non-financial corporation may be classified in three main categories: (i) Holding companies are used to channel financial flows between group entities *via* Luxembourg without funding their balance sheet from external sources, and their assets mainly consists of participating interests in and loans to other group entities[14]. (ii) Financing companies raise money in Luxembourg by issuing securities on behalf of the group to which they belong and lend the proceeds to other affiliates. Given that these financing flows stay within the group, they cannot be assimilated to credit intermediation (ESRB, 2016). (iii) Treasury management companies centrally manage the liquidity of large corporations to increase financial profitability, by investing cash balances in a securities portfolio usually comprising short-term instruments[15].

The remaining 471 entities, which can be classified as financial SOPARFIs, are affiliated to a financial institution and display together a balance sheet of approximately EUR 985.5 billion. These financial SOPARFIs are broken down in the following Table based on the sector of activity of their parent company.

[13] See e.g. ESRB (2016) for a more detailed discussion on this topic.
[14] See e.g. the case study of an Irish domiciled SPE used in tax efficiency structure (Godfrey et al., 2015, p.55).
[15] While these so-called institutional cash pools have been considered in the literature as an important component of the credit intermediation chain, given their investments in MMFs shares and repo markets (See e.g. Pozsar, 2011), they cannot be assimilated to shadow banks. Indeed, as these entities use the funds of the companies to which they belong, they do not fulfil economic functions EF1 and EF2 defined by the FSB.

Table 2: Financial SOPARFIs broken down by business sector of the parent company (outstanding amount, EUR billion, end of 2014)

	Banks	*Asset management companies*	*Wealth management companies*	*Insurance companies and pension funds*	*Financial services enterprises*	*Sovereign funds and foundations*
Aggregate balance sheet	478.9	269.9	99.6	60.1	41.7	35.3
Number of entities	92	234	46	44	36	19

Source: BCL

In a second step, entities consolidated in the balance sheet of a banking group are also excluded from the narrow definition of shadow banking since their activity is already subject to appropriate regulatory supervision and to liquidity and capital requirements. This information is usually provided in the financial statements and the list of bank subsidiaries is sometimes available on the Internet. In case the information is not available at this stage, a conservative approach is adopted, and the entities remain in the list of potential shadow banks. As a consequence, 77 additional entities with an aggregate balance sheet of EUR 432.0 billion have been removed from the shadow banking perimeter.

Subsequently, entities with a business model that does not engage in credit or financial intermediation and/or does not display any of the economic functions defined by the FSB are also excluded from the narrow measure of shadow banking. These entities are affiliated to sovereign funds, pension funds, foundations, insurance companies (not engaged in a credit intermediation chain), private wealth management companies and some companies involved in financial services activities (e.g. custodian, credit scoring companies). In addition, captive financial companies related to equity hedge funds, 'traditional' private equity funds (i.e. funds characterised by an asset portfolio comprising holdings of non-quoted shares), equity REITs (i.e. REITs investing in physical properties[16]) and infrastructure funds are not considered as shadow banks either, as they do not provide credit to the economy. In the same vein, closed-ended investment funds may also be removed from the sample given that the liquidity and maturity transformation risks are substantially reduced in this type of entities, in particular when the use of balance sheet leverage is strictly limited by the regulation (FSB, 2015). As a result of this approach, 137 entities with an aggregate balance sheet of EUR 226.4 billion have been further removed from the shadow banking perimeter.

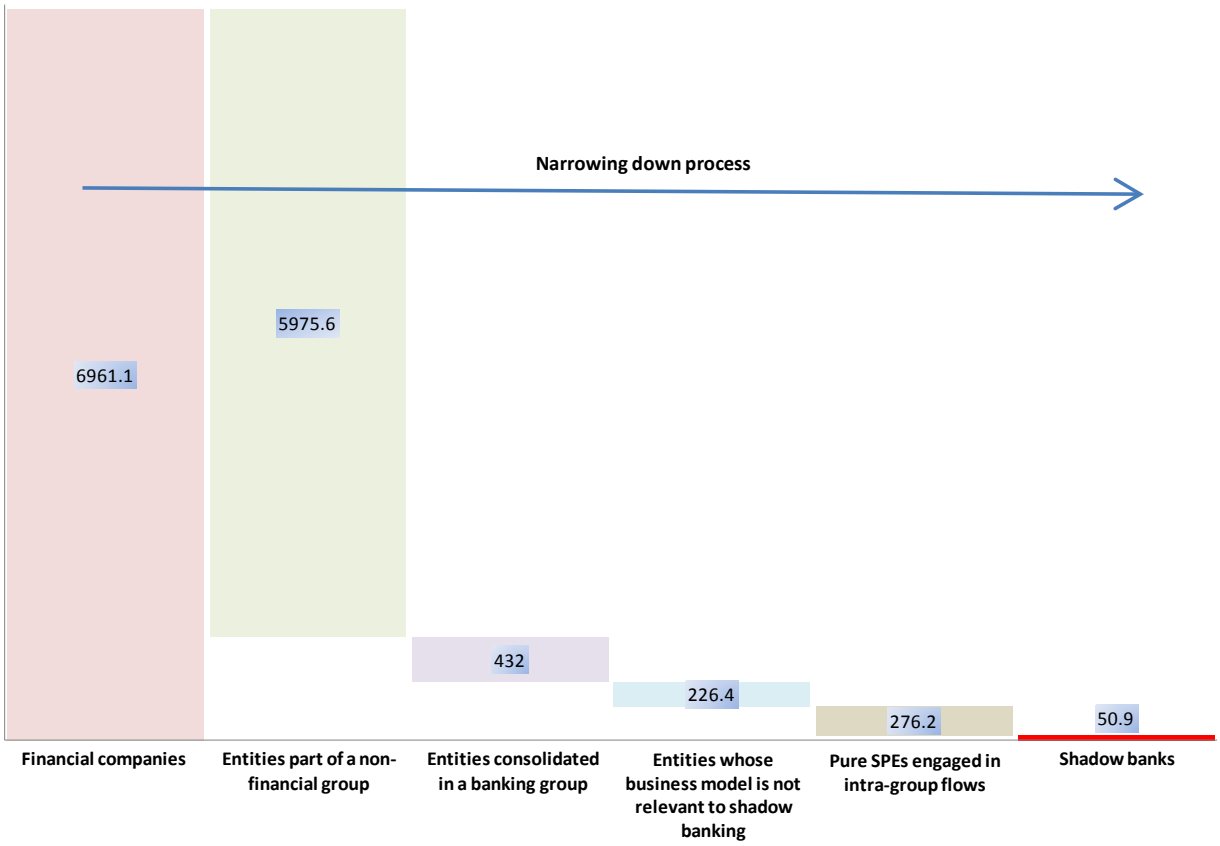
Finally, entities displaying a pure SPE balance sheet with intra-group flows on both the asset side and the liability side are excluded from the narrow perimeter of shadow banking as these entities do not engage in credit or financial intermediation beyond the subsidiaries of the parent company to which they belong. These entities, which are mainly affiliated to alternative investment funds (e.g. REITs, private equity and infrastructure funds) and banks (for which information on the

[16] *"[Equity] REITs typically only invest in and own physical properties and are therefore usually not part of the credit intermediation process, as they neither lend directly to other financial entities nor do they hold fixed income products in any significant way in their investment portfolio"* (FSB, 2014, p.2).

consolidated balance sheets was previously missing), are financed by other group entities and their assets mainly consist of participating interests and loans to other group entities. Overall, these entities do not carry any financial risk as they simply constitute an additional layer in a longer chain of affiliated companies used for intra-group financing. Accordingly, 214 additional entities displaying an aggregate balance sheet of EUR 276.2 billion have been excluded from the shadow banking perimeter.

The results of this gradual narrowing of the shadow banking perimeter are summarised in the following Figure. As a matter of fact, the scope of the study has been reduced significantly. An important conclusion can thus be reached already at this stage of the analysis: aggregate figures based on the OFI sector are largely misleading in the context of the shadow banking sector, in particular for countries like Luxembourg.

Figure 5: Narrowing down of captive financial companies from shadow banking[17]
(outstanding amounts, EUR billion, end of 2014)



Source: BCL

[17] The scope of the study is limited to reporting entities.

Most of the 43 remaining captive financial companies, whose aggregate balance sheet amounts to EUR 50.9 billion, are affiliated to an alternative investment fund active in the credit markets, i.e. directly or indirectly providing credit to the real economy *via* three main categories of financing: direct lending to corporate, (distressed) private debt instruments holdings and acquisition financing for Leveraged Buyout Operations (LBO). To complete the analysis, the shadow banking content of these entities is investigated using granular data on balance sheets and securities holdings. More specifically, indicators of maturity/liquidity transformation, leverage and interconnectedness are calculated to measure the potential risks stemming from these shadow bank activities.

4.2 Quantitative risk metrics of shadow bank activities

This section provides a thorough analysis of the activity of those entities remaining in the shadow banking perimeter. The business models and balance sheet structures of the different categories of entities are presented first. An analysis of the shadow banking content of these entities and the underlying risks that could materialise for the stability of the financial system are then presented. The statistical sources are mainly based on the granular data collected by the BCL and additional information is also extracted from the financial statements published in the RCS.

4.2.1 Business model and balance sheet characteristics

Because of the heterogeneous nature of the activities of captive financial companies it is difficult to categorise the different entities. However, the level of granularity of the data of these reporting entities constitutes a clear advantage for the analysis and monitoring of shadow banking activities in this sector when applying the entity-based approach of the FSB methodology.

Even though the activities of the entities comprised in the narrow perimeter of shadow banking differ, some common characteristics have been identified. Based on the balance sheet structure and nature of the remaining captive financial companies and of their associated parent companies, these entities are classified into four main business models: credit funds, investment companies, private equity funds and REITs. A financial company that cannot be classified into any of these four business models falls into the category “Other”. The breakdown by business model of the aggregate balance sheets of the different categories of captive financial companies involved in shadow banking activities is displayed in the following Table.

Table 3: Balance sheet structure of captive financial companies involved in shadow banking, broken down by business model
(Outstanding amounts, EUR billion, end of 2014)

	CREDIT FUND	INVESTMENT COMPANY	PRIVATE EQUITY FUND	REIT	OTHER	TOTAL
TOTAL ASSETS	**20.8**	**16.9**	**8.3**	**3.6**	**1.2**	**50.8**
Cash and cash equivalents	*1.0*	*2.6*	*0.4*	*0.0*	*0.0*	***4.0***
Loans to affiliated	*1.7*	*0.4*	*2.7*	*3.0*	*0.7*	***8.5***
Loans to non-affiliated	*7.0*	*0.1*	*1.5*	*0.0*	*0.0*	***8.6***
Fixed income securities	*8.3*	*6.9*	*1.0*	*0.0*	*0.0*	***16.2***
Quoted/Mutual funds shares	*0.9*	*6.4*	*0.3*	*0.0*	*0.0*	***7.6***
Participations	*1.2*	*0.0*	*1.7*	*0.0*	*0.0*	***2.9***
Non-financial assets	*0.0*	*0.0*	*0.0*	*0.5*	*0.5*	***1.0***
Derivatives/Other assets	*0.7*	*0.5*	*0.7*	*0.1*	*0.0*	***2.0***
TOTAL LIABILITIES	**20.8**	**16.9**	**8.3**	**3.6**	**1.2**	**50.8**
Loans from affiliated	*14.7*	*11.3*	*5.5*	*0.6*	*0.2*	***32.3***
Loans from a bank	*1.8*	*0.9*	*1.4*	*0.4*	*1.0*	***5.5***
Debt	*2.2*	*1.7*	*0.0*	*2.6*	*0.0*	***6.5***
Capital	*1.4*	*2.7*	*1.1*	*0.0*	*0.0*	***5.2***
Derivatives/Other liabilities	*0.7*	*0.3*	*0.3*	*0.0*	*0.0*	***1.3***
Number of entities	**21**	**6**	**10**	**4**	**2**	**43**

Source: BCL

Credit funds, investment companies and private equity funds are usually financed by their parent companies via the issuance of subordinated or unsubordinated debt, and these entities only differ in the composition of their asset portfolio. Most of the exposures of credit funds consist of loan claims, securities issued by financial vehicle corporations and distressed bonds issued by banks, non-financial corporations or governments. Private equity funds usually distinguish themselves by a portfolio of mezzanine debts associated with LBO strategies, while investment companies display a similar portfolio as mixed funds, i.e. a portfolio comprising cash and cash equivalents, bonds, equities and investment funds shares. However, all these entities have the same liability structure, i.e. these entities are mainly financed by loans from affiliates. As a result, these entities artificially exhibit a balance sheet with a low leverage, a confined maturity transformation activity and a quasi inexistent liquidity risk. At the same time, as the issuance of shares and external market-based funding appear very limited, these entities cannot be classified in any FSB economic function, neither EF1 nor EF2. Overall, these entities are only at the end of a longer international chain and there is no information available regarding the liability structure of the parent entity granting the loans to its subsidiary. This contributes to making the mapping and monitoring of the shadow banking system quite challenging for policymakers. At the opposite, REITs remaining in the shadow banking perimeter have on average a greater leverage ratio than the other categories, as the purpose of these entities is to issue notes on behalf of their group and to lend the proceeds to their parent entity, which is usually engaged in a leasing activity on real estate properties. As a consequence, the liquidity and maturity transformation of REITs is also quite significant.

As indicated in the previous section, nearly half of the remaining entities are linked to a fund active in the credit markets. In the wake of the 2007 crisis, credit markets have emerged mainly as an alternative source of financing for the Small and Medium Enterprises (SMEs) (Kraemer-

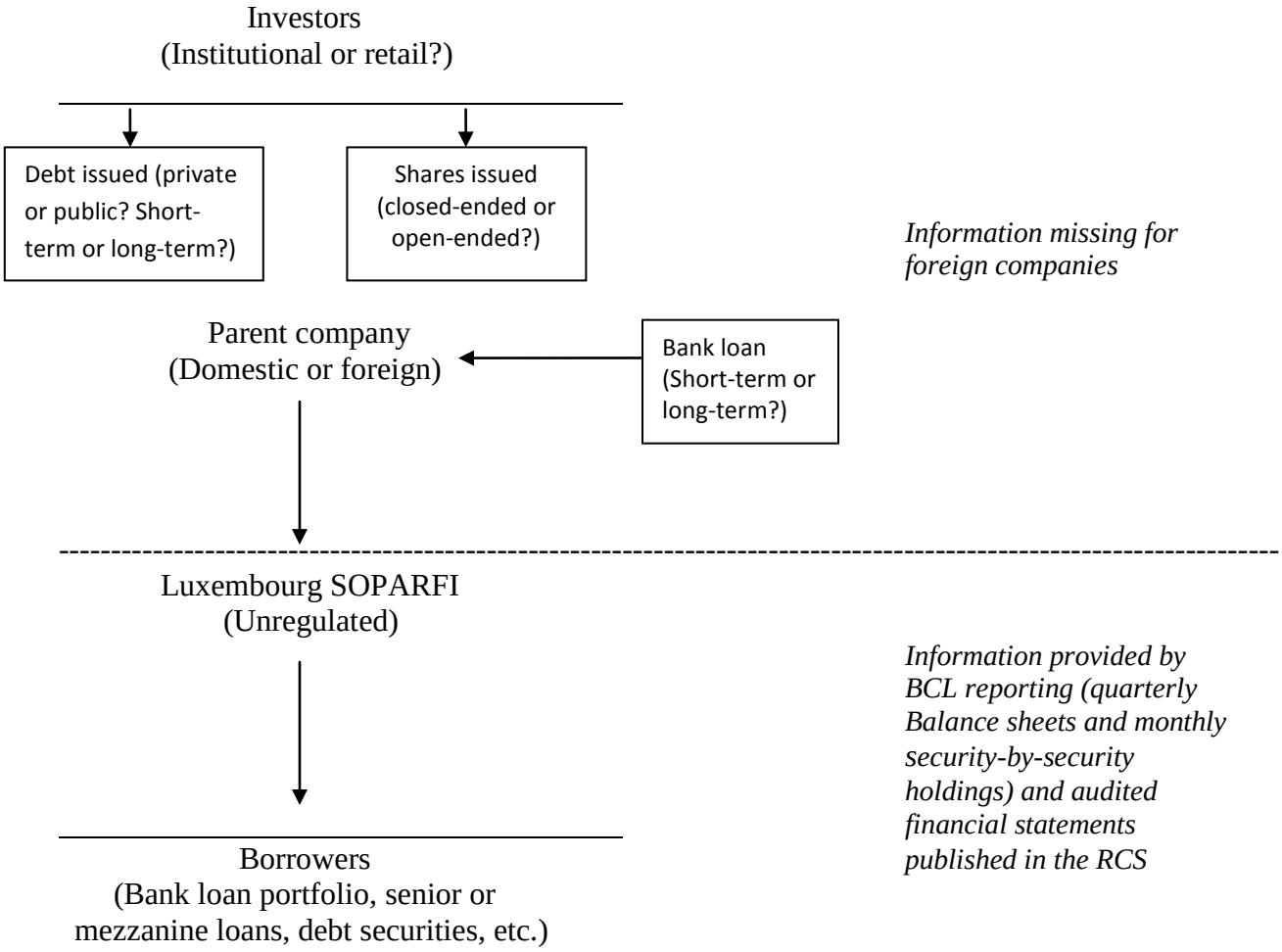
Eis et al., 2014). This development has been underpinned by increased banks' reluctance to finance SMEs and by some investors' appetite for instruments with a higher yield compared to traditional fixed income securities. Investment funds active in the credit markets are an important element of the shadow banking system.

Contrary to some EU countries which explicitly adopted a regulation for loan funds or credit funds (European Securities and Markets Authority, 2016), Luxembourg has not implemented a specific law for this type of activity. Nevertheless, the Luxembourg regulatory and legal environment is flexible enough for private debt fund managers to conduct lending activities on a large scale. In particular, Luxembourg unregulated holding companies[18] (i.e. SOPARFIs) may grant loans directly. However, a raising vehicle typically invests in the SOPARFI, which subsequently invests in the target portfolio. This two-layer investment structure involving a SPV illustrates the synergy between alternative funds (e.g. private equity funds, REITs or hedge funds) and SOPARFIs. The majority of alternative funds prefer investing *via* non-regulated vehicles for multiple reasons such as privacy concerns, costs and investors/targets/management profiles.

The following diagram displays some typical models of shadow banking activities run by a (domestic or foreign) private debt funds and involving a Luxembourg SOPARFI.

[18] However, SOPARFIs may be supervised by the CSSF if they are managed by an authorised Alternative Investment Fund Manager (AIFM). SOPARFIs may also be indirectly regulated by the European Market Infrastructure Regulation (EMIR) if they are engaged in derivative trading, by the Prospectus and Transparency Directives if they issue debt publicly, and may also be concerned by the Securities Financing Transaction Regulation (SFTR) recently adopted by the European Commission. However, most of these entities still remain outside the regulatory perimeter, which represents challenges for authorities engaged in mapping and monitoring the shadow banking system.

Figure 6: Typical structures involved in lending activities and using Luxembourg SOPARFIs



Source: BCL

On the asset side, the composition of private debt funds' portfolios may include direct holdings of loan claims (credit funds), distressed debts (distressed debt funds), venture debts or mezzanine investments (private equity LBO funds). On the liability side, different types of instruments may be used by these non-bank lenders to finance their activity, ranging from bank loans to the issuance of public or private debt as well as closed-ended or open-ended shares.

As far as financial engineering is concerned, Luxembourg is a hub that often serves as a link in a longer chain. Given the international dimension of Luxembourg and the fact that shadow banking entities are part of a long intermediation credit chain, it is sometimes difficult to measure accurately the shadow banking content of these entities. As illustrated in the example above, when a financial company holding a portfolio of loan claims is entirely financed from an affiliated credit fund located abroad, it is not possible to determine if the fund is open-ended or closed-ended. To get a full picture, it would be necessary to consolidate the balance sheet of this entity with the balance sheet of the entity located abroad, an information that is missing for such an analysis[19]. For the same reason, the classification of these entities in an economic function defined by the FSB or the assessment of the maturity/liquidity transformation and the use of leverage by these shadow banks is a challenging exercise.

Despite these difficulties, some quantitative indicators are built in the following section using the balance sheets and securities portfolios of individual entities in order to measure the risk associated to the shadow banking content of these entities.

4.2.2 Shadow banking content of captive financial companies

According to the "top-down" methodology, the FSB suggests analysing the detailed balance sheets of the entities included in the narrow perimeter in order to define layers of shadow banks against the background of their involvement in the following activities: (i) credit provision, (ii) maturity transformation, (iii) liquidity transformation, (iv) use of leverage, (v) imperfect credit risk transfer, (vi) interconnectedness with the financial sector and, in particular, banks, and (vii) size of assets. While (ii), (iii) and (iv) are related to risks directly related to the business model of the entity, (i), (v), (vi) and (vii) are related to the propagation effects to the financial system in case the entity gets into a difficult situation. All these risk indicators are computed based on the statistics collected by the BCL and the audited financial statements published in the RCS.

Extent of credit provision

The role of shadow banks in a credit intermediation chain is a crucial dimension of the FSB definition. A negative shock affecting the viability of these entities could lead to a credit crunch directly *via* their holdings of loan claims or debt issued by non-financial corporations, or indirectly *via* their funding of institutions providing credits to the real economy, namely banks

[19] The same problem occurs when a SOPARFI feeds a hedge fund domiciled abroad. If no information is available neither in the RCS nor on the Internet to determine the investment policy of the master fund, it is not possible to determine if the entity should remain in the shadow banking perimeter.

and securitisation vehicles. The indicator used to measure the extent of credit provision (CP) is the following:

CP = (cash deposits + loans to non-affiliated + holdings of debt securities) / Total assets

Maturity/liquidity transformation and leveraging

Before carrying out any computation, it is necessary to first define the degree of maturity and liquidity of the different assets and liabilities and then to apply the appropriate weights to obtain the maturity transformation and liquidity transformation indicators.

Regarding maturity, a distinction must be made between original maturity and residual maturity. Original maturity is the time between the issue date and the maturity date of a financial instrument, while residual maturity is the time remaining until the expiration or the repayment of a financial instrument. Therefore, the residual maturity can be considered as a better measure than the original maturity to assess balance-sheet vulnerabilities, even though the former is often more difficult to obtain in the case of captive financial companies.

The liquidity concept is a relationship between the time dimension (how long it will take to sell an asset) and the price dimension of an asset (Bodie et al., 2013). It describes the degree to which an asset or security can be quickly bought or sold in the market without affecting the price of the asset. While the application of the liquidity concept is relatively straightforward for the assets, the liquidity (or volatility) of liabilities is mainly based on maturity (time dimension), i.e. the date at which the obligation is due. It is generally admitted that the less time before the obligation (liability) is due, the more liquid (or volatile) the liability is. For example, debts that can be called upon immediately, like deposits without a fixed term, are considered liquid liabilities while debt securities that mature in 10 years are considered illiquid liabilities. It should be noted that while this time dimension is crucial to assess the liquidity of liabilities, the liquidity of an asset is not only relying on its maturity as an asset can always be sold on a market whatever its maturity date. For example, a 10-year bond issued by the US government is usually considered a more liquid asset than a 2-year bond issued by a US private company or an emerging market debt issued by a government.

Once maturity and liquidity are defined, direct information is combined with assumptions in order to define the degree of maturity and liquidity of the different balance sheet items[20]. The

[20] In the ECB and ESRB reports on shadow banking (Bakk-Simon et al., 2012, ESRB, 2016), short-term assets/liabilities include currency, all deposits, short-term debt securities, short-term loans, financial derivatives, quoted shares, mutual fund shares, and other accounts receivable/payable. All other financial instruments are included in long-term assets/liabilities.

classification of the different balance sheet instruments used to assess the maturity and liquidity transformation of captive financial companies is summarised in Annex II.

Information on residual maturity is available for debt securities as the security-by-security database of the BCL contains detailed information on the maturity date of these instruments. The Weighted Average Maturity (WAM) can thus be calculated on both the asset side and liability side of the balance sheet. Debt securities that have a residual maturity of less than one year are considered as short-term instruments, debt securities with a residual maturity larger than one year and less than five years are considered as medium-term instruments, and debt securities with a residual maturity larger than five years are considered as long-term instruments.

For the other balance sheet instruments, information on residual maturity is more difficult to capture and therefore requires some assumptions.

Loans to affiliated companies/shareholders, which represent 16.7% of the total assets of the remaining 43 entities, could be considered as a short-term maturity instrument due to the special relationships between the parties involved in the loans contracted. However, a qualitative assessment is required in most cases so that the maturity of these loans is contingent to the business model of the parent company, i.e. to the underlying assets these loans are financing. For example, in the case of REITs, these loans, which are funded by the issuance of notes, finance the real estate leasing activity of the parent company. Consequently, in this case these loans are considered as a long-term maturity instrument given the nature of the underlying assets, namely residential and commercial buildings.

In the same vein, on the liability side, loans from affiliated companies/shareholders, which represent 63.6% of the total liabilities of the remaining 43 entities, could be considered as a long-term maturity instrument. This assumption would however not reflect the real business model of the entity, as the maturity of these instruments should take into account the funding structure of the parent company providing these loans. For example, in the case of a credit fund using a SOPARFI to target its debt portfolio, loans from affiliates could also be financed with a closed-ended or an open-ended issuance of shares. As this information is missing in most cases, these loans are conservatively considered as medium-term liabilities, at least when the entity is affiliated to a credit fund.

Cash deposits, which represent 7.9% of the total assets of the remaining 43 entities, can reasonably be considered as short-term instruments. At the opposite, loan claims to the non-bank private sector are categorised as long-term instruments. These loans, which represent 16.9% of the total assets, mainly reflect the business model of the entities affiliated to a credit fund. On the liability side, loans from banks, which represent 10.8% of the total liabilities, are categorised according to the information reported to the BCL and/or the information available in the financial accounts published in the RCS. Bank loans that have a residual maturity of less than one year are considered as short-term instruments, bank loans with a residual maturity larger

than one year and less than five years are considered as medium-term instruments and bank loans with a residual maturity larger than five years are considered as long-term instruments.

The category “Equity and investment fund shares/units”, representing 20.7% of total assets, consists in quoted shares and mutual fund units, which are considered as short-term assets, and unquoted shares, which are considered as medium-term assets. The item “capital, share premiums, reserves and results brought forward”, which represents 10.2% of the total balance sheet of the remaining entities, is classified as a long-term liability.

Non-financial assets, which mainly comprise land and buildings or machineries, are as for them classified as long-term assets. Finally, “derivatives”, “other assets” and “other liabilities” are considered as short-term assets and liabilities. “Other assets” and “other liabilities” mainly consist in interests or trade credits becoming due or payable within one year.

As regards the degree of liquidity of the various balance sheet items, the classification into short-term /liquid, medium-term/semi-liquid and long-term/illiquid applies, except for debt securities holdings. Debt securities with an International Securities Identification Number (ISIN) could, in a simplified way, be considered as liquid assets, while debt securities without an ISIN could be considered semi-liquid assets. Nevertheless, assessing the liquidity of debt obligations is complex and a qualitative judgement may also be applied when necessary. In particular, debt securities issued by distressed companies/countries are considered illiquid even with an ISIN code. In addition, as for maturity, the liquidity of loans to and from affiliates is assessed against the business model of the parent company, thus relying on a qualitative judgement.

Once the maturity and liquidity of the different balance sheet items have been classified, some indicators can be computed to assess the maturity and liquidity transformation operated by the captive financial companies remaining in the narrow perimeter of shadow banking[21].

In order to evaluate the degree of maturity transformation (MT) operated by the remaining captive financial companies and to assess whether these entities use short-term funds to finance long-term assets, the following indicator is calculated at the individual level:

$$MT = [\text{long-term assets} + 0.5*(\text{medium-term assets}) - \text{long-term liabilities} - 0.5*(\text{medium-term liabilities})] / \text{Total assets}$$

The value of this maturity transformation indicator ranges from "1", when the entity fully finances long-term assets with short-term debt, to "- 1", when the entity fully finances short-term

[21] The formulae used for the computation of the maturity and liquidity transformation indicators are inspired by the work of Berger and Bouwman (2009).

assets with long-term liabilities. Therefore, entities that show a positive ratio conduct a maturity transformation operation in their balance sheet, thereby reflecting a characteristic of a shadow banking activity.

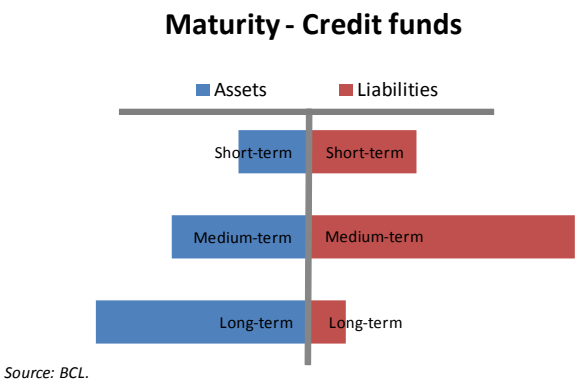
The liquidity transformation indicator (LT) is computed according to the following formula:

LT = [illiquid assets + 0.5*(semi-liquid assets) - illiquid liabilities - 0.5*(semi-liquid liabilities)] / Total assets

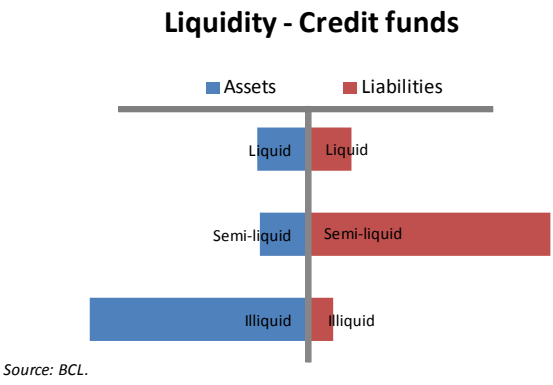
This indicator provides a measure of the liquidity created by captive financial companies. As LT is reported to total assets, its value ranges from "1", when the entity fully finances illiquid assets with liquid liabilities (liquidity creation), to "- 1" when the entity fully funds liquid assets with illiquid liabilities (liquidity destruction). Therefore, entities with a positive LT conduct a liquidity transformation operation in their balance sheet, thus illustrating a shadow banking content.

Chart 2 below provides an overview of the degree of maturity and liquidity mismatches in the balance sheet structure of shadow banks broken down by business model.

Chart 2: Balance sheet structure of shadow banks - Degree of maturity and liquidity broken down by business model (EUR, billion, outstanding amounts, end of 2014)



Source: BCL.



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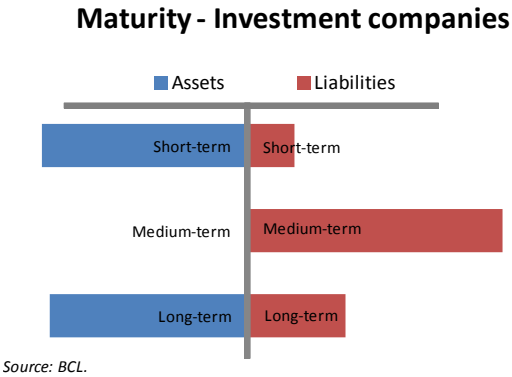

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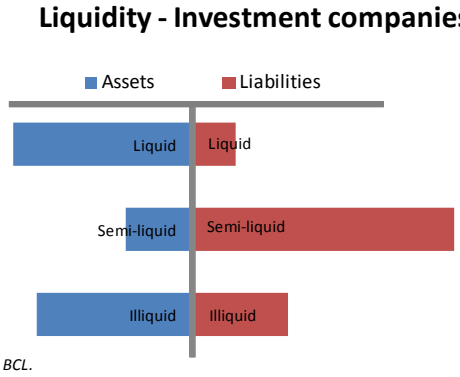

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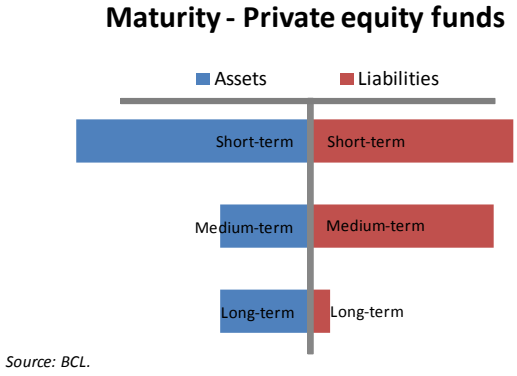

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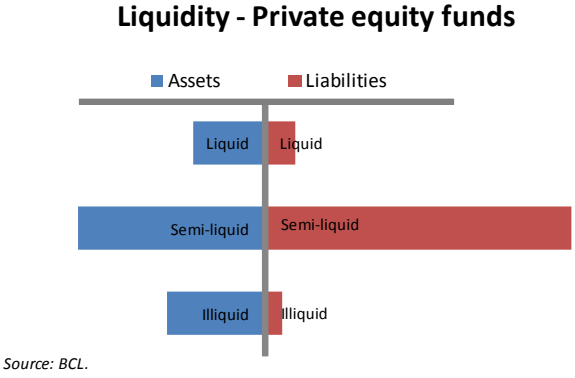

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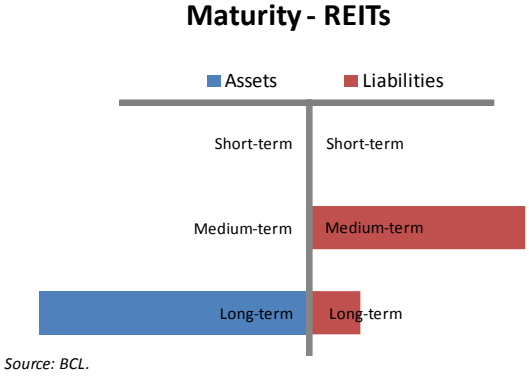
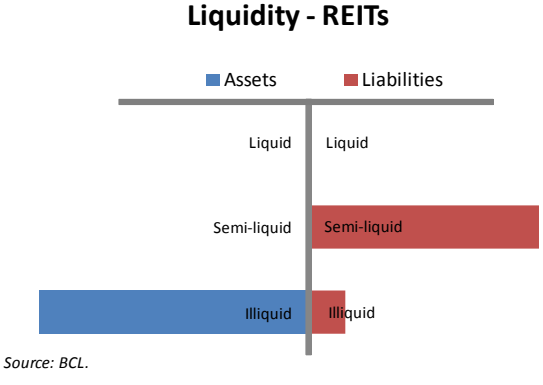


Source: BCL.



Source: BCL.

Finally, the debt leverage (DL) indicator is calculated as follows:

DL = (Total assets - capital - loans from affiliates) / Total assets

For captive financial companies, leverage may arise from the issuance of debt securities, bank borrowing, collateralised borrowing from prime brokers or through repo markets, as well as from derivative exposures. The vast majority of these entities are not leveraged since they are largely financed by loans from affiliates. However, it is worth noting that, as mentioned above, the information is usually missing to consolidate the balance sheet of the SOPARFI with the one of the parent company. As a consequence, this indicator may be biased, e.g. when the parent entity entirely finances the loan to the SOPARFI by borrowing to a bank or by issuing market debt.

The degree of risk at the individual company level combining this information is then evaluated by a composite indicator (CI) derived from the following formula:

CI = (0.5*MT + 0.5*LT) / (1 - DL)

This composite indicator, which provides a synthetic measure of the shadow banking content of captive financial companies, is computed for each of the remaining entities. A high level of risk, characterised by a high level of maturity and liquidity transformation combined with the use of a significant debt leverage, is indicated by a value larger than 0.5. Inversely, entities displaying a composite indicator with a value of less than 0 are characterised by a low level of risk. Despite their involvement in a credit intermediation chain and the possibility to use a leveraged balance sheet, these entities do not engage in maturity or liquidity transformation. The results obtained from the computation of this composite indicator are summarised in the following Table.

Table 4: Shadow banking content of Luxembourg captive financial companies (Outstanding amounts, EUR billion, end of 2014)

	High	Medium	Low	Total
Total assets	11.6	27.7	11.6	**50.9**
Number	12	20	11	**43**
Composite indicator	> 0.5	[0 - 0.5]	< 0	

Source: BCL

Typically, a financial company whose parent is a credit fund invests in a loan portfolio funded with loans from affiliates. The balance sheet structure of this company comprises long-term/illiquid asset and liabilities are considered, in this case, as medium-term/semi-liquid. As a result, the maturity/liquidity transformation activity of this entity is reflected in a medium shadow banking content.

While systemic risk may indeed arise when entities perform shadow banking activities (maturity and liquidity transformation associated with a significant debt leverage), the contagion effects to the financial system may depend on other dimensions, namely imperfect credit risk transfer, interconnectedness with other financial institutions and, more specifically, the regular banking system, as well as the size of these entities (FSB, 2015, ESRB, 2016).

Imperfect credit risk transfer

Imperfect credit risk transfer (ICRT) is usually defined in relation with the use of synthetic securitisation, credit derivatives or credit enhancement, i.e. guarantees provided by financial institutions. In the sample of remaining entities, imperfect credit risk transfer is mainly associated with a Credit Default Swap (CDS) portfolio, which is used as the reference indicator and normalised by the size of total assets.

Interconnectedness

Information on interconnectedness is relatively straightforward on the asset side, in particular because captive financial companies report monthly information on security-by-security holdings, which contains detailed information on the sector of activity of the issuer. Concerning the liability side, information is relatively scarce as for the holder of securities issued publicly or privately by an entity. However, the debt relationships with banks or prime broker counterparties are usually specified in the financial accounts published in the RCS.

In order to evaluate the degree of interconnectedness operated by captive financial companies, the following interconnectedness indicator (II) is calculated at the individual level:

II = (cash deposits + debt issued from the financial sector + shares issued by investment funds + loans from banks + amounts due to prime broker counterparties) / Total assets

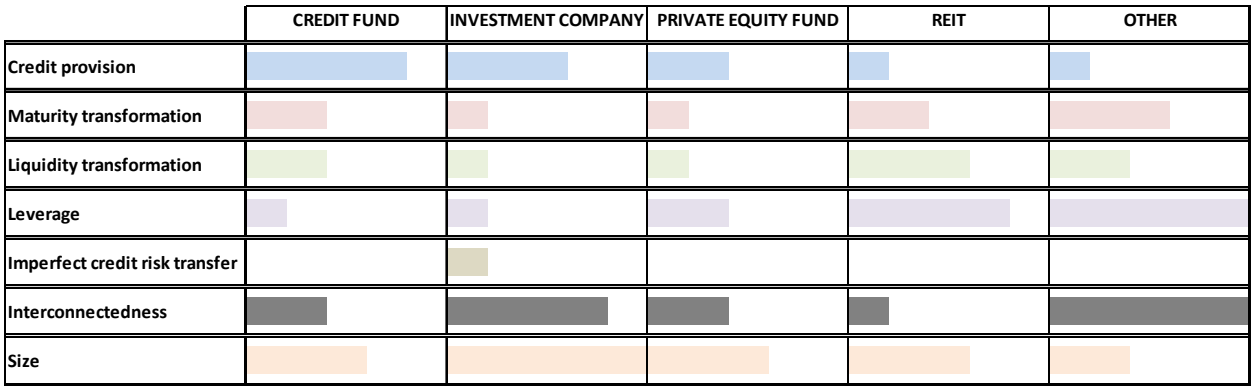
Size

The size of shadow banks is also an important criterion to take into consideration when evaluating the risk for the financial system stemming from a negative shock to their balance sheet. An indicator of size is arbitrarily defined as follows: 0.2 when the total assets of the entity are less than EUR 0.5 billion, 0.4 when the total assets of the entity are comprised between EUR 0.5 billion and EUR 1 billion, 0.6 when the total assets of the entity are comprised between EUR

1 billion and EUR 2 billion, 0.8 when the total assets of the entity are comprised between EUR 2 billion and EUR 5 billion, and 1.0 when the total assets of the entity are larger than EUR 5 billion.

To complete the picture, Table 5 depicts a dashboard encompassing all the dimensions defined above for each of the business models included in the narrow perimeter of shadow banking[22]. The indicators range from 1 to 5 and are weighted by the assets of the individual entities to obtain an aggregate.

Table 5: Shadow banking risks in Luxembourg captive financial companies, broken down by business model



Source: BCL

The results in the Table provide a synthetic view of the various sources of shadow banking risk in the captive financial companies sector. For example, private equity funds seem less involved in credit provision as their portfolio holdings comprise a mix of debts and participations, reflecting to some extent the LBO strategy of these entities. They also distinguish by a less important maturity and liquidity transformation in comparison with credit funds, which hold a higher proportion of longer maturity and less liquid assets in their portfolio. As expected, captive financial companies classified in credit funds are mainly engaged in a credit provision activity. These two categories of entities also display on average a medium level of interconnectedness with the financial system. The degree of leverage, albeit limited on average, may nevertheless be important for some entities using bank loans or issuing market debt to finance their activity.

Investment companies, which display a similar portfolio as mixed funds, are characterised by an important credit provision and interconnectedness with the financial system but score low on other dimensions, as their liability side is mainly composed of loans granted by affiliates. The size of these entities makes them also more systemically important. However, these results should be carefully interpreted as they are largely driven by the important size of a single entity.

[22] The IMF (2014) provides a similar dashboard in Chapter 2 of the 2014 Global Financial Stability Report dedicated to the shadow banking system.

Indeed, at the individual level, some of these investment companies are also engaged in an important maturity and liquidity transformation activity associated with a significant use of leverage as they finance the holding of their bond portfolio through the repo market.

At the opposite, REITs are characterised by a very high leverage due to the fact that these entities issue securities mainly on behalf of their parent companies. They also display a relatively important level of liquidity transformation due to the nature of their business model. Their degree of maturity transformation is less important as these entities finance their leasing activity mainly through long-term funding. Accordingly, their level of interconnectedness and their activity of credit provision are more negligible.

Finally, the captive financial companies classified as 'others' display an important shadow banking content, but a limited credit provision to the real economy. However, these results are not significant, given that this category only comprises two entities. It is also worth noting that the results presented in the Table to illustrate the shadow banking content of the different business models can also be released at the level of each individual entity which is more relevant from the point of view of a monitoring exercise.

5 Conclusion

To conclude, measuring the shadow banking activity of the captive financial companies domiciled in Luxembourg is a very challenging exercise. While the broad definition of the shadow banking perimeter is directly available in the financial accounts published by the BCL, there is clearly a gap in regular statistics to fully analyse the shadow banking activity of this subsector. As a matter of fact, the narrowing down process of the shadow banking perimeter is time and resource consuming as it mostly requires a case-by-case analysis of granular data, which are available in different formats.

Nevertheless, given the size of the aggregate balance sheet of captive financial companies in Luxembourg, this analytical effort is all the more important that the impressive amounts displayed for this subsector could uselessly feed the discussions around the shadow banking perimeter in the euro area. Upon completion of this narrowing down process, the main finding is that a significant part of captive financial companies do not belong to the shadow banking system, even though the aggregate balance sheet of the remaining entities is still a relevant phenomenon.

According to the preliminary findings of a narrowing down exercise applied to end-of-2014 data, only 43 entities with a total balance sheet of EUR 50.9 billion pertain to the shadow banking perimeter. However, at this stage, additional analysis, *inter alia*, are needed for deepening our understanding on this issue in order to assess the potential risks for financial stability. In particular, it is sometimes difficult to fully appreciate the whole chain of shadow banking,

mainly because companies outside Luxembourg are also involved in the process. As an illustrative example, the liquidity risk of these remaining entities on the liability side of the balance sheet appears very limited due to the importance of loans from affiliated companies, so that most of them could not be classified in any FSB economic functions.

In addition, 41 entities established their accounts in conformity with the Luxembourg Generally Accepted Accounting Principles (Lux GAAP). These well recognised accounting standards allow off-balance sheet financing as long as GAAP classification methods are followed. The main objective of off-balance sheet financing is to reduce or maintain a company's debt at or below a required level. By definition, the off-balance sheet financing is not reported to the BCL and therefore the final amount of the shadow banking perimeter and underlying risks may slightly be underestimated.

In practice, the perimeter of the shadow banking activities and the interconnectedness across institutions is difficult to identify due to a lack of statistical sources and transparency in the financial system. The existing statistical reporting framework is useful to analyse the potential risks associated with shadow banks. However, important data gaps still remain. On the one hand, the current statistical frameworks have not been designed specifically for the shadow banking monitoring, and on the other hand, data sources are still missing, in particular concerning derivatives and securities financing transactions. This difficulty is even more important when taking into account the international dimension of the shadow banking system, as evidenced in the case of Luxembourg. The global dimension of shadow banking inevitably raises the question of the improvement of the access for a given country to information already available in other countries in order to assess more accurately the narrow measure of shadow banking. Indeed, this working document emphasises the global interconnectedness of shadow banking entities, and the consolidation of entities domiciled in different countries but participating in the same shadow banking chain could be considered in the narrowing down exercise. This consolidation process would avoid a double counting phenomenon and would thus result in a lower but more accurate measure of the shadow banking activity. From this point of view, the actual development of databases by the ECB like the Securities Holdings Statistics by Sector (SHSS) database and the Register of Institutions and Affiliates Database (RIAD) is an important step in this direction.

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Annex I: Captive financial companies data collection at the Banque centrale du Luxembourg

The Regulation BCL 2014/N°17 of the Banque centrale du Luxembourg (BCL) defines a survey on captive financial companies whose total assets exceed EUR 500 million. A financial company is defined as a company whose activity fulfils at least one of the following characteristics:

- investment in any society for any kind of investment;

- acquisition by subscription, purchase, exchange or any other way of securities, shares and other equity investments, bonds, receivables, certificates of deposits and other debt instruments and in general all financial instruments issued by a public or private entity;

- investment, directly or indirectly, in the acquisition and management of a real estate portfolio, of patents or other intellectual property rights whatever the nature or the origin;

- borrowing in any form;

- lending funds to its shareholders, subsidiaries, affiliated companies, and/or any other entity.

These entities must report to the BCL quarterly balance sheets including positions and some transactions, as well as monthly security-by-security positions. This data collection is an essential pillar of the compilation of financial sector statistics in Luxembourg, as captive financial companies form the main financial subsector in Luxembourg. As stated by Feuvrier (2015), these captive financial companies are usually set up by multinational groups for different reasons, which explain the relatively large size of this subsector in Luxembourg. It should also be noted that while captive financial companies are numerous, their activity is hardly linked to the Luxembourg business cycles.

Captive financial companies provide the BCL with three reports:

- A quarterly full balance sheet at a relatively aggregated level, which must be sent at the latest 20 working days following the end of the period to which it relates;

- A monthly security-by-security report, which must be sent at the latest 20 working days following the end of the period to which it relates. This report includes a relatively high level of detailed information, in particular with respect to the counterpart country (first counterpart), currency and economic sector.

- A quarterly report on transactions affecting some balance sheet items, which must be sent at the latest 20 working days following the end of the period to which it relates.

This statistical framework for the quarterly balance sheet and monthly security-by-security reports of captive financial companies is summarised in the following Table.

Table A.1 - Reporting framework of the captive financial companies

√ = Available. *Blank cell= not available or not applicable.*		Issuer country	Issuer economic sector	Maturity	Frequency	Details level
Assets	Loans granted to shareholders	√	Only 2	Only original	Q	Aggregated
	Loans granted to companies holding at least 10 % of the capital or of the voting rig	√	Only 2	Only original	Q	Aggregated
	Loans granted to sister companies	√	Only 2	Only original	Q	Aggregated
	Loans and deposits to non related entities	√	Only 2	Only original	Q	Aggregated
	Debt securities held	√	All	Original and residual	M	Detailed Security by security
	Equity and investment fund shares/units held	√	All		M	Detailed Security by security
	Non-financial assets	√			Q	Aggregated
	Financial derivatives	√			Q	Aggregated
	Other assets	√			Q	Aggregated
Liabilities	Loans received from shareholders	√	Only 2	Only original	Q	Aggregated
	Loans received from companies holding at least 10% of the capital or of the voring	√	Only 2	Only original	Q	Aggregated
	Loans received from sister companies	√	Only 2	Only original	Q	Aggregated
	Loans received from non related entitities	√	Only 2	Only original	Q	Aggregated
	Short sales of securities	√	All	Original and residual	M	Detailed Security by security
	Debt securities issued	√	All	Original and residual	M	Detailed Security by security
	Capital, share premiums, reserves and results	√	All		M	Detailed Security by security
	Financial derivatives	√			Q	Aggregated
	Other liabilities	√			Q	Aggregated

Source : BCL

Annex II: Classification of balance sheet items according to the degree of maturity and liquidity

		Maturity			Liquidity		
		Short-term	Medium-term	Long-term	Liquid	semi-liquid	Illiquid
Assets	Cash deposits	x			x		
	Loans to affiliated companies	Contingent to the business model of the parent company			Contingent to the business model of the parent company		
	Loans to non-affiliated companies			x			x
	Debt securities held	< 1 year	Between 1 and 5 years	> 5 years	Based on the detailed information reported to the BCL and qualitative judgement		
	Equity and investment fund shares/units held	Quoted	Unquoted		Quoted	Unquoted	
	Non-financial assets			x			x
	Financial derivatives	x			x		
	Other assets	x			x		
Liabilities	Loans from affiliated companies	Contingent to the business model of the parent company			Contingent to the business model of the parent company		
	Bank loans	< 1 year	Between 1 and 5 years	> 5 years	< 1 year	Between 1 and 5 years	> 5 years
	Debt securities issued	< 1 year	Between 1 and 5 years	> 5 years	< 1 year	Between 1 and 5 years	> 5 years
	Capital, share premiums, reserves and results			x			x
	Financial derivatives	x			x		
	Other liabilities	x			x		

Source: BCL