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A TYPOLOGY OF CAPTIVE FINANCIAL INSTITUTIONS AND MONEY LENDERS (SECTOR S127) IN LUXEMBOURG

GABRIELE DI FILIPPO FRÉDÉRIC PIERRET

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Gabriele Di Filippo
External Statistics Section
Department of Statistics
Banque Centrale du Luxembourg

Frédéric Pierret
External Statistics Section
Department of Statistics
Banque Centrale du Luxembourg

Abstract

The paper presents a typology of captive financial institutions and money lenders (sector S127) in Luxembourg. Given data availability, the analysis relies on a sub-sample of the whole population of S127 firms. This sub-sample features S127 firms whose total assets are at least equal to EUR 500 million. As of Q4 2018, this sub-sample represents about 5% of the total number of S127 firms in Luxembourg, and about 85% of the total assets held by S127 firms in Luxembourg. The period of analysis spans Q4 2014 to Q4 2019. In terms of number and on average over the period Q4 2014 – Q4 2019, the sample of S127 corporations regroups holding corporations (42%), intragroup lending companies (25%), mixed structures (19%), conduits (7%) and loan origination companies (4%). These corporations represent about 98% of the total number of S127 companies whose total assets of at least EUR 500 million. The remaining types that complete the sample of S127 entities consist of captive factoring and invoicing corporations, companies with predominant non-financial assets, extra-group loan origination firms, wealth-holding entities and captive financial leasing corporations. In addition, on average over the period Q4 2014 – Q4 2019, holding corporations own the largest share of total assets (55%) followed by intragroup lending companies (22%), mixed structures (14%), conduits (6%) and loan origination companies (2%). These corporations account for about 99% of the total assets held by S127 companies whose total assets are at least equal to EUR 500 million. The relative importance of holding corporations, intragroup lending companies, mixed structures, conduits and loan origination companies suggests that Luxembourg plays the role of a global financial centre for MNEs. The latter benefit from Luxembourg as a financial platform to manage their business activities and structure their corporate investments.

Keywords: Captive financial institutions and money lenders, Sector S127, Typology

JEL codes: C80, C81, L22

Contact: gabriele.difilippo@bcl.lu, frederic.pierret@bcl.lu **Disclaimer:** This paper should not be reported as representing the views of the Banque centrale du Luxembourg or the Eurosystem. The views expressed are those of the authors and may not be shared by other research staff or policymakers in the Banque centrale du Luxembourg or the Eurosystem. **Acknowledgements:** For suggestions and comments, we would like to thank Roland Nockels, Germain Stammet, Ivete Ferreira, Johann Antoine, Alexandre Carreira, Paul Feuvrier, Kola Lendele, Michel Mencagli. We are also grateful to the people that contribute to the collection and compilation of the BCL database on S127 corporations. Any remaining errors are the sole responsibility of the authors.

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Non-Technical Summary

The paper presents a typology of captive financial institutions and money lenders (sector S127) in Luxembourg. Given data availability, the analysis relies on a sub-sample of the whole population of S127 firms. This sub-sample features S127 firms with at least EUR 500 million in total assets. As of Q4 2018, this sub-sample represents about 5% of the total number of S127 firms in Luxembourg and about 85% of the total assets held by S127 firms in Luxembourg. The period of analysis spans from Q4 2014 to Q4 2019.

In terms of number and on average over the period Q4 2014 – Q4 2019, the sample of S127 corporations brings together holding corporations (42%), intragroup lending companies (25%), mixed structures (19%), conduits (7%) and loan origination companies (4%). These corporations represent about 98% of the total number of S127 companies with at least EUR 500 million in total assets. The remaining types that complete the sample of S127 entities consist of captive factoring and invoicing corporations, companies with predominant non-financial assets, extra-group loan origination firms, wealth-holding entities and captive financial leasing corporations. In addition, on average over the period Q4 2014 – Q4 2019, holding corporations own the largest share of total assets (55%) followed by intragroup lending companies (22%), mixed structures (14%), conduits (6%) and loan origination companies (2%). These corporations account for about 99% of the total assets held by S127 companies with at least EUR 500 million in total assets.

The relative importance of holding corporations, intragroup lending companies, mixed structures, conduits and loan origination companies suggests that Luxembourg acts as a global financial centre for multinational enterprises (MNEs), which benefit from Luxembourg as a financial platform for managing their business activities and structuring their corporate investments.

According to the literature (Moyse et al. (2014), Hoor (2018)), several factors can explain the attractiveness of Luxembourg as a platform for MNEs to structure their investment and financing activities. These factors include an open economy, an international tax treaty network and a stable legal and regulatory environment. Moreover, Luxembourg also boasts a qualified, experienced and multilingual workforce and financial infrastructures (e.g. access to the Eurobond market via the Luxembourg stock exchange, clearing entities to settle transactions with Clearstream, large number of foreign banks) that contribute to its integration within the network of financial centres worldwide.

Résumé Non-Technique

L'article présente une typologie des institutions financières captives et prêteurs non institutionnels (secteur S127) au Luxembourg. Compte tenu des données disponibles, l'analyse repose sur un sous-échantillon de la population totale des entreprises du secteur S127. Ce sous-échantillon regroupe les entreprises dont le total des actifs est au moins égal à 500 millions d'euros. En 2018T4, ce sous-échantillon représente environ 5% du nombre total d'entreprises du secteur S127 au Luxembourg et environ 85% du stock total d'actifs détenus par les entreprises du secteur S127 au Luxembourg. La période d'analyse s'étend de 2014T4 à 2019T4.

En terme de nombre et en moyenne sur la période 2014T4-2019T4, l'échantillon d'entreprises du secteur S127 regroupe des sociétés holdings (42%), des sociétés de prêt intragroupe (25%), des structures mixtes (19%), des conduits (7%) et des sociétés de montage de prêts intragroupes (4%). L'ensemble de ces sociétés représente environ 98% du nombre total d'entreprises du secteur S127 dont la taille du bilan est supérieure ou égale à 500 millions d'euros. Les autres types d'entités S127 complétant l'échantillon sont les entreprises captives d'affacturage et de facturation, les sociétés ayant des actifs non financiers prédominants, les entreprises de montage de prêts en dehors du groupe, les sociétés de gestion de patrimoine familial et les entreprises captives de crédit-bail financier. De plus, en moyenne sur la période 2014T4–2019T4, les sociétés holdings détiennent la part la plus importante d'actifs total (55%), suivies par les sociétés de prêt intragroupe (22%), les structures mixtes (14%), les conduits (6%) et les sociétés de montage de prêts (2%). Au total, ces sociétés représentent environ 99% du total des actifs détenus par les entreprises du secteur S127 dont le total des actifs est supérieur ou égal à 500 millions d'euros.

L'importance relative des sociétés holdings, des sociétés de prêt intragroupe, des conduits et des sociétés de montage de prêts suggère que le Luxembourg joue un rôle de place financière internationale pour les entreprises multinationales (MNE). Ces dernières bénéficient du Luxembourg en tant que plateforme financière pour gérer leurs activités commerciales et structurer leurs investissements.

D'après la littérature (Moyse *et al.* (2014), Hoor (2018)), les facteurs relatifs à l'attractivité du Luxembourg en tant que plateforme d'investissement et de financement des MNE peuvent avoir trait à une économie ouverte, un réseau de conventions fiscales internationales ainsi qu'un environnement juridique et réglementaire stable. A cela s'ajoutent la disponibilité d'une main-d'œuvre qualifiée, expérimentée et multilingue et l'implantation d'infrastructures financières (*e.g.* accès au marché des euro-obligations *via* la Bourse de Luxembourg, entités de compensation pour enregistrer les transactions avec Clearstream, disponibilité d'un nombre important de banques internationales) qui contribuent à l'intégration du Luxembourg au sein du réseau de centres financiers internationaux.

1. Introduction

The process of globalisation and its inherent reduction in trade and capital barriers led to intensified competition between corporations worldwide, putting pressure on their production and operating costs. For a corporation, the process of globalisation embodies a host of motivating factors, including the quest for new markets, the search for lower production costs and the access to strategic assets (e.g. skilled workforce, technological expertise, presence of competitors and suppliers with valuable knowledge or experience, etc). In their pursuit of these aims, corporations expanded beyond national borders, giving rise to multinational enterprises.

According to Dunning and Lundan (2008), a multinational enterprise (MNE) is an enterprise that engages in foreign direct investment (FDI) and oversees value-added activities in more than one country[1]. In fact, the geographical segmentation of corporations concurs with a vertical segmentation of their value-added activities leading to the development of global value chains (Cadestin et al. (2018), WB (2020)). Thus, both segmentations contributed to an increase not only in the trade of intermediate inputs worldwide, but also in the flows of direct investment worldwide. In turn, both segmentations added complexity to the structure of MNEs. Competing with their peers at the global level, MNEs frame their business and operational structures in the most strategic and most efficient manner, with regard to costs, risks and taxes[2]. Their organisational structure often takes the form of a parent institution (or headquarters) that controls, directly or indirectly, diverse foreign operational entities located in different jurisdictions and performing various operational activities. MNEs usually control their operational entities by resorting to centralised financial entities. International statistical standards classify these entities within the sector of "captive financial institutions and money lenders" (S127), a sub-sector of the financial companies sector[3].

The manuals of statistics published by the main international bodies define captive financial institutions and money lenders as "institutional units providing financial services other than insurance, where most of either their assets or liabilities are not transacted on open financial

[1] See Dunning and Lundan (2008), p. 3.
[2] See Bolwijn et al. (2018) p. 107. See also Finnerty et al., 2007, "Chapter 6: Structure and Goals of a Multinational Enterprise", p. 71-84.
[3] The financial sector includes the central bank (S121), deposit corporations except central bank (S122), money market funds (S123), non-MMF investment funds (S124), other financial intermediaries except insurance corporations and pension funds (S125), financial auxiliaries (S126), captive financial institutions and money lenders (S127), insurance corporations (S128) and pension funds (S129).

markets. It includes entities transacting only within a limited group of units, such as with subsidiaries or subsidiaries of the same holding corporation, or entities that provide loans from own funds provided by only one sponsor" (OECD (2008), UN (2009), IMF (2009), EC (2013), IMF (2017))[4].

The adjective "captive" means that the financial company is here *owned and controlled by* and typically for the sole use of an organisation: the parent. Within a MNE's structure, captive financial entities generally lie between the decision body (i.e. the headquarters) and the operational affiliates (i.e. those relating to the production activities).

Thereby, captive financial entities can serve different investment and financial purposes by the means of different types of corporations. Whether directly or indirectly, they usually own the share capital of one or several operational entities of the group and can manage the decisions of its subsidiaries. They are often used to optimise the management of liquidities and the financing of a group's entities. Such activities cover the pooling of cash proceeds from the operational affiliates, the granting of intragroup loans, the raising of funds on external markets for lending on behalf of its parent, the centralised management of treasury activities and accounts receivables, etc.

Owing to their role of financial intermediary within the group, captive financial institutions and money lenders are often located in jurisdictions that act as global financial centres and share the following structural characteristics: openness to trade and financial flows, political and economic stability, international tax treaty network, access to different forms of finance, reliable communication and financial infrastructures, skilled and multilingual workforce, etc.

When settled in these jurisdictions, captive financial institutions and money lenders often contribute to an increase, sometimes substantially so, in the flows of foreign direct investment at national level. In this context, there is a need to understand these influential players on the scene of international capital flows. This topic is of importance for Luxembourg since this global financial centre features a large amount of foreign direct investments whose flows are predominantly initiated by captive financial institutions and money lenders[5].

[4] For more information, the reader can refer to OECD (2008)'s Benchmark Definition of Foreign Direct Investment p. 162-163, p. 77-78, UN (2009)'s SNA2008 framework Para 4.113 to 4.114 p. 77-78, IMF (2009)'s BPM6 Para. 4.82 to 4.87 p. 65-66, EC (2013)'s European System of Accounts ESA 2010 Para 2.98 to 2.99 p. 42, IMF (2017)'s Monetary and Financial Statistics Manual and Compilation Guide Para. 3.181 to 3.188, p. 46-47.

[5] See Appendices A and B.

A potential way to understand captive financial institutions and money lenders is to establish a typology of these entities. To our best knowledge, two pioneering papers in the literature came up with elements of a typology for the sector S127: ECB-Eurostat-OECD (2013) and IMF (2018). The ECB-Eurostat-OECD (2013)'s typology relies essentially on qualitative criteria pertaining to institutional sectors and economic activity[6]. In addition to the latter criteria, the IMF (2018)'s typology includes qualitative criteria regarding the resident parent, the production and the FDI pass-through investment. More importantly, the IMF (2018)'s typology puts forward prototype balance sheets assigned to specific types of corporations. Despite the advances made, neither of these papers attempted to test a typology of sector S127 empirically.

Against this background, the paper presents an empirical typology of the sector of captive financial institutions and money lenders (S127) in Luxembourg. From a practical perspective, the paper relies on qualitative criteria applied to firm-level balance sheet data to build a typology of S127 entities. The period spans Q4 2014 to Q4 2019, and the data is taken from the BCL. Given data availability, investigations only cover a sub-sample of the total population of S127 firms as the BCL data regroups S127 firms with at least EUR 500 million in total assets. In terms of number of companies, this sub-sample represents about 5% of the total population of S127 firms in Luxembourg (as of Q4 2018). In terms of total assets, this sub-sample represents about 85% of the total assets held by the total population of S127 firms in Luxembourg (as of Q4 2018).

To understand the typology applied to the sample of S127 corporations in Luxembourg, the paper adopts a multi-faceted approach as it merges different disciplines: law, history, statistics and economics. Bridging these various disciplines leads to a lengthy but comprehensive paper. Such an approach prevents fragmented views on this topic and any ensuing potential misleading interpretation of sector S127. In addition, the paper undertakes a positive approach, rather than a normative one, as it endeavors to present facts objectively.

This paper contributes to the literature in various aspects. It fine-tunes definitions of the potential types of S127 entities along with their respective prototype balance sheets. In addition, the paper presents a simple and robust qualitative method to identify all the potential types of S127 entities. This method highlights not only the prototype balance sheet of S127 entities put forward

[6] Institutional sectors rely on the UN (2009)'s System of National Accounts 2008 (SNA2008) and EC (2010)'s European System of Accounts 2010 (ESA2010) classifications while economic activity is based on the UN (2008)'s International Standard Industrial Classification of All Economic Activities (ISIC), Revision 4.

in the literature (ECB-Eurostat-OECD (2013), IMF (2018)), but also variants of the prototype balance sheets defined in this paper as well as new prototype balance sheets of S127 entities which may be peculiar to the case of Luxembourg. Thanks to this method, it becomes possible to draft an initial empirical typology of S127 entities in Luxembourg, a global financial centre where the sector S127 is of notable importance, particularly in terms of FDI stocks.

It is worth noticing that the paper draws lessons from IMF (2018) that focuses on Special Purpose Entities (SPEs)[7]. SPEs can be found in various sectors, including the sector of captive financial institutions and money lenders (sector S127). However, the paper does not deal with issues pertaining to the definition of SPEs or as to whether a given S127 entity falls under the SPE label. Rather, the focus of the paper is to establish a typology of the sector S127 for the purposes of better understanding this sector.

The remainder of the paper is organised as follows. Section 2 defines the potential types of corporations identified by the literature for the sector S127. This section refines the definition of the potential types of S127 entities and puts forward new or alternative types of prototype balance sheets not considered in IMF (2018). Section 3 describes the building of the database, by taking stock of the different sources of information available. Section 4 presents the methodology to identify the prototype balance sheets of S127 companies within the typology. Section 5 presents the results, and Section 6 presents the conclusions.

[7] IMF (2018) defines a SPE as an entity resident in an economy, that is a formally registered and/or incorporated legal entity recognised as an institutional unit, with no or little employment up to maximum of five employees, no or little physical presence and no or little physical production in the host economy. SPEs are directly or indirectly controlled by non-residents. SPEs are established to obtain specific advantages provided by the host jurisdiction with an objective to (i) grant its owner(s) access to capital markets or sophisticated financial services; and/or (ii) isolate owner(s) from financial risks; and/or (iii) reduce regulatory and tax burden; and/or (iv) safeguard confidentiality of their transactions and owner(s). SPEs transact almost entirely with non-residents and a large part of their financial balance sheet typically consists of cross-border claims and liabilities.

2. Potential types of captive financial institutions and money lenders

This section presents the various types of captive financial institutions and money lenders (sector S127) available in the typology. While drawing on previous works - mainly ECB-Eurostat-OECD (2013) and IMF (2018) - the section refines the definition of each type of S127 entity. In this respect, the section puts forward variants of the prototype balance sheets proposed by IMF (2018) which still comply with the definitions of the types of S127 entities listed in IMF (2018). In addition, the section specifies the economic rationale of resorting to a given type of entity.

2.1 Holding corporations

2.1.1 Definition and prototype balance sheet by IMF (2018)

A holding corporation mainly owns a controlling-level amount of equity in one or more subsidiaries in a passive manner, i.e. without providing any other service to its subsidiaries. Thus, holdings do not administer or manage other units or undertake any management activities. Holdings should be classified in industry NACE Rev. 2 (or ISIC) Section K6420 "Activities of holding companies"[8]. A holding's balance sheet comprises a majority of direct investment equity on the assets side and on the liabilities side. The balance sheet excludes non-financial assets. Hence:

Table 1.1: Holding corporations

Prototype balance sheet (IMF (2018))		Assets	Liabilities
Non-Financial Assets		No	
Direct investment	**Equity**		
	Debt		
Portfolio investment	**Equity**		
	Debt		
Other investment	**Loans**		
	Currency & Deposits		

Source: IMF (2018)

[8] The holding corporations of sector S127 should not be confused with another type of holding referred to as the head office. According to statistical standards (IMF (2009), EC (2010)), head offices should be allocated to the sector S11 and hence considered as a non-financial company (NFC). The reason lies in the fact that contrary to S127 holding corporations, head offices (or S11 holding corporations) often exercise some aspects of managerial and operational control over its subsidiaries and undertake strategic planning or organisational decision of its subsidiaries ((UN (2008)). In addition, the head office sometimes may have noticeably fewer employees, and at a more senior level, than its subsidiaries, but it is actively engaged in production. See also UN (2009), "Head offices and holding companies", Para. 4.53-4.54 p. 68-69.

2.1.2 Proposed balance sheet variants and economic rationale

The IMF (2018)'s prototype balance sheet of holding corporations suits the activities of pure (or passive) holdings. Compared to IMF, this paper distinguishes two categories of holding corporations in its typology: pure holdings and mixed holdings. The main objective of both pure and mixed holding corporations is to hold participations in affiliates so that the equity item (as direct investment) dominates on both sides of the balance sheet. To be considered as direct investment, the holding should own at least 10% of the voting power (or capital share) in its direct affiliate. The IMF (2009)'s BPM6 distinguishes between the influential power and the controlling power in a direct affiliate. To have influential power, the holding must own a capital share between 10% and 50%. To have controlling power, the holding must own a capital share larger than 50%[9]. In addition, compared to pure holdings, mixed holdings can perform other ancillary activities like granting loans (in the form of credit facilities or cash advances to affiliates), pooling cash between affiliates, managing exchange rate risk, holding intellectual property (IP) rights arising from R&D activities inside the group or on behalf of another group, etc. As a result, this paper considers several variants of the IMF (2018)'s prototype balance sheet. These variants comply with the IMF (2018)'s definition of a holding (equity predominates on both sides of the balance sheet), while also allowing for the existence of other balance sheet items not considered in IMF (2018). Hence:

Table 1.2: Variants of holding corporations

Holding the assets (owning controlling level of equity, *E_DI_A*) of subsidiary corporations…

Variants of prototype balance sheet		Assets	Liabilities
Non-Financial Assets		Yes	
Direct investment	**Equity**	***E_DI_A***	***E_DI_L***
	Debt		
Portfolio investment	**Equity**		
	Debt		
Other investment	**Loans**		
	Currency & Deposits		

…on behalf of its parents (*E_DI_L*) or its direct shareholder affiliated to the same parent

Source: Adapted from IMF (2018)

A holding corporation presents several advantages. In the context of vertical and geographical segmentation of their supply chain, MNEs may consider holdings as a suitable tool

[9] Consider the case of two holding companies belonging to different groups. These holdings own the following capital shares in a given subsidiary: 30% for holding A and 70% for holding B. Hence, both holdings perform a direct investment. However, while holding A has influential power in the subsidiary, holding B has controlling power of the subsidiary.

to benefit from economies of scale and organise efficiently the structure of their operational affiliates. A holding company can here not solely own and manage a group of affiliates or subsidiaries in a particular region of the globe but can also regroup other ancillary business functions, including broader regional headquarters and management functions, administrative services, treasury management and/or intellectual property ownership (Finnerty et al. (2007), IBFD (2012)). The use of a holding is even more relevant in the case of a multinational conglomerate where the parent holds subsidiaries in multiple industries located in various jurisdictions worldwide[10].

The borrowing capacity of a group can be increased by using a holding in financial structuring. Indeed, within a simple parent-holding-subsidiary structure, borrowing can be implemented at the parent level, at the holding level and at the subsidiary level, which thus increases the leverage effect of the structure as a whole. For example, private equity investors often resort to holdings for the leveraged buyout (LBO)[11] of companies. Holding structures can also be used for equity dilution. In this case, a holding enables a major shareholder to keep control of the company while involving a larger number of investors in the structure. In the case of a single company, a major shareholder keeps control of the company if third investors purchase 49% of the remaining shares. In comparison, by establishing a parent-holding-subsidiary structure, a major shareholder keeps control of the structure if third-party investors purchase 49% of the shares at the parent level, at the holding level and at the subsidiary level. This increases the number of investors involved in the structure and dilutes the equity, without losing control of the group. Moreover, the parent-holding-subsidiary structure could better suit a pool of investors, as some may be willing to invest only in the holding company while others only in the subsidiary.

In addition, as they benefit from a financial and legal liability separation *vis-à-vis* its affiliates, holdings make it possible to isolate the risks between a group's entities. These risks can arise from different sources and include insolvency, illiquidity, operational risk, foreign exchange risk, etc. Hence, if a subsidiary incurs losses or goes bankrupt, the creditors of the subsidiary cannot legally pursue the holding to recover their claims.

[10] A conglomerate is a multi-industry company - i.e. a combination of multiple business entities operating in different industries under one corporate group - usually involving a parent company and many subsidiaries. Conglomerates often hold large total assets and usually span on a global level.

[11] A leveraged buyout (LBO) is the acquisition of another company using a significant amount of borrowed money to meet the acquisition cost. The assets of the company being acquired are often used as collateral for the loans, along with the assets of the acquiring company.

2.2 Conduit corporations

2.2.1 Definition and prototype balance sheet by IMF (2018)

Conduits raise or borrow funds from unrelated enterprises or the open market and remit those funds to its parent or to other affiliated enterprises. Conduits typically do not transact on the open markets on the assets side. A synonym for conduit is external financing. Conduits should be classified in industry NACE Rev. 2 Section K6499 "Other financial service activities, except insurance and pension funding activities, n.e.c.". A conduit's balance sheet includes a majority of debt (as direct investment) on the assets side. On the liabilities side, equity (as direct investment) and debt securities (as portfolio investment) predominate. Thus:

Table 2.1: Conduit corporations

Prototype balance sheet (IMF (2018))		Assets	Liabilities
Non-Financial Assets		No	
Direct investment	**Equity**		
	Debt		
Portfolio investment	**Equity**		
	Debt		
Other investment	**Loans**		
	Currency & Deposits		

Source: IMF (2018)

2.2.2 Proposed balance sheet variants and economic rationale

The paper considers several variants of the above prototype balance sheet that are in line with the IMF (2018)'s definition of a conduit. The variants allow for the existence of other balance sheet items not considered in the IMF (2018)'s prototype balance sheet.

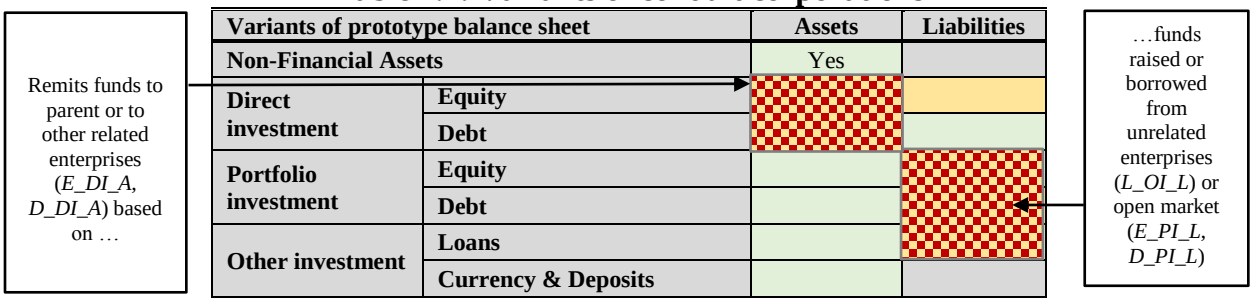
On the liabilities side, while IMF (2018) considers only one source of external funding (i.e. debt as portfolio investment), the paper adds equity (as portfolio investment) and loans (as other investment). The latter two items fall within the scope of the IMF (2018)'s definition as they represent external financing sources, respectively from the open market and from unrelated enterprises.

On the assets side, while IMF (2018) presumes that the remittance of funds by conduits to parent or affiliates only takes the form of debt (as direct investment), the paper considers that conduits can also finance their parent or affiliates with equity (as direct investment). The latter

assumption does not infringe upon the prototype balance sheet of holding corporations (see *infra*, section 2.1).

In addition, while the prototype balance sheet put forward by IMF (2018) presumes that the external financing items are equally predominant with equity (as direct investment) on the liabilities side, the paper assumes that the external financing items can predominate over equity (as direct investment). Additionally, conduits can feature non-financial assets if they do not predominate over debt or equity securities (as direct investment) on the assets side. Hence:

Table 2.2: Variants of conduit corporations



Source: Adapted from IMF (2018)

From an economic perspective, resorting to a conduit means favouring external financing to internal financing. Internal financing represents funding generated within the group and relates to retained earnings, reserves and profits. External financing represents funding sources coming from third parties outside the group. In the case of expensive investments, external financing can be more relevant than internal funding or used as complementary financing sources to internal funding, as the latter may be insufficient or may increase liquidity risk.

2.3 Intragroup lending corporations

2.3.1 Definition and prototype balance sheet by IMF (2018)

Intragroup lending corporations perform lending from and to related companies. Intragroup lending corporations should be classified under the NACE Rev. 2 section K6420 "Activities of holding companies". The balance sheet of intragroup lending corporations regroups a majority of debt (as direct investment) on the assets side. On the liabilities side, equity (as direct investment)

and debt (as direct investment) represent the major items, but debt predominates over equity. The balance sheet precludes non-financial assets. Hence:

Table 3.1: Intragroup lending corporations

Prototype balance sheet (IMF (2018))		Assets	Liabilities
Non-Financial Assets		No	
Direct investment	Equity		
	Debt		
Portfolio investment	Equity		
	Debt		
Other investment	Loans		
	Currency & Deposits		

Source: IMF (2018)

2.3.2 Proposed balance sheet variants and economic rationale

This paper considers variants of the aforementioned prototype balance sheet. While the variants allow for the existence of other items, debt (as direct investment) always predominate, whether on the assets side or on the liabilities side, in line with the IMF (2018)'s definition. Thus:

Table 3.2: Variants of intragroup lending corporations

Lending to related companies (*D_DI_A*). Covers all debt instruments (including PEC and loans)…

Variants of prototype balance sheet		Assets	Liabilities
Non-Financial Assets			
Direct investment	Equity		
	Debt	*D_DI_A*	*D_DI_L*
Portfolio investment	Equity		
	Debt		
Other investment	Loans		
	Currency & Deposits		

…and borrowing funds from related companies (*D_DI_L*) but not on open markets otherwise it is a conduit.

Source: Adapted from IMF (2018)

From an economic perspective, resorting to intragroup lending means favouring internal financing to external financing. Internal financing represents funding generated within the group and relates to retained earnings, reserves and profits. Compared to external financing, intragroup lending often features lower costs and is generally a timesaving solution to finance liquidity needs of a group's entities, especially when the financing requirements are small, due in the short-term and cross-border. In addition, intragroup lending excludes shareholders' approval and collateral requirements. Moreover, internal funding reduces the financial dependence on third parties. The

latter argument can be relevant in times of financial stress when banks tighten credit standards or when financial markets become more risk averse, thereby restricting access to finance. In this context, intragroup lending allows MNEs to pursue business and investment activities by relying on internal funding sources and avoiding any disruption in the provision of financial resources.

Intragroup lending also permits a better allocation of liquidities between the different entities of a group. For example, an entity benefiting from a surplus can lend to another entity (e.g. those registering losses) via an intragroup lending corporation.

Furthermore, the structure of a group can benefit from economies of scale and improve its organisational efficiency if it centralises intragroup financing activities within a single unit. A group can also associate intragroup financing activities with other ancillary activities such as treasury functions that involve the management of cash, debt, liquidity and risks by skilled workers (IBFD (2012)) or administrative functions (e.g. accountancy, IT or consultancy matters, etc).

2.4 Captive factoring and invoicing corporations

2.4.1 Definition and prototype balance sheet by IMF (2018)

Captive factoring and invoicing corporations concentrate the accounts receivable (i.e. invoices or sales claims) of a group. They sell these invoices owed by clients to a third party called "the factor". The latter purchases these invoices and proceeds to an immediate but partial settlement of up to 90% of the amount of the receivables transferred to the captive factoring. The factor then collects the full invoice payment by the client of the group. As a last step, the factor deducts its factoring fees (the discount) and returns the remaining invoice amount. Factoring fees are typically small, so that the captive factoring should receive potentially about 97-99% of the original invoice amount once the factor receives the full payment from the client of the group. According to ECB-Eurostat-OECD (2013), captive factoring should be classified under the NACE Rev. 2 section K6499 "Other financial service activities, except insurance and pension funding activities, n.e.c.".

On the assets side of their balance sheet, captive factoring companies hold a majority of debt (as direct investment) as well as currency and deposits (as other investment) since the latter regroup accounts receivable and invoices. In addition, the share of debt (as direct investment) should be larger than the share of currency and deposits. On the liabilities side, equity (as direct

investment) and debt (as direct investment) represent the major items, but debt predominates over equity. Their balance sheet includes non-financial assets. Thus:

Table 4.1: Captive factoring and invoicing corporations

Prototype balance sheet (IMF (2018))		Assets	Liabilities
Non-Financial Assets		Yes	
Direct investment	Equity		
	Debt		
Portfolio investment	Equity		
	Debt		
Other investment	Loans		
	Currency & Deposits		

Source: IMF (2018)

2.4.2 Proposed balance sheet variants and economic rationale

The paper considers several variants of the aforementioned prototype balance sheet. One variant considers the same prototype balance sheet as IMF (2018) but relaxes the existing condition on non-financial assets. A second variant considers different intensities in the relative proportions of the balance sheet items that characterise captive factoring and invoicing corporations. Hence:

Table 4.2: Variants of captive factoring and invoicing corporations

Variants of prototype balance sheet		Assets	Liabilities
Non-Financial Assets		Yes/No	
Direct investment	Equity		
	Debt		
Portfolio investment	Equity		
	Debt		
Other investment	Loans		
	Currency & Deposits		

Concentrate sales claims and invoicing sales of enterprises

Source: Adapted from IMF (2018)

Resorting to a captive factoring and invoicing corporation can present several advantages for a group (Finnerty et al. (2007), IBFD (2012)).

Factoring enables groups to prevent cash-flow shortages (lower liquidity risk) and ensure the continuing payment of production factors (raw materials, machines, wages, rents, etc). Indeed, a company can face a delay between the production of its output and the payment received from the sale of its products to clients. To circumvent issues relating to late payment of sales invoices

and meet cash needs immediately, a group can resort to a factor that quickly advances the cash payment against the unpaid accounts receivable, in exchange for small fees.

Factoring also permits groups to externalise insolvency issues relating to unpaid accounts receivable. Indeed, the factor takes responsibility for follow-up and bears the recovery risk (or counterparty credit risk) of the transferred receivables, by guaranteeing the invoice payments to the factoring client.

Captive factoring and invoicing corporations can generate economies of scale when used at the group level to merge in a single unit, all or part of the support functions necessary for the affiliates (e.g. pay, accounting, administrative management, IT). This allows affiliates to focus exclusively on their core business and the group to save money and be more profitable through a more efficient organisation.

2.5 Captive financial leasing corporations

2.5.1 Definition and prototype balance sheet by IMF (2018)

The literature generally distinguishes two types of leasing companies: captive financial leasing companies versus operational leasing companies (Finnerty et al. (2007), IMF (2018)). The differences between these two forms of leasing activities mainly relates to the terms of the lease agreement between the lessor and the lessee: the actual owner of the leased asset, the resulting accounting and tax treatment, the bearer of expenses and running costs associated with the leased asset, the length of the lease term and purchase option of the leased asset.

On the one hand, captive operational leasing corporations provide a service agreement in which they, as lessor, purchase and own a non-financial asset that is leased to a lessee for a short time period (ranging from hours, days to years but shorter than the life of the asset). The asset often passes through different lessees over its life. Along with the leased asset, the lessor can also provide required services. The lessor retains the risks of the leased asset and bears the expense and running costs relative to the use of the leased asset. At the end of the lease term, the lessee returns the asset to the lessor and does not have an option to buy the asset. Assets falling under operational lease usually include utility vehicles (e.g. cars, trucks, etc.), office and medical equipment (e.g. computers, telephones, beverage machines, etc). Because the lessor provides a renting service, operational leasing companies relate to the institutional sector S11 of non-financial corporations,

with the industry NACE Rev. 2 section N7730 for "Renting and leasing of other machinery, equipment and tangible goods" (UN (2008)).

On the other hand, captive financial leasing corporations provide a loan agreement in which they, as lessor, purchase the assets on behalf of the lessee for economic use. In return, the lessee proceeds to periodical fixed rental repayments of the principal and interest. The lessee is considered to have ownership of the asset. This means that the asset appears on the balance sheet of the lessee and not on the balance sheet of the lessor. Usually, a unique lessee utilises the asset over the leased period. The latter lasts longer than that of an operational lease and usually exceeds the economic life of the asset. The lessee retains the risks of the leased asset and bears the expense and running costs associated with its use. At the end of the lease term, the financial lease provides the lessee with an option to purchase the leased asset at less than the asset's fair market value. Financial lease generally includes expensive assets like aircraft, freight or passenger trains, boats, plants and machineries, drilling rigs, land and office buildings, etc. Financial leasing corporations relate to the institutional sector S127, with the industry NACE Rev. 2 section K6491 "Financial leasing" (UN (2008)).

According to IMF (2018), the balance sheet of captive financial leasing corporations is similar to intragroup lending corporations. The assets side regroups a majority of debt (as direct investment) as the loan granted by the captive financial leasing usually features a long maturity. On the liabilities side, equity (as direct investment) and debt (as direct investment) represent the major items, but debt predominates over equity. As the lessor does not have ownership of the fixed assets to be leased (see *infra*), the balance sheet of captive financial leasing corporations excludes non-financial assets. Hence:

Table 5: Captive financial leasing corporations

Prototype balance sheet (IMF (2018))		**Assets**	**Liabilities**
Non-Financial Assets		No	
Direct investment	**Equity**		
	Debt		
Portfolio investment	**Equity**		
	Debt		
Other investment	**Loans**		
	Currency & Deposits		

Source: IMF (2018)

Since captive financial leasing corporations feature a unique NACE code across the different types of S127 entities, the paper identifies captive financial leasing corporations based on the NACE Rev. 2 classification code K6491. The NACE code is provided by the STATEC. The paper does not consider any variant of the prototype balance sheet for captive financial leasing corporations.

2.5.2 Economic rationale

From the lessee's perspective, a financial lease is an alternative to borrowing if the lessee cannot afford to purchase the asset based on internal funds (i.e. by relying on its own capital) or is not eligible to get a loan from a bank as the latter implies less flexible conditions (e.g. collateral, higher fees) than financial leasing companies. From the lessor (or captive financial leasing entity)'s perspective, a financial lease agreement is a way to optimise cash management by financing the purchase of assets and then rewarding this loan via periodical fixed payments by the lessee. In addition, the risks are generally contained and externalised since the lessee bears the ownership, the expense and running costs (insurance, maintenance and tax costs) relative to the use of the asset.

2.6 Loan origination corporations

2.6.1 Definition and prototype balance sheet by IMF (2018)

A loan origination corporation finances companies external to the group to which it belongs, based on funding obtained from the parent or from related enterprises. Loan origination corporations fall under the NACE Rev. 2 section K64 "Financial service activities, except insurance and pension funding". On the assets side of their balance sheet, loan origination corporations hold primarily loans (as other investments). On the liabilities side, equity and debt both as direct investment represent the major items, but debt predominates over equity. The balance sheet excludes non-financial assets. Hence:

Table 6.1: Loan origination corporations

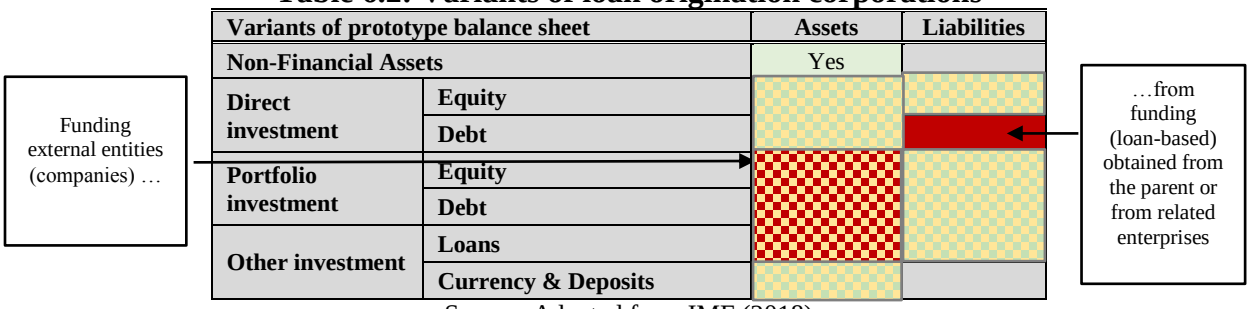
Prototype balance sheet (IMF (2018))		Assets	Liabilities
Non-Financial Assets		No	
Direct investment	**Equity**		
	Debt		
Portfolio investment	**Equity**		
	Debt		
Other investment	**Loans**		
	Currency & Deposits		

Source: IMF (2018)

2.6.2 Proposed balance sheet variants and economic rationale

The paper considers several variants of the above prototype balance sheet. The first variant allows for positive but not predominant non-financial assets. While the IMF (2018) limits the definition of external financing to the granting of loans, this paper considers variants featuring additional external financing items on the assets side: equity and debt, both as portfolio investment. These variants do not infringe upon the other types of S127 entities and comply with the IMF (2018)'s definition of a loan origination corporation. Thus:

Table 6.2: Variants of loan origination corporations



Source: Adapted from IMF (2018)

Loan origination corporations can answer different needs. From the perspective of the group, resorting to a loan origination entity can serve as a temporary financing mean towards a more durable investment. For example, a group can start a preliminary relationship with a third company. To this end, the group will start to finance this third company by granting loans based on internal funds via a loan origination entity. After some time, the group can purchase this third company and include it - as subsidiary or affiliate - within its structure.

Loan origination corporations can also take part in private equity investments and LBO if the amount of the loan predominates over the investment in equity (as direct investment). The latter strategy may suit private equity investment funds.

Loan origination corporations can also conceal financial leasing activities if they perform this activity with entities that do not belong to their group.

2.7 Securitisation vehicles / financial vehicle corporations

2.7.1 Definition and prototype balance sheet by IMF (2018)

Securitisation vehicles or financial vehicle corporations (FVC) carry out securitisation transactions. The securitisation process involves four steps. In the first step, a company (the originator) selects various assets that it wishes to sell or remove from its balance sheet. These assets are individually illiquid and generate regular cash flows (such as interest, dividends, royalties, regular payments from customers or other ongoing revenues). In the second step, the selected assets are pooled together and transferred to a securitisation vehicle (SV). In a third step, the SV issues interest-bearing securities in the market. The SV thus finances the acquisition of these pooled assets *vis-à-vis* the originator by issuing interest-bearing debt securities in the market, whose interest and principal payments depend on and are backed by the assets transferred. Securitisation vehicles should be classified in industry NACE Rev. 2 Section K6499 "Other financial service activities, except insurance and pension funding activities, n.e.c.".

According to IMF (2018), the balance sheet of securitisation vehicles features predominant loans (as other investment) on the assets side. On the liabilities side, equity (as direct investment) and debt (as portfolio investment) represent the major items. However, debt (as portfolio investment) predominates over equity (as direct investment). Their balance sheet may include non-financial assets, but this is not a prerequisite. Hence:

Table 7.1: Securitisation vehicle / financial vehicle corporations

Prototype balance sheet (IMF (2018))		Assets	Liabilities
Non-Financial Assets			
Direct investment	Equity		
	Debt		
Portfolio investment	Equity		
	Debt		
Other investment	Loans		
	Currency & Deposits		

Source: IMF (2018)

2.7.2 Proposed balance sheet variants and economic rationale

The paper considers only slight variants of the aforementioned prototype balance sheet. The assets side is similar to the prototype balance sheet presented in IMF (2018). On the liabilities side, the variants assume that debt (as portfolio investment) always predominates, while allowing for changes concerning the relative importance of other items. Thus:

Table 7.2: Variants of Securitisation vehicle corporations

They securitise assets.

Variants of prototype balance sheet		Assets	Liabilities
Non-Financial Assets			
Direct investment	Equity		
	Debt		
Portfolio investment	Equity		
	Debt		
Other investment	Loans		
	Currency & Deposits		

They issue debt securities, other debt instruments, securitisation fund units, and/or financial derivatives and/or legally or economically own assets underlying the issue of these financing instruments that are offered for sale to the public or sold based on private placements

Source: Adapted from IMF (2018)

From an economic perspective, securitisation provides several benefits to the originator. Via securitisation, specific assets can be removed from the balance sheet of the originator. In so doing, securitisation makes it possible to transfer the asset-related risks from the originator to the investors that purchase the securitised assets. As the SV is legally independent from the originator, investors in securitised assets have limited claims on the originator in case of payment default on the securitised assets or of bankruptcy of the SV.

In addition, securitisation allows the originator to raise funds on capital markets via the selling of securitised assets to investors in the market. NFCs can use this alternative funding method to raise cash for expansion, acquisition or reduce bank debt.

In Luxembourg, the Law of 22 March 2004 rules securitisation vehicles. Given that the latter relate to sector S125 "Other financial intermediaries, except insurance corporations and pension funds"[12], they should not take part of the typology on S127 entities.

2.8 Companies established to manage personal and family wealth

2.8.1 Definition and prototype balance sheet by IMF (2018)

Wealth-holding entities manage personal wealth for individuals or families by holding financial and non-financial assets. Wealth-holding entities include foundations, limited liability companies and family trusts[13], which fall under the category NACE Rev. 2 Section K 6430 "Trusts, funds and similar financial entities".

The assets side of wealth-holding entities features several predominating items, including equity (whether as direct or portfolio investment), debt securities (whether as direct or portfolio investment) and currency and deposits (as other investment). The liabilities side is similar to that of holding corporations with a majority of equities (as direct investment). However, contrary to holding companies, the balance sheet of wealth-holding companies includes non-financial assets. Hence:

Table 8: Personal and family wealth-holding entities

Prototype balance sheet (IMF (2018))		Assets	Liabilities
Non-Financial Assets		Yes	
Direct investment	**Equity**		
	Debt		
Portfolio investment	**Equity**		
	Debt		
Other investment	**Loans**		
	Currency & Deposits		

Source: IMF (2018)

[12] See EC (2013)'s European System of Accounts ESA2010 p. 41.
[13] However, according to UN (2008)'s SNA, if a trust deals with individuals and families on the open market, it should be classified under the appropriate financial subsector, for example, as non-MMF investment funds (S124).

Since wealth-holding entities feature a unique NACE code across the different types of S127 entities, the paper identifies wealth-holding entities based on the NACE Rev. 2 classification code K64.305. The NACE code is provided by the STATEC. The paper does not consider any variant for the prototype balance sheet of wealth-holding entities.

2.8.2 Economic rationale

From an economic perspective, resorting to a wealth-holding entity makes it possible to manage, preserve and develop the wealth of individuals and families and to ensure its transmission to future generations. Personal and family wealth-holding entities can take the form of a single-family office (SFO) or a multi-family office (MFO). The latter are professional organisations featuring a team of qualified professionals (e.g. analysts, accountants, lawyers, jurists, administrative staff, etc.) dedicated to managing the personal fortunes and lives of one or several wealthy families or high-net-worth individuals (HNWI)[14].

A wealth-holding entity permits economies of scale by pooling a large number of different functions into a single entity. Indeed, notwithstanding its main wealth management function, a family office often includes other functions. These relate to administrative activities (financial administration and reporting, legal and tax services, leasing of transportation vehicles, etc.) and family-related activities: family education, counseling services, relationship management, concierge services (e.g. organisation of holidays and business trips, managing domestic staff, monitoring major purchases, etc.) and charity/philanthropy, etc.

While a family office can cover several wealth management activities (e.g. asset allocation, risk management, real estate planning), it still allows investment flexibility to tailor the wealth management strategy to the exclusive needs and objectives of family members. As a result, the structure of a family office is largely dependent on its predetermined mission, wealth management objectives and on the family's size, history and overall owned assets, whether they be real or financial. This explains the presence of several balance sheet items that are of equal importance in the prototype balance sheet presented in Table 8.

[14] The literature defines high-net-worth individuals (HNWI) as individuals holding financial assets (excluding their primary residence) with a value greater than USD 1 million. These individuals can be founders, managers, entrepreneurs and majority owners of family business groups. They are often involved in their family's operating business and are usually an active majority shareholder (Amit et al. (2007)).

2.9 Mixed structures

Beyond the IMF (2018)'s prototype balance sheets and their variants proposed in this paper, additional balance sheet structures unlisted in the IMF (2018)'s typology can still exist. In particular, this paper emphasises the importance of S127 entities whose balance sheet features mixed activities. The paper refers to this new type of entity as mixed structures. The rationale underlying the existence of mixed structures is that they reduce costs and increase organisational efficiency, as they concentrate on different types of activities within a single structure, instead of resorting to multiple entities that perform a specific activity. This suggests that a S127 entity could for example combine the activities of an intragroup lending corporation and a pure holding corporation.

The paper ensures that the prototype balance sheets of mixed structures do not interfere with the prototype balance sheets and the variants of other S127 entities. In this regard, mixed structures should not be confused with mixed holdings which can carry out mixed activities but whose stylised feature is the predominance of equity as direct investment on both sides of the balance sheet.

In retrospect, considering mixed structures would enlarge the scope of the typology, thus improving its suitability to the empirical facts, and more completely identify the various types of S127 entities that prevail within the sample of S127 corporations, thus avoiding the exclusion of any S127 entity from the typology.

3. Data

3.1 BCL data collection on S127 corporations

The BCL collects balance sheet items data for captive financial institutions and money lenders (sector S127). The collection is limited to a sub-population of S127 corporations. Indeed, only corporations whose total balance sheet is at least equal to EUR 500 million must provide periodic reporting to the BCL[15]. The BCL does not collect data for S127 companies with balance sheet smaller than EUR 500 million.

[15] See BCL regulation 2011/8 dated 29 April 2011 and amended by the BCL regulation 2014/17 dated 21 July 2014.

Hence, given data availability, this paper limits its investigations to a sub-sample of the whole population of S127 firms. This sub-sample features S127 firms with at least EUR 500 million in total assets. As of Q4 2018, this sub-sample represents about 5% of the total number of S127 firms in Luxembourg, and about 85% of total assets held by S127 firms in Luxembourg.

Table 9 presents the balance sheet items available in the BCL data collection. As securities items are provided in monthly frequency and non-securities items in quarterly frequency, the paper relies on a quarterly database that spans the period Q4 2014 – Q4 2019. The sample period begins in Q4 2014, as data starting from this period onwards comply with the revised international statistical standards of the IMF (2009)'s BPM6.

The assets side regroups financial assets, non-financial assets and other assets. Financial assets include intragroup loans granted to entities belonging to the same group of the captive financial institution (1-LA2001, 1-LA2002, 1-LA2003) or extra-group loans provided to entities external to the group (1-N02000). Financial assets also cover the purchase of debt securities (1-003000) and equity securities (1-005000). The remaining asset items include non-financial assets (1-006000), financial derivatives (1-007000) and other assets (1-090000). As the latter item includes currency and deposits, it is assumed to proxy the item "currency and deposits" in the IMF (2018)'s prototype balance sheets. The item "total assets" (1-000000) sums the total assets of the balance sheet.

The liabilities side covers financial assets, capital and other liabilities. Financial assets include intragroup loans granted to firms belonging to the same group of the captive financial institution (2-LA2001, 2-LA2002, 2-LA2003) or extra-group loans provided to entities external to the group (2-N02000). Financial assets also regroup the purchase of debt securities (2-003000) and short sales (2-002050). The remaining liability items include capital (2-C05000), financial derivatives (2-011000) and other liabilities (2-090000). The item "total liabilities" (2-000000) sums the total liabilities of the balance sheet.

Table 9: Balance sheet items available in the BCL database

Item	Definition		Affiliation link	Freq.	Item	Definition		Affiliation link	Freq.
1-LA2001	Intragroup loans: loans to shareholders		Yes	Q	2-LA2001	Intragroup loans: loans from shareholders		Yes	Q
1-LA2002	Intragroup loans: loans to companies where the company holds at least 10% of the social capital		Yes	Q	2-LA2002	Intragroup loans: loans from companies where the company holds at least 10% of the social capital		Yes	Q
1-LA2003	Intragroup loans: loans to sister companies		Yes	Q	2-LA2003	Intragroup loans: loans from sister companies		Yes	Q
1-N02000	Extra-group loans		Yes	Q	2-N02000	Extra-group loans		Yes	Q
1-003000	Debt securities	ISIN	No	M	2-003000	Debt securities	ISIN	No	M
		non-ISIN	Yes				non-ISIN	Yes	
1-005000	Equity securities	ISIN	No	M	2-C05000	Capital	ISIN	No	M
		non-ISIN	Yes				non-ISIN	Yes	
1-006000	Non-financial assets		Yes	M	2-002050	Short sales		Yes	M
1-007000	Financial derivatives		Yes	M	2-011000	Financial derivatives		Yes	M
1-090000	Other assets		Yes	Q	2-090000	Other liabilities		Yes	Q
1-000000	TOTAL Assets		Yes	Q	2-000000	TOTAL Liabilities		Yes	Q

Source: BCL

3.2 Matching BCL balance sheet data with IMF (2018)'s prototype balance sheets

Table 10 presents the matching between the balance sheet items available in the BCL database and the items included in the IMF (2018)'s prototype balance sheets.

Table 10: Matching BCL balance sheet data with IMF (2018)'s prototype balance sheets

		Assets (A)		Liabilities (L)	
		IMF (2018) prototype BS items	**BS items available in the BCL database**	**IMF (2018) prototype BS items**	**BS items available in the BCL database**
Non-Financial Assets		***NFA***	1-006000		
Direct investment	**Equity**	***E_DI_A***	1-005000 with *dumAL_A*=1	***E_DI_L***	2-C05000 with *dumAL_L*=1
	Debt	***D_DI_A***	1-LA2001+1-LA2002+ 1-LA2003+(1-003000 with *dumh_A*=1)	***D_DI_L***	2-LA2001+2-LA2002+ 2-LA2003+(2-003000 with *dumh_L*=1)
Portfolio investment	**Equity**	***E_PI_A***	1-005000 with *dumAL_A*=0	***E_PI_L***	2-C05000 with *dumAL_L*=0
	Debt	***D_PI_A***	1-003000 with *dumh_A*=0	***D_PI_L***	2-003000 with *dumh_L*=0
Other investment	**Loans**	***L_OI_A***	1-N02000	***L_OI_L***	2-N02000
	Curr. & Deposits	***CD_OI_A***	1-090000		
Financial derivatives		***Deriv_A***	1-007000	***Deriv_L***	2-011000
Short sales				***SS_L***	2-002050
Other liabilities				***Other_L***	2-090000

Source: IMF (2018) and BCL. NB: The term "BS items" stands for balance sheet items.

3.2.1 Assets side

On the assets side (Table 10), non-financial assets (*NFA*) in the IMF (2018)'s prototype balance sheets correspond with the item "non-financial assets" (1-006000) from the BCL database.

To compute equity as direct investment (*E_DI_A*) and equity as portfolio investment (*E_PI_A*), the paper relies on the item "equity securities" (1-005000) from the BCL database. The distinction between equity as direct investment and equity as portfolio investment depends upon the affiliation link. Section 3.2.3 presents this statistical treatment.

To calculate debt as direct investment (*D_DI_A*) and debt as portfolio investment (*D_PI_A*), the paper uses intragroup loans (1-LA2001+1-LA2002+1-LA2003) and debt securities (1-003000) from the BCL database. Debt securities include hybrid and non-hybrid instruments. The paper considers non-hybrid debt securities as portfolio investment since they are negotiable financial instruments. Conversely, as hybrid debt securities are non-negotiable financial instruments, the paper classifies them in direct investment, along with intragroup loans. Section 3.2.4 provides detailed information concerning the statistical treatment of hybrid debt securities.

Loans (*L_OI_L*) are tallied with extra-group loans (1-N02000) while currency and deposits (*CD_OI_A*) concur with other investments (1-090000).

Compared to the IMF (2018)'s prototype balance sheets, the paper considers an additional balance sheet item available in the BCL database, namely financial derivatives (*Deriv_A*), matching the balance sheet item 1-007000.

3.2.2 Liabilities side

On the liabilities side (Table 10), to compute equity as direct investment (*E_DI_L*) and equity as portfolio investment (*E_PI_L*), the paper utilises the item "capital" (2-C05000) from the BCL database. The distinction between equity as direct investment and equity as portfolio investment relies on the affiliation link. Section 3.2.3 presents this statistical treatment.

To calculate debt as direct investment (*D_DI_L*) and debt as portfolio investment (*D_PI_L*), the paper uses intragroup loans (2-LA2001+2-LA2002+2-LA2003) and debt securities (2-003000) from the BCL database. Debt securities include hybrid and non-hybrid instruments. The paper considers non-hybrid debt securities as portfolio investment since they are negotiable financial instruments. Conversely, as hybrid debt securities are non-negotiable financial instruments, the paper classifies them in direct investment, along with intragroup loans. Section 3.2.4 provides detailed information concerning the statistical treatment of hybrid debt securities.

Loans (*L_OI_L*) correspond to extra-group loans (2-N02000) from the BCL database.

Compared to the IMF (2018)'s prototype balance sheet, the paper considers additional balance sheet items available in the BCL database: short sales (*SS_L*, proxied by the item 2-002050), financial derivatives (*Deriv_L*, proxied by the item 2-011000) and other liabilities (*Other_L*, proxied by the item 2-090000). Overall, the consideration of additional balance sheet items on both sides of the balance sheet allows a full coverage of the balance sheet of S127 corporations in Luxembourg, which is a prerequisite for a robust typology of sector S127.

3.2.3 Treatment of equity securities: disentangling between direct investment (E_DI) and portfolio investment (E_PI)

By definition, a direct investment is an investment in which the investor has controlling power in an entity. Statistical standards define a direct investment relationship if an investor owns at least 10% of the equity shares in a given entity (IMF (2009)'s BPM6).

The paper uses the affiliation link to distinguish equity as direct investment (*E_DI*) from equity as portfolio investment (*E_PI*). The statistical treatment of the affiliation link differs however between equity securities depending on whether they feature an ISIN code (Table 9). An ISIN (International Securities Identification Number) code is a 12-digit alphanumeric number that serves for identification of a financial instrument at trading, clearing and settlement. ISIN codes are mandatory when a financial instrument is issued and traded on a market. This is not the case though for financial instruments not issued on a market. In other words, listed equity securities issued on a market must feature an ISIN code in contrast to unlisted equity securities which are not issued and not traded on a market.

Affiliation link for non-ISIN equity securities

For non-ISIN equity securities, the BCL database provides the affiliation link on the assets side and on the liabilities side. Indeed, S127 companies with at least EUR 500 million in total assets must report this information to the BCL (BCL (2014)).

On the assets side, if the equity securities item 1-005000 features an affiliation link equal to "01" for "equity and investment fund shares/units held at minimum 10% of the capital", then the equity securities item relates to direct investment (*E_DI_A*). Conversely, if the equity securities item 1-005000 differs from the affiliation link "01" then "equity and investment fund shares/units held are at less than 10%", so that the equity securities item is classified as portfolio investment (*E_PI_A*). Hence:

$$\begin{cases} \textit{non-ISIN equity securities as DI (E\_DI\_A)} \\ \textit{non-ISIN equity securities as PI (E\_PI\_A)} \end{cases} \textit{if} \begin{cases} \textit{Affiliation Link} = 01 \\ \textit{Affiliation Link} \neq 01 \end{cases} \textit{then} \begin{cases} \textit{dumAL\_A} = 1 \\ \textit{dumAL\_A} = 0 \end{cases}$$

On the liabilities side, if the equity securities item 2-C05000 presents an affiliation link equal to "04" for "equity and investment fund shares/units held at minimum 10% of the capital", then the equity securities item relates to direct investment (*E_DI_L*). Conversely, if the equity securities item 2-C05000 differs from the affiliation link "04", then "equity and investment fund shares/units held are at less than 10%*"*, so that the equity securities item is classified as portfolio investment (*E_PI_L*). Hence:

$$\begin{cases} \textit{non-ISIN equity securities as DI (E\_DI\_L)} \\ \\ \textit{non-ISIN equity securities as PI (E\_PI\_L)} \end{cases} \textit{if} \begin{cases} \textit{Affiliation Link} = 04 \\ \\ \textit{Affiliation Link} \neq 04 \end{cases} \textit{then} \begin{cases} \textit{dumAL\_L} = 1 \\ \\ \textit{dumAL\_L} = 0 \end{cases}$$

Affiliation link for ISIN equity securities

For ISIN equity securities, the information concerning the affiliation link is not available in the BCL database. The paper derives this information from the Centralised Securities Database (CSDB)[16] and the Securities Holdings Statistics by Sectors (SHSS)[17] data, based on the ratio of the number of securities held by the company over the number of securities listed in the equity market.

On the assets side, the BCL database provides the number of securities held by the company while the CSDB indicates the number of securities listed in the equity market. Hence, for a given company *i* at time *t*:

$$Ratio_t^{Assets,i} = \frac{\sum securities\ held\ by\ the\ company_t^{BCL,i}}{\sum securities\ listed\ in\ the\ market_t^{CSDB}}$$

[16] Operational since 2009, the Centralised Securities Database (CSDB) is a security-by-security database with the aim of holding complete, accurate, consistent and up-to-date information on all individual securities relevant for the statistical and, increasingly, non-statistical purposes of the ESCB. It is a single information technology infrastructure that contains reference data on securities (e.g. outstanding amounts, issue and maturity dates, type of security, coupon and dividend information, statistical classifications, etc.), issuers (identifiers, name, country of residence, economic sector, etc.) and prices (market, estimated or defaulted) as well as information on ratings (covering securities, issuance programmes, and all rated institutions independently of whether they are issuers of securities). The CSDB covers securities issued by EU residents, securities likely to be held and transacted in by EU residents, and securities denominated in euro, regardless of the residency of the issuer and holders. For more information, see ECB (2010) and Pérez and Huerga (2016).

[17] The Securities Holdings Statistics by Sector (SHSS) data, collected on a security-by-security basis, provide information on securities held by euro area resident sectors, broken down by instrument type and selected issuer countries. For more information, see ECB (2015) and ECB-SDW: Home\Statistics\Financial markets and interest rates\Securities holdings statistics.

On the liabilities side, the SHSS database provides the number of securities held by the company while the BCL indicates the number of securities listed in the equity market. Hence, for a given company *i* at time *t*:

$$Ratio_t^{Liabilities,i} = \frac{\sum securities\ held\ by\ the\ company_t^{SHSS,i}}{\sum securities\ listed\ in\ the\ market_t^{BCL}}$$

Once these ratios are calculated, the affiliation link is derived as follows. If the respective company holds a number of equity securities in a given entity that is larger than or equal to 10% (respectively, lower than 10%) of its total number of securities listed in the market, then said company is assumed to have (or conversely not to have) controlling power in the given entity. The equity securities item is then classified as direct investment (respectively, portfolio investment).

Hence, for equity securities on the assets side (1-005000), we get:

$$\begin{cases} \textit{ISIN equity securities as DI (E\_DI\_A)} \\ \textit{ISIN equity securities as PI (E\_PI\_A)} \end{cases} \textit{if} \begin{cases} Ratio^{Assets,i} \geq 10\% \\ Ratio^{Assets,i} < 10\% \end{cases} \textit{then} \begin{cases} dumAL\_A = 1 \\ dumAL\_A = 0 \end{cases}$$

For equity securities on the liabilities side (2-C05000), we have:

$$\begin{cases} \textit{ISIN equity securities as DI (E\_DI\_L)} \\ \textit{ISIN equity securities as PI (E\_PI\_L)} \end{cases} \textit{if} \begin{cases} Ratio^{Liabilities,i} \geq 10\% \\ Ratio^{Liabilities,i} < 10\% \end{cases} \textit{then} \begin{cases} dumAL\_L = 1 \\ dumAL\_L = 0 \end{cases}$$

Table 10 (see *infra*) incorporates the aforementioned statistical treatment for the matching between the IMF (2018)'s prototype balance sheets and the BCL balance sheet data.

3.2.4 Treatment of hybrid instruments within debt securities: disentangling between intragroup loans (D_DI) and debt securities (D_PI)

The balance sheet item "debt securities" (item 1-003000 on the assets side and item 2-003000 on the liabilities side) includes non-hybrid and hybrid instruments[18]. Non-hybrid debt securities relate to portfolio investment (*D_PI*) while hybrid debt securities pertain to direct investment (*D_DI*) and add to intragroup loans. Indeed, as hybrid debt securities are not negotiable on markets, they are considered as direct investment rather than portfolio investment.

To distinguish between debt securities as direct investment (hybrid instruments) or debt securities as portfolio investment (non-hybrid instruments), a potential solution is to use the affiliation link. However, this information is not available for debt securities in the BCL database (BCL (2014)). As a result, the distinction between hybrid and non-hybrid instruments relies on the code and the label name associated with a given debt securities item. Both are available from the BCL database on the asset and liability sides of the balance sheet. Hence, if the security code and the security label name identify a hybrid instrument, then the debt securities item relates to direct investment (*D_DI*) and adds to intragroup loans. Conversely, if the security code and the security label name do not identify a hybrid instrument, then the debt securities item is classified as portfolio investment (*D_PI*). Hence, on the assets side, we get:

$$\begin{cases} \textit{Debt securities (1-003000) as DI } (D\_DI\_A) \\ \textit{Debt securities (1-003000) as PI } (D\_PI\_A) \end{cases} \textit{if} \begin{cases} \text{Hybrid debt securities} \\ \text{Non-hybrid debt securities} \end{cases} \textit{then} \begin{cases} dumh\_A = 1 \\ dumh\_A = 0 \end{cases}$$

On the liabilities side, we have:

$$\begin{cases} \textit{Debt securities (2-003000) as DI } (D\_DI\_L) \\ \textit{Debt securities (2-003000) as PI } (D\_PI\_L) \end{cases} \textit{if} \begin{cases} \text{Hybrid debt securities} \\ \text{Non-hybrid debt securities} \end{cases} \textit{then} \begin{cases} dumh\_L = 1 \\ dumh\_L = 0 \end{cases}$$

[18] According to Finnerty et al. (2007) p. 124, a hybrid instrument is a form of financing that is treated differently by the tax system of the country receiving the finance and by that of the country providing it. Typically, hybrid financing instruments are used in tax planning to obtain a tax deduction in the entity receiving the finance with the corresponding return being totally or partially exempt from tax at the level of the recipient.

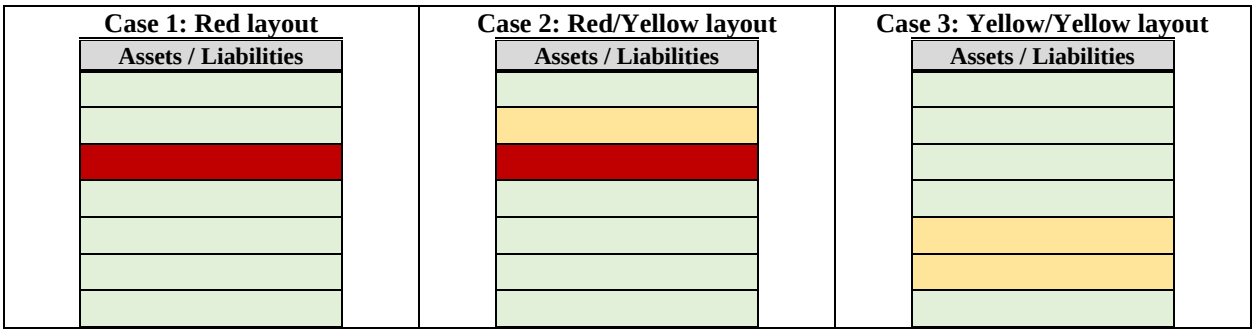
Table 10 (see *infra*) incorporates the aforementioned statistical treatment for the matching between the IMF (2018)'s prototype balance sheets and the BCL balance sheet data.

4. Methodology

4.1 Qualitative approach

The identification of the type of S127 entity within the typology relies on qualitative criteria. The latter analyse the relative predominance of a given balance sheet item over the others. The methodology considers three potential balance sheet layouts.

The first layout (*Red layout*) characterises a balance sheet where only one item predominates strongly over the others. The second layout (*Red/Yellow layout*) represents a balance sheet where one item (*Red*) predominates over the others but with a second item (*Yellow*) which features a relative importance compared to the remaining ones. The first item is thus larger than the second item. The third layout (*Yellow/Yellow layout*) features a balance sheet where no single item predominates over the others but where the sum of two items represents the majority of the balance sheet. The charts below present the three potential balance sheet layouts:



To distinguish between the three layouts, the paper implements a simple methodology applied to the balance sheet of each S127 entity at each time period. The first step starts by classifying the balance sheet items from the largest to the lowest in terms of proportion in the total balance sheet. Hence:

$S=\{s_1, s_2, \dots, s_N\}$, where $s_i > s_j$ for all $i > j$, for $I = 1, \dots, N$ where $s_i = \frac{Balance\ sheet\ item^i}{Total\ Assets}$

A second step identifies the respective layouts based on three conditions. The *existence criterion* analyses whether a specific item features a positive amount and thus exists in the balance sheet. The *predominance criterion* tests whether a specific item predominates over the others in the balance sheet. The *relative predominance criterion* checks whether any second item predominates over the remaining ones (excluding the first predominant item). To this end, this latter condition relies on an indicator of statistical dispersion applied to the distribution of the proportions of a company's balance sheet items.

Hence, in the *Red layout*, the *Red* item s_1 must fulfill the following conditions:

$$\textit{Red layout} \Leftrightarrow \begin{cases} \textit{Existence criterion}: \quad s_1 > 0 \\ \textit{Predominance criterion}: s_1 > (1 - s_1) \\ \textit{Strong predominance over the second largest item}: (s_1 - s_2) > \sigma^2/\mu \end{cases}$$

In the *Red/Yellow layout*, the *Red* item s_1 and the *Yellow* item s_2 must respect the following conditions:

$$\textit{Red / Yellow layout} \Leftrightarrow \begin{cases} \textit{Existence criterion}: \quad s_1 > 0 \text{ and } s_2 > 0 \\ \textit{Predominance criterion}: s_1 > (1 - s_1) \\ \textit{Weak predominance over the second largest item}: (s_1 - s_2) \leq \sigma^2/\mu \end{cases}$$

In the *Yellow/Yellow layout*, the *Yellow* item s_1 and the *Yellow* item s_2 must fulfill the following conditions:

$$\textit{Yellow / Yellow layout} \Leftrightarrow \begin{cases} \textit{Existence criterion}: \quad s_1 > 0 \text{ and } s_2 > 0 \\ \textit{Non-predominance criterion}: s_1 \leq (1 - s_1) \\ \textit{Non-predominance criterion}: s_2 \leq (1 - s_2) \end{cases}$$

4.2 Value added: more granularity in the proposed typology

The paper applies the aforementioned methodology to the balance sheets of S127 entities. The paper then matches the latter balance sheets with the prototype balance sheets defined in section 2 to build the typology. We thus end up with a typology that entails three complementary baskets of prototype balance sheets. The first basket includes the prototype balance sheets defined by IMF (2018). The second basket covers the proposed variants of the IMF (2018)'s prototype

balance sheets. These variants enlarge the scope of specific S127 entity while still complying with their respective IMF (2018)'s definition. The third basket regroups new prototype balance sheets of S127 entities not listed in the IMF (2018)'s typology and which may be peculiar to the case of Luxembourg.

Altogether, the paper puts forward a typology that identifies all the potential types of S127 entities based on their balance sheet structure. Indeed, considering prototype balance sheets beyond those specified in IMF (2018) yields a full coverage of the potential types of S127 firms with larger granularity regarding the specificities of their respective prototype balance sheet.

4.3 Examples of identified prototype balance sheets

The charts below provide examples of prototype balance sheets identified based on the aforementioned methodology. Charts 1.1 to 1.5 present respectively the prototype balance sheet of a holding, a conduit, an intragroup lending company, a captive factoring and invoicing corporation and a loan origination company as defined in the IMF (2018)'s typology. Chart 1.6 presents the prototype balance sheet of a mixed structure that falls outside the scope of the IMF (2018)'s typology. The mixed structure combines the prototype balance sheets of a holding and an intragroup lending corporation.

Chart 1.1: Holding corporation as defined in IMF (2018)

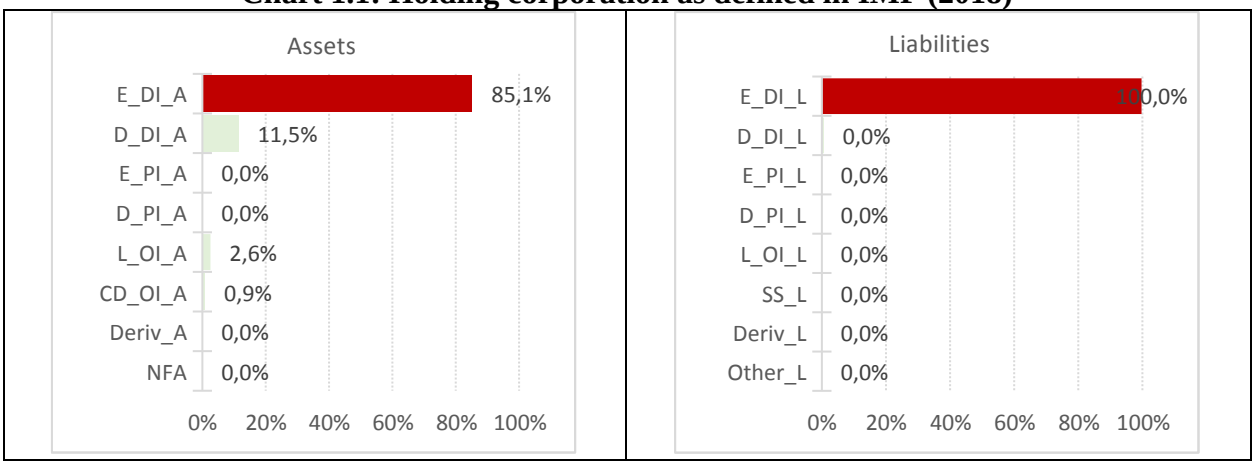


Chart 1.2: Conduit corporation as defined in IMF (2018)

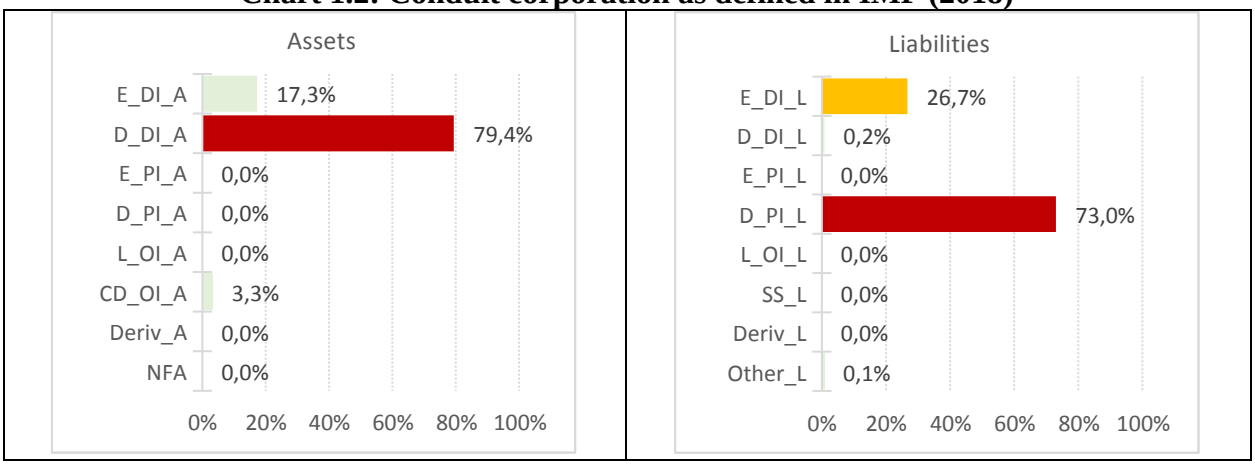


Chart 1.3: Intragroup lending corporation as defined in IMF (2018)

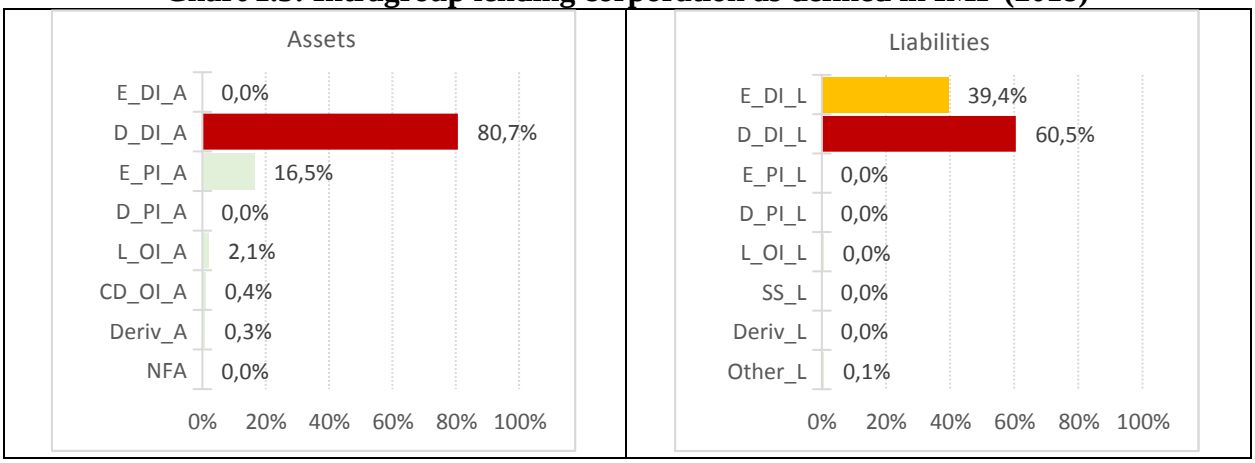


Chart 1.4: Captive factoring and invoicing corporation as defined in IMF (2018)

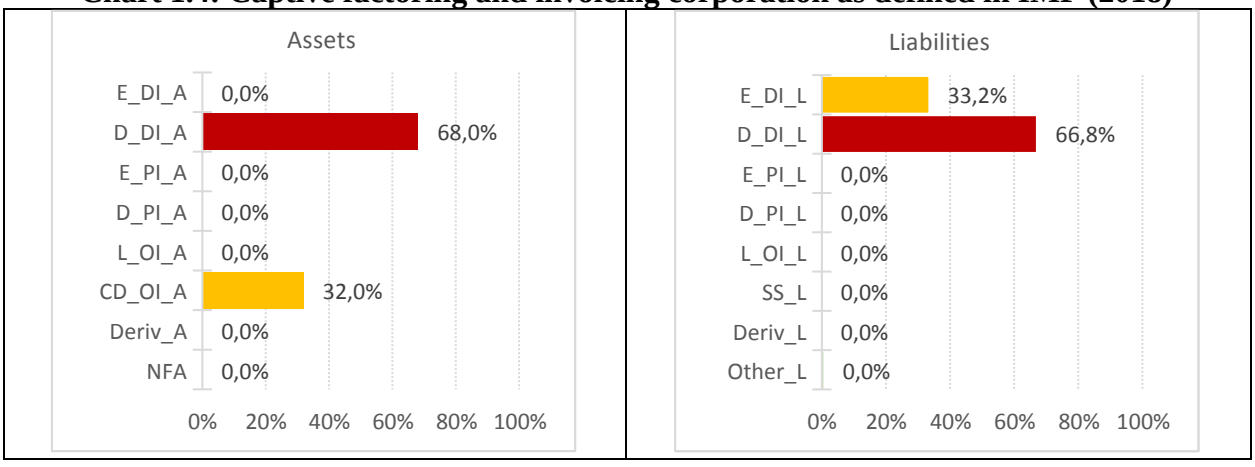


Chart 1.5: Loan origination corporation as defined in IMF (2018)

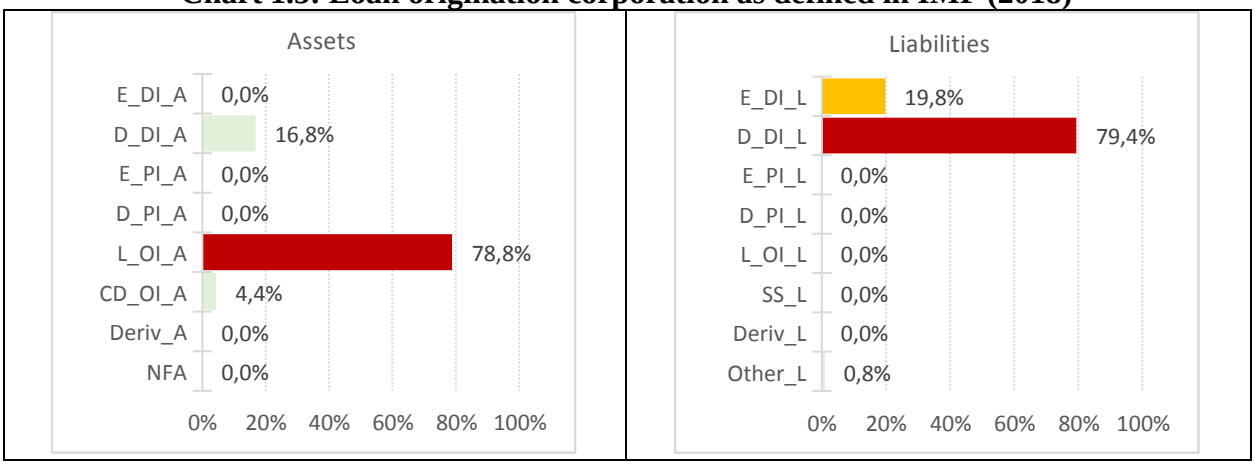
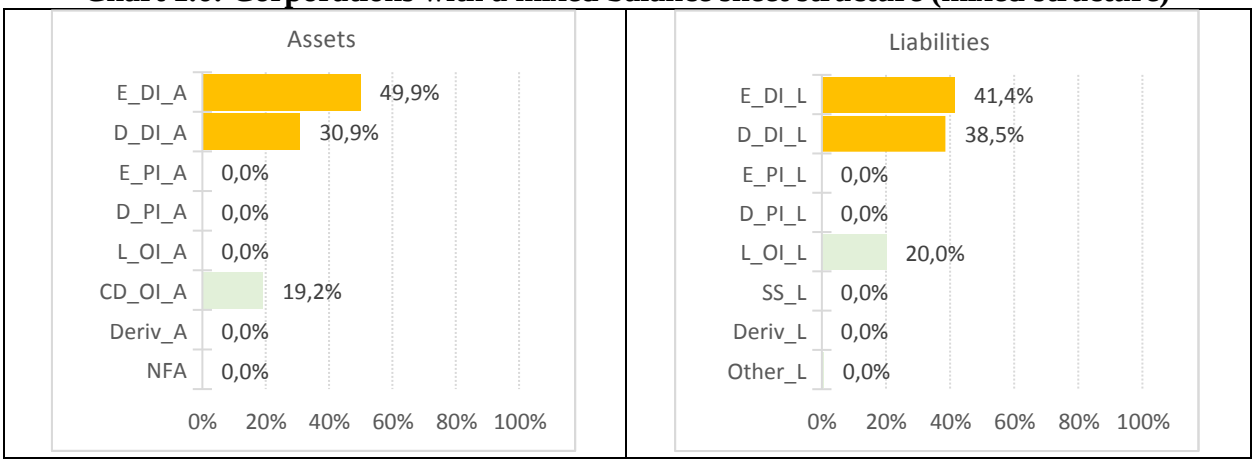


Chart 1.6: Corporations with a mixed balance sheet structure (mixed structure)

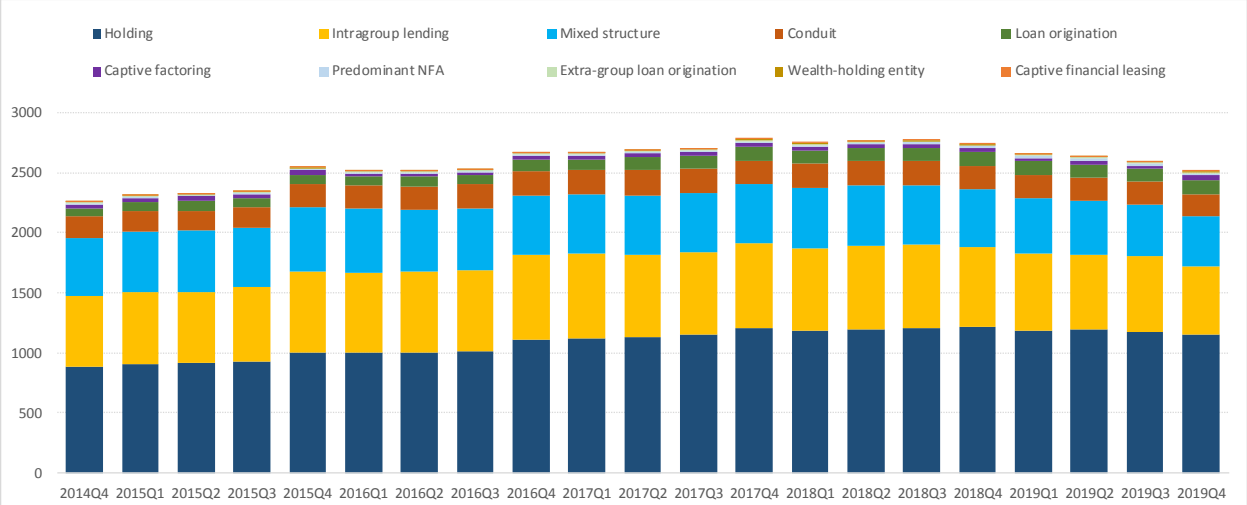


5. Results

5.1 Typology of captive financial institutions and money lenders in Luxembourg

Chart 2 presents the typology of S127 firms in Luxembourg, by number of firms. On average over the period Q4 2014 – Q4 2019, the sample of S127 corporations regroups holding corporations (42%), intragroup lending companies (25%), mixed structures (19%), conduits (7%) and loan origination companies (4%). These corporations represent about 98% of the total number of S127 companies with at least EUR 500 million in total assets. The remaining types that complete the sample of S127 entities consist of captive factoring and invoicing corporations, companies with predominant non-financial assets, extra-group loan origination firms, wealth-holding entities and captive financial leasing corporations.

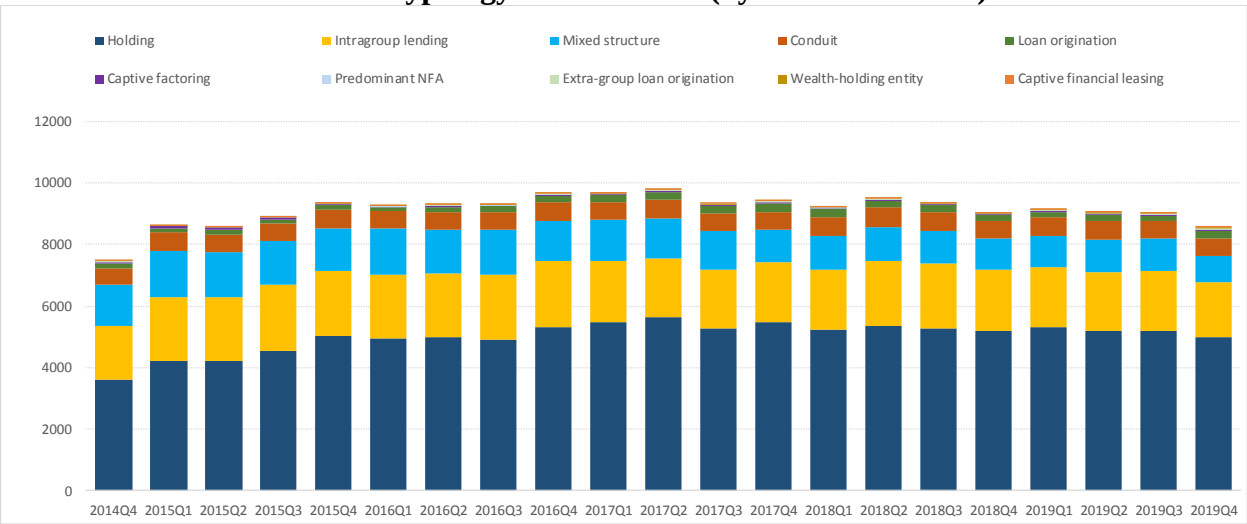
Chart 2: Typology of S127 firms (by number)



Source: Authors' calculations. Units: Number of S127 firms.

Chart 3 presents the typology of S127 firms in Luxembourg, by total assets held. On average over the period Q4 2014 – Q4 2019, the most important asset holders are holding corporations (55%), followed by intragroup lending companies (22%), mixed structures (14%), conduits (6%) and loan origination companies (2%). These corporations represent about 99% of the total assets held by S127 companies with at least EUR 500 million in total assets. The remaining types that complete the sample of S127 entities consist of captive factoring and invoicing corporations, companies with predominant non-financial assets, extra-group loan origination firms, wealth-holding entities and captive financial leasing corporations.

Chart 3: Typology of S127 firms (by total assets held)



Source: Authors' calculations. Units: EUR billion.

Altogether, the relative proportion of the different types of S127 entities remains stable over time, whether in terms of number or in terms of total assets. The most important types of S127 entities are holding corporations, followed by intragroup lending companies, mixed structures, conduits and loan origination corporations.

5.2 Discussion of the results

5.2.1 Holding corporations

Holding corporations represent the most important type of S127 firms, whether in terms of number or total assets held. Amongst holding corporations, pure holding companies account for about 63% of the total number of holding corporations and 61% of the total assets owned by holding corporations, on average over the period Q4 2014 – Q4 2019. The remaining share represents that of mixed holdings.

The predominance of holding corporations suggests that they represent an attractive vehicle for global investors and MNEs. Several factors can explain this result.

From an economic perspective, facing a context of geographical and vertical segmentation of their supply chain, MNEs may consider holding corporations as a suitable tool to coordinate the activities of their affiliates worldwide. In this context, MNEs can resort to holdings for the classic controlling and management of stakes in their operational subsidiaries located in different countries worldwide. In addition, global investors and in particular private equity investment funds and real estate investment funds extensively use holdings to acquire directly or indirectly the target investments.

From an operational perspective, holding corporations can take the form of mixed holdings, and the latter can involve shareholding activities as well as ancillary activities pertaining to financial, business, administrative and commercial matters. For example, ancillary activities can feature the funding of intragroup activities to optimise the group's finances or the owning of intellectual property (IP) rights arising from R&D activities inside the group, etc. This task flexibility may meet the demand of a large number of MNEs and investors worldwide.

Charts 4.1 and 4.2 present the evolution of the number and total assets of pure and mixed holdings over time. The number and total assets of pure and mixed holdings evolve around an upward trend over the sample period.

Chart 4.1: Pure holdings versus mixed holdings (number)

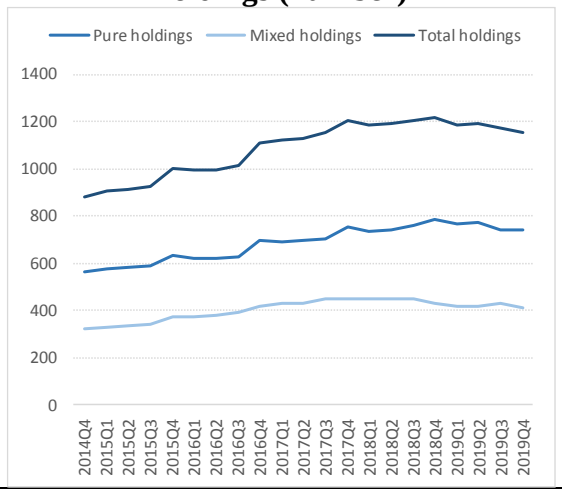
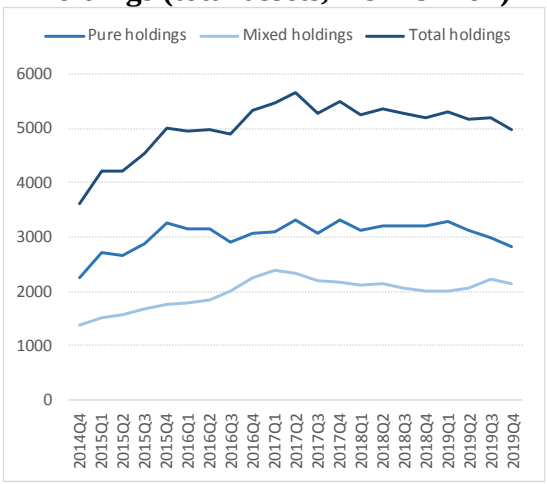


Chart 4.2: Pure holdings versus mixed holdings (total assets, EUR billion)



Source: BCL and authors' calculations

5.2.2 Intragroup lending corporations

Intragroup lending corporations come in second in terms of importance in the typology. From an economic perspective, intragroup lending corporations enable MNEs to optimise the allocation of liquidities across a group's entities. For example, an intragroup lending corporation can centralise the lending and borrowing of surplus/deficits between a group's subsidiaries located in different places worldwide. The centralisation of intragroup financing activities within a specific unit permits a group to benefit from economies of scale and improves its organisational and financial efficiency.

From an operational perspective, intragroup lending corporations can lend not only to direct subsidiaries, but also to indirect affiliates of the group to which they belong. Moreover, intragroup lending corporations may also perform ancillary activities pertaining to shareholding and commercial matters. Ancillary functions can take the form of centralised treasury function, involving the management of cash, debt, liquidity and risk (IBFD (2012)). This flexibility in the structure of intragroup lending corporations may suit the demand of a large number of MNEs and investors. Indeed, according to Hoor (2018), over the last decade, Luxembourg has become a hub

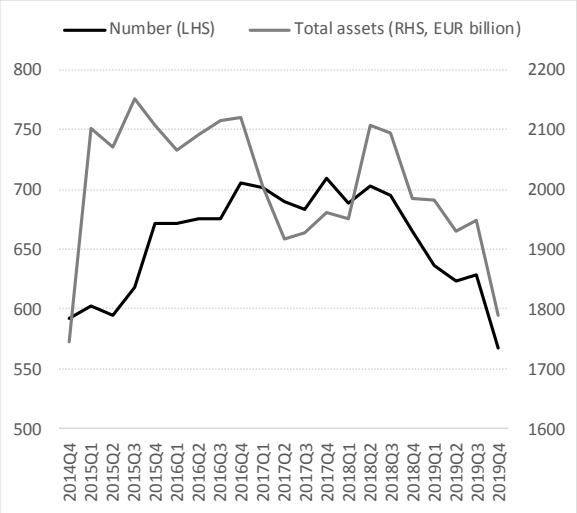
for multinational enterprises for the structuring of the groups financing activities. The intragroup financing services play an important role in private equity, private debt, real estate and infrastructure investments in or through Luxembourg. According to Hoor (2018), the main factors underlying Luxembourg's attractiveness as a preferred location for the structuring of intragroup financing activities are the existence of a tax treaty network, a stable legal and regulatory environment and the availability of a qualified and multilingual workforce.

The relative importance of intragroup lending corporations can also relate to the fact that they can disguise other activities and in particular operational leasing and financial leasing activities. This is notably the case if a captive financial leasing corporation undertakes financial leasing activities with entities belonging to its group.

Overall, intragroup lending corporations represent an attractive structure for groups looking to optimise the use of their internal financial resources.

Chart 5: Number and total assets of intragroup lending corporations

Chart 5 presents the evolution of the number and total assets of intragroup lending corporations over time. While total assets trend downward, the dynamics of the number of intragroup lending corporations resembles an inverted U-shaped curve, which increases from Q4 2014 to Q4 2016 and decreases thereafter.



5.2.3 Mixed structures

Mixed structures rank third in terms of importance in the typology. They comprise various sub-types. In terms of number (Chart 6.1) and on average over the period Q4 2014 – Q4 2019, mixed structures bring together a mix of holding and intragroup lending corporations (22%), companies declaring losses (negative capital) all over their living period (33%)[19] and other mixed structures (45%). In terms of total assets (Chart 6.2) and on average over the period Q4 2014 – Q4 2019, mixed structures represent a mix of holding and intragroup lending corporations (30%), companies declaring losses (negative capital) all over their living period (31%) and other mixed structures (39%).

The evolution of the sub-types of mixed structures differs over time. In terms of number (Chart 6.1), the mix of holding and intragroup lending corporations trends downward all over the sample period, which is also true of negative capital companies albeit with a lower magnitude. The number of other mixed structures features an upward trend. In terms of total assets (Chart 6.2), the magnitude, timing and trend differ over time, across the different sub-types of mixed structures. However, from 2016 onwards, their respective total assets trend downward.

Chart 6.1: Sub-types of mixed structures (number)

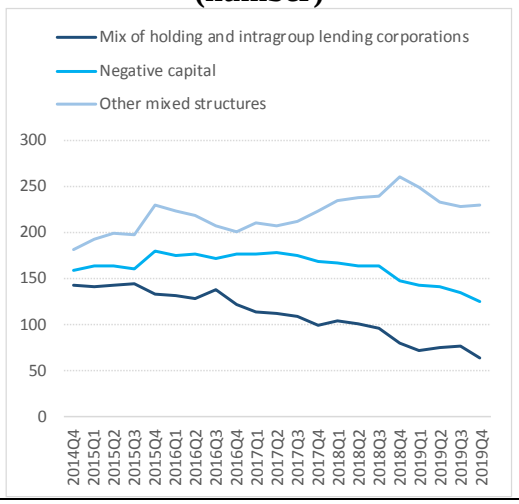
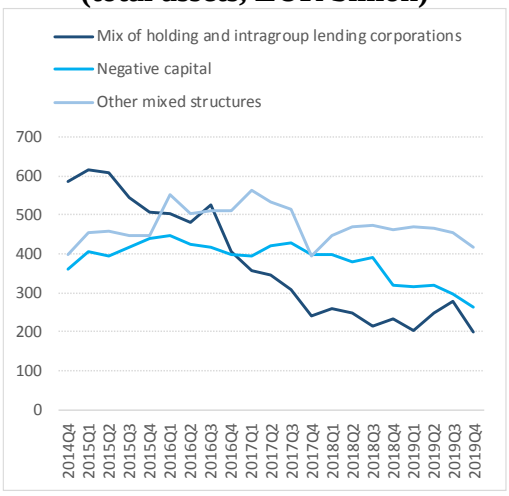


Chart 6.2: Sub-types of mixed structures (total assets, EUR billion)

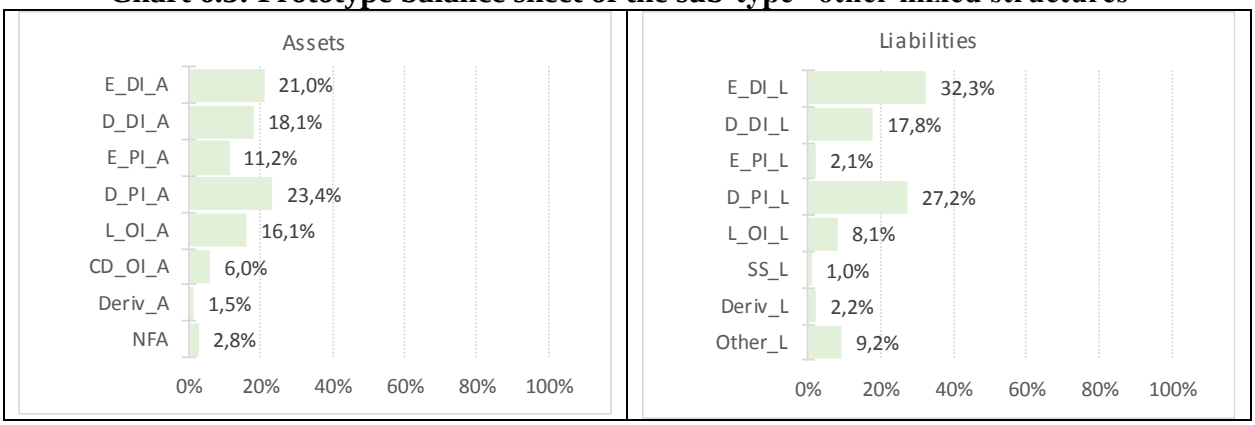


Source: BCL and authors' calculations

[19] Any given company facing a loss in a given year can carry this loss forward, i.e. use this loss to offset profits in future years. This allows the company to decrease its income tax base and hence the ensuing tax payments.

Chart 6.3 presents the representative prototype balance sheet of S127 entities belonging to the sub-type "other mixed structures" by considering the average proportion of each balance sheet item across entities, over the period Q4 2014 – Q4 2019. On the assets side, the most important balance sheet item relates to debt securities as portfolio investment (23.4%), followed by equity securities (21.0%) and debt securities (18.1%) both as direct investment. On the liabilities side, the most important item pertains to equity securities as direct investment (32.3%) and debt securities as portfolio investment (27.2%)

Chart 6.3: Prototype balance sheet of the sub-type "other mixed structures"



Source: BCL and authors' calculations

5.2.4 Conduit corporations

Conduit corporations are fourth in terms of importance in the typology. Conduits finance intragroup activities based on three main external financing sources on their liabilities side: equity and debt securities (both as portfolio investment) and loans (as other investment). Charts 7.1 and 7.2 present the decomposition of the liabilities side of conduits.

The most important types of conduits feature in majority debt securities on their liabilities side. They represent 67% of the total number of conduits and 72% of the total assets held by conduits. Conduits with major liabilities in loans represent 28% of the total number of conduits and 23% of the total assets held by conduits. Conduits with major liabilities in equity securities represent 6% of the total number of conduits and 5% of the total assets held by conduits.

Chart 7.1: Types of conduits (number)

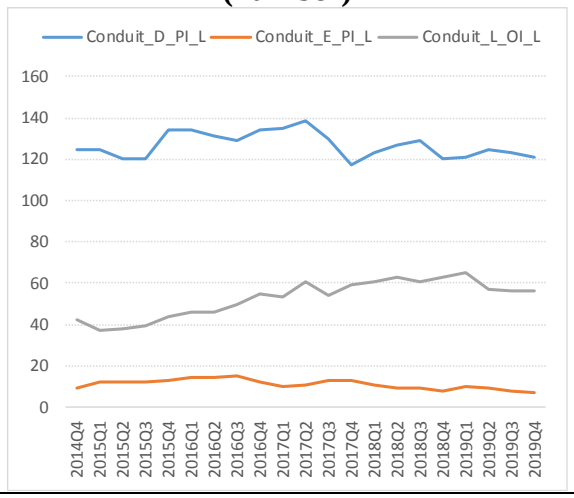
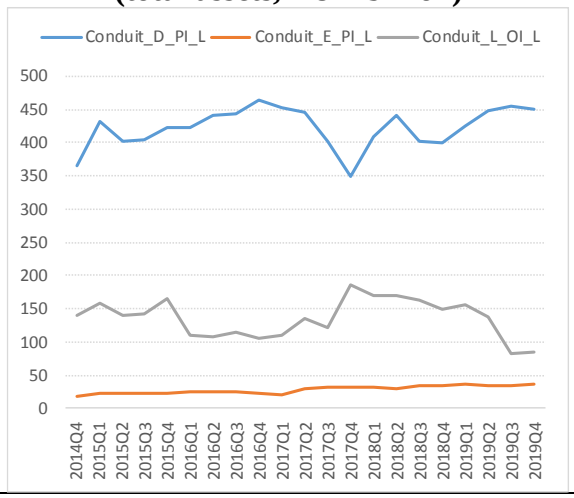


Chart 7.2: Types of conduits (total assets, EUR billion)



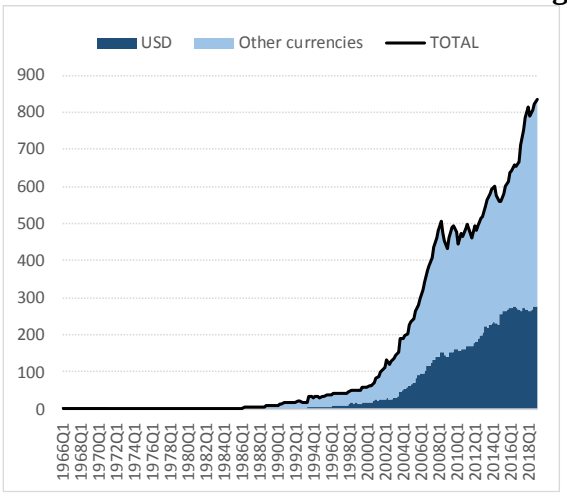
Source: BCL and authors' calculations

From a historical perspective, the relative importance of conduits with major liabilities in debt securities can relate to the long-standing experience of Luxembourg concerning international debt issuance. Indeed, the development of conduits flourished with the expansion of the Eurobond (or international debt) market in Luxembourg since its creation in the 1960s (Chart 7.3 and Moyse et al. (2014)). From an operational perspective, MNEs willing to resort to the international debt market benefit in Luxembourg from the presence of notable financial infrastructures materialised by the Luxembourg Stock Exchange where MNEs can issue and list international debt securities. In addition, Luxembourg hosts one of the two main clearing systems available worldwide for international debt securities - Clearstream[20] - where MNEs can clear and settle their transactions in international debt securities. Additionally, Luxembourg benefits from long-standing experience and refined skills regarding the handling of international debt market activities. In this respect, Luxembourg was one of the first country worldwide to issue Eurobonds[21].

[20] Clearstream results from the merger between Deutsch Börse Clearing and CEDEL in January 2000. The creation of the CEDEL (*centrale de livraison de valeurs mobilières*) in Luxembourg dates to September 1970. CEDEL is an organisation whose main purpose is to provide clearing and centralised deposit of Eurobonds and of shares. Its creation was a response from European banks to the creation of Euroclear by Morgan Guaranty in 1968. Euroclear, located in Belgium, is the second clearing system of international debt securities worldwide.

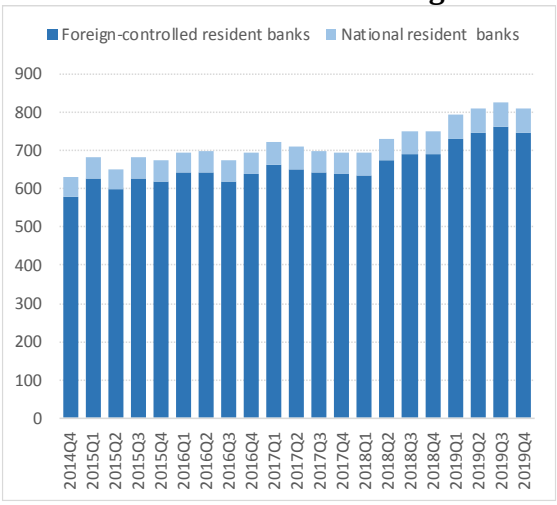
[21] According to Norman (2008), Luxembourg was the first country to issue Eurobonds in January 1961. The issuance was worth USD 5 million implemented by Kredietbank SA Luxembourgeoise for the Portuguese entity SACOR. According to Moyse et al. (2014), the first major Eurobonds were issued in 1963 by the Italian motorway group Autostrade. The issue was worth USD 15 million and arranged by London bankers S. G. Warburg and listed on the Luxembourg Stock Exchange.

Chart 7.3: Relative importance of the international debt market in Luxembourg



Source: BIS Statistics Warehouse, Debt securities, Outstanding amount, Units: USD billion

Chart 7.4: Total assets held by banks resident in Luxembourg



Source: BCL. Units: EUR billion

The relative importance of conduits with major liabilities in loans can relate to the role of Luxembourg as an international banking centre, hosting many foreign banks coming from different countries worldwide. On average over the period Q1 2003 – Q4 2019, foreign banks account for more than 96% of the total number of banks in Luxembourg[22]. In addition, the total assets held by foreign banks within the total population of resident banks in Luxembourg amount to 91%, on average, over the period Q4 2014 – Q4 2019 (Chart 7.4). This allows MNEs to select one or several banks of their choice (in the case of syndicated loans, for example) to structure their investments via a conduit. The hosting of many foreign banks also contributes to the integration of Luxembourg within the network of major financial centres worldwide: e.g. London, Frankfurt, Switzerland, Belgium, Paris, New York, etc.

5.2.5 Loan origination corporations

Loan origination corporations come in fifth in terms of importance in the typology. Loan origination corporations rely on financial sources obtained inside the group to finance entities outside the group. To this aim, loan origination corporations use three types of instruments on their assets side: equity and debt securities (both as portfolio investment) and loans (as other

[22] See http://www.bcl.lu/en/statistics/series_statistiques_luxembourg/11_credit_institutions/index.html

investments). Charts 8.1 and 8.2 present the breakdown of the assets side of loan origination corporations.

Chart 8.1: Types of loan origination corporations (number)

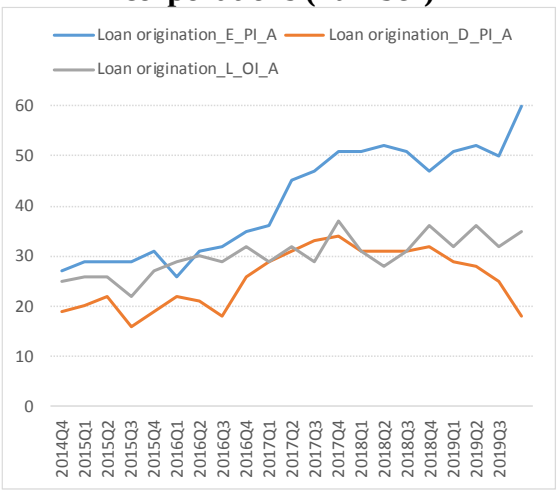
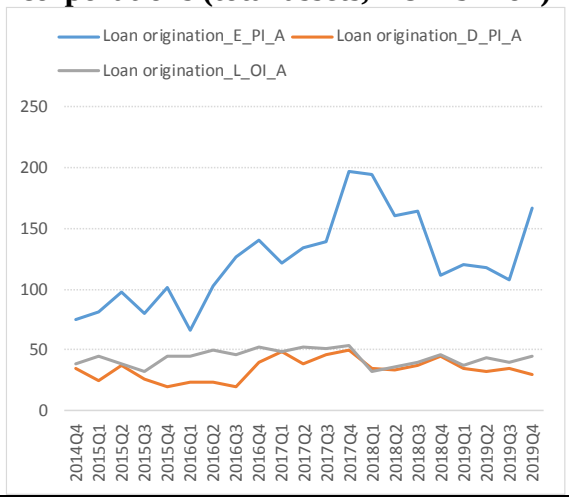


Chart 8.2: Types of loan origination corporations (total assets, EUR billion)



Source: BCL and authors' calculations

In terms of number, loan origination corporations with major assets in equity securities (as portfolio investment) predominate over loan origination corporations whose major assets relate to debt securities (as portfolio investment) or loans (as other investment). For the two latter types of loan origination corporations, the evolution of their number and total assets are broadly stable over the sample period. This is not the case though for loan origination corporations that hold the majority of their investments in equity securities (as portfolio investment). Indeed, their total assets trend upward from Q4 2014 to Q4 2017, and downward afterwards.

5.2.6 Remaining types

The remaining types of S127 entities include captive factoring and invoicing corporations, predominant non-financial assets (NFA) companies, extra-group loan origination firms, wealth-holding entities and captive financial leasing corporations. Together, they account for about 1% of the total assets (respectively, 2% of the total number) of S127 entities whose balance sheet is at least equal to EUR 500 million. The remaining types include entities listed in the IMF (2018)'s typology as well as new types of entities potentially specific to the case of Luxembourg. These new types relate to predominant NFA and extra-group loan origination (see *supra*). Charts 9.1 and

9.2 present respectively the evolution of the number and total assets of the remaining types of S127 entities.

Chart 9.1: Remaining types (number)

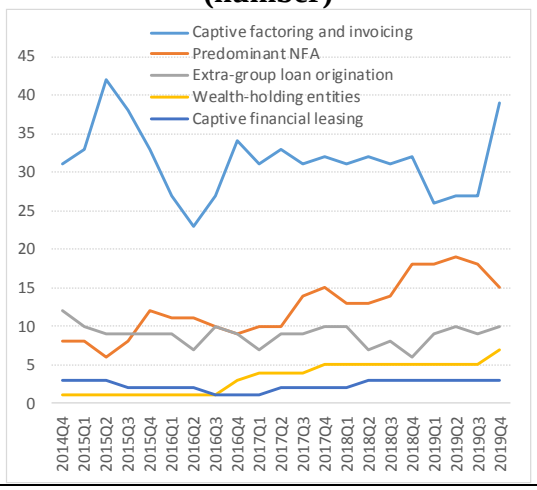
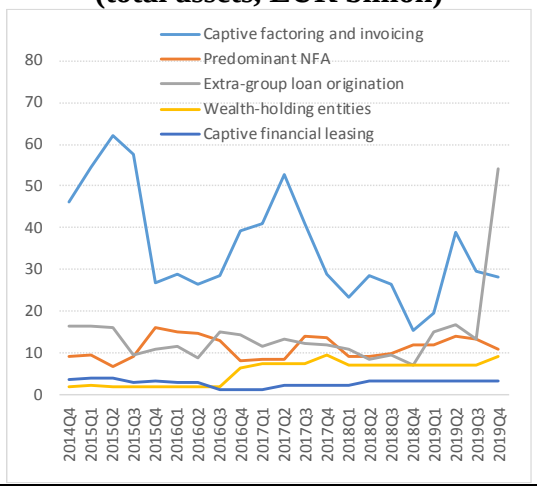


Chart 9.2: Remaining types (total assets, EUR billion)



Source: BCL and authors' calculations

Amongst the remaining types, captive factoring and invoicing corporations are the most important in terms of number and total assets held (Charts 9.1 and 9.2). This can be explained by the fact that such activities involve treasury management activities that suit the needs of MNEs that located their treasury centres in Luxembourg.

Predominant NFA and extra-group loan origination corporations share similar characteristics in terms of importance (Charts 9.1 and 9.2).

The prototype balance sheet of predominant NFA corporations feature non-financial assets as the major item on the assets side of their balance sheet (Table 11.1). No condition prevails on the liabilities side. Predominant NFA corporations can include the holding of intellectual property (IP) arising from R&D activities inside a MNE group or on behalf of another group company. IP rights include patents, brands, internet domain names, software, trademarks, design, industrial model, 3D-printing models, etc). Beyond intellectual property, the tangible assets of predominant NFA corporations can also cover stocks and inventories, real estate assets and transport vehicles (e.g. ships, trains owned by the group, etc). Unfortunately, the dataset under use does not allow for

distinguishing clearly between the various types of tangible assets owned by predominant NFA corporations.

Table 11.1: Prototype balance sheet of predominant NFA

Predominant NFA		A	L
Non-Financial Assets			
Direct investment	Equity		
	Debt		
Portfolio investment	Equity		
	Debt		
Other investment	Loans		
	Currency & Deposits		

Table 11.2: Prototype balance sheet of extra-group loan origination

Extra-group loan origination		A	L
Non-Financial Assets			
Direct investment	Equity		
	Debt		
Portfolio investment	Equity		
	Debt		
Other investment	Loans		
	Currency & Deposits		

The prototype balance sheet of extra-group loan origination corporations (Table 11.2) relies on loans obtained from third parties outside the group to finance specific assets, namely equity and debt securities (both as portfolio investment) and loans (as other investment). To avoid duplicates with the assets side of the other types of S127 entities, extra-group loan origination corporations cannot finance the following types of assets: equity and debt securities (both as direct investment), currency and deposits and non-financial assets.

In conclusion, wealth-holding entities and captive financial leasing corporations complete the typology of S127 corporations.

The number and total assets held by captive financial leasing corporations is the lowest across the different types of S127 entities identified (Charts 9.1 and 9.2). However, the reader should bear in mind that the paper relies on the NACE code provided by the STATEC to identify captive financial leasing corporations, as their prototype balance sheet is similar to that of intragroup lending corporations. This means that the latter can hide financial leasing activities, notably when undertaking such activities with entities belonging to the same group. In addition, loan origination corporations can also conceal financial leasing activities. This is notably the case when a loan origination corporation undertakes a financial leasing activity with entities that do not belong to the group.

Wealth-holding entities account only for a few S127 entities in terms of number and total assets (Charts 9.1 and 9.2). The paper identifies wealth-holding entities based on the NACE code

provided by the STATEC. The relatively low importance of wealth-holding entities does not necessarily mean that Luxembourg hosts only a few wealth-holding entities. Rather, this suggests that wealth-holding entities with at least EUR 500 million in total assets represent only a few corporations in the sample analysed. Indeed, the reader should bear in mind that this analysis is limited to a sub-sample of the whole population of S127 entities in Luxembourg. This sub-sample brings together S127 firms with at least EUR 500 million in total assets. Given that wealth-holding entities manage the wealth of high-net-worth individuals (HNWI), one can deem that a significant share of HNWIs lies below the EUR 500 million threshold while only a few HNWIs feature a fortune over EUR 500 million. Hence, the number of wealth-holding entities could likely increase when analysing S127 entities below the EUR 500 million threshold.

6. Concluding remarks

The paper presents a typology of captive financial institutions and money lenders (sector S127) in Luxembourg. Given data availability, the analysis relies on a sub-sample of the whole population of S127 firms. This sub-sample features S127 firms with at least EUR 500 million in total assets. As of Q4 2018, this sub-sample represents about 5% of the total number of S127 firms in Luxembourg, and about 85% of the total assets held by S127 firms in Luxembourg. The period of analysis spans Q4 2014 to Q4 2019.

In terms of number and on average over the period Q4 2014 – Q4 2019, the sample of S127 corporations regroups holding corporations (42%), intragroup lending companies (25%), mixed structures (19%), conduits (7%) and loan origination companies (4%). These corporations represent about 98% of the total number of S127 companies with at least EUR 500 million in total assets. The remaining types that complete the sample of S127 entities consist of captive factoring and invoicing corporations, companies with predominant non-financial assets, extra-group loan origination firms, wealth-holding entities and captive financial leasing corporations. In addition, on average over the period Q4 2014 – Q4 2019, holding corporations own the largest share of total assets (55%) followed by intragroup lending companies (22%), mixed structures (14%), conduits (6%) and loan origination companies (2%). These corporations account for about 99% of the total assets held by S127 companies whose total assets are at least equal to EUR 500 million.

The relative importance of holding corporations, intragroup lending companies, mixed structures, conduits and loan origination companies suggests that Luxembourg plays the role of a

global financial centre for MNEs. The latter benefit from Luxembourg as a financial platform to manage their business activities and structure their corporate investments.

According to the literature (Moyse et al. (2014), Hoor (2018)), several factors can explain the attractiveness of Luxembourg as a platform for the structuring of investment and financing activities by MNEs. These factors include an open economy, an international tax treaty network as well as a stable legal and regulatory environment. Additional factors include the availability of a qualified, experienced and multilingual workforce, the establishment of financial infrastructures (e.g. access to the Eurobond market via the Luxembourg stock exchange, clearing entities to settle transactions with Clearstream) and the hosting of many foreign banks. These factors contribute to the integration of Luxembourg within the network of financial centres worldwide.

Despite its potential merits, the present paper features several limits. The analysis focuses on a sub-population of S127 entities, those with at least EUR 500 million in total assets. A potential sequel of this work could extend the coverage of S127 entities by building a database for S127 entities below the EUR 500 million threshold. In addition, the analysis spans a relatively short period (Q4 2014 – Q4 2019). As the starting period corresponds with the implementation of the new international statistical standards (IMF (2009)'s BPM6), it is difficult to extend the series backwards, given that the statistical standards attached to the balance sheet reporting of S127 entities are different. Although simple and easy to implement, the methodology used in the paper to identify the prototype balance sheets and build the typology could be tested against alternative techniques such as clustering methods. Perhaps, this paper does not address important issues that relate to sector S127. One important and current issue pertains to the classification of S127 entities as SPEs or non-SPEs. Another issue relates to the explanation of the evolution of the number and total assets of S127 entities, considered either by type or as a whole. The paper does not address this issue for several reasons. First, the scope of the paper is to draw a typology of the sector S127 to improve the understanding of its main actors. Second, the evolution of the number and total assets of the considered S127 entities spans a relatively short period. Third, the data can be subject to revisions notably at the end of the period. Fourth and most importantly, to assess the main drivers of the number and total assets of S127 entities, one should identify the full range of factors that can affect the latter variables. Among the numerous factors cited in the literature (Amit et al. (2007), Finnerty et al. (2007), Dunning and Lundan (2008)) lie companies' restructuration, mergers and acquisitions, economies of scale and of scope, network effects, supply-chain

constraints, strategic MNE management, fiscal and tax matters, etc. Additional factors can pertain to geopolitical shocks, technological shocks, life-standards, cultural factors, historical reasons, geographical distances, communication infrastructure, reputation effect, etc. The quest and determination of the latter factors deserve further investigations that exceed the scope of this paper. These topics could nevertheless constitute a future research agenda.

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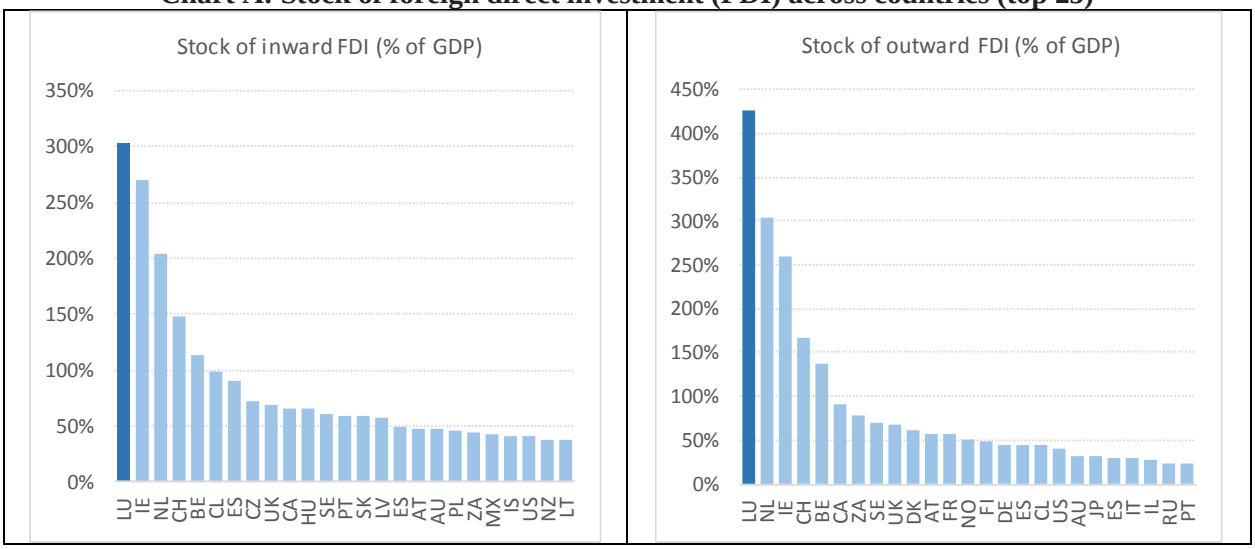
Appendix

A. Stocks of inward and outward FDI-to-GDP: cross-country comparison

Chart A presents the evolution of inward and outward FDI. In terms of GDP, Luxembourg features the most important stocks of inward and outward FDI compared to other countries.

Chart A: Stock of foreign direct investment (FDI) across countries (top 25)

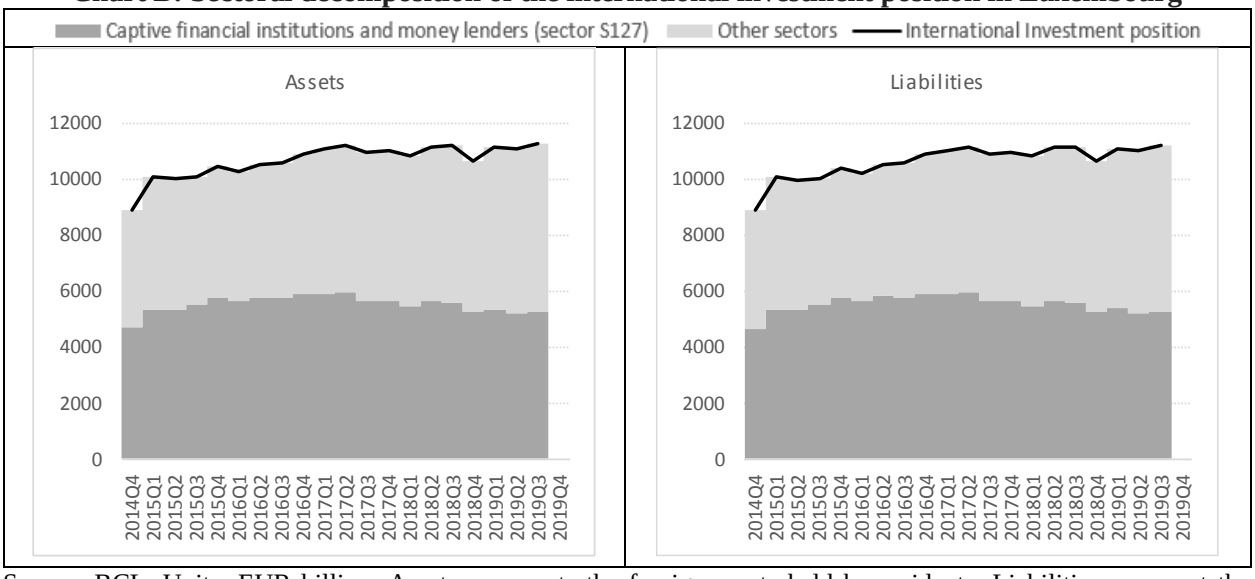


Source: OECD, https://data.oecd.org/fdi/fdi-stocks.htm#indicator-chart. Units: Percent of GDP. Period: Average over the period 1999-2018.

B. Sectoral decomposition of the international investment position in Luxembourg

Chart B shows that captive financial institutions and money lenders (sector S127) account for the largest share of the international investment position of Luxembourg, on the asset and liability sides, compared to the other sectors.

Chart B: Sectoral decomposition of the international investment position in Luxembourg



Source: BCL. Units: EUR billion. Assets represents the foreign assets held by residents. Liabilities represent the domestic assets held by non-residents (hence residents' liabilities).

C. Typology of S127 firms according to ECB-Eurostat-OECD (2013)

Table C.1: Typology according to ECB-Eurostat-OECD (2013)

Type	Function	Criteria	Industry	Sector
Holding company	Holding the assets (owning controlling level of equity) of subsidiary corporations on behalf of its parent without undertaking any management activities	An SPE (or similar type of entity) exercising some aspects of managerial control over its subsidiaries should be classified as head office; see also section 3 and 4 of the report.	ISIC Section K 6420	Sector S127 - Captive financial institutions and money lenders
Shell company	Passing through funds from non-residents to non-residents without conducting any operations in the economy	A shell company only deals with group enterprises and is thus classified under S127. If the relevant SPE (or similar type of entity) mainly holds shares of subsidiaries, it should be regarded as a holding company.	ISIC Section K6430 or K 6499	Sector S127 - Captive financial institutions and money lenders
Unit for holding and managing wealth of individuals and families	Holding financial and non-financial assets for individuals and families	According to the 2008 SNA, family trusts are to be treated as captive financial institutions (S127). However, if the trust deals with individuals and families on the open markets, it should be distinguished from other family trusts and it should be classified under the corresponding financial subsector, for example, as Non-MMF investment funds (S124).	ISIC Section K 6430	Sector S124 – Non-MMF investment funds or S127 - Captive financial institutions and money lenders
Securitisation company	Securitising assets for fund raising	Purchasing assets while issuing securities such as Asset Backed Securities (ABS) and Asset Backed Commercial Paper (ABCP) or acquiring loans originated by other units. Although SNA 2008, para. 4.110 states that financial corporations engaged in securitisation are to be classified under S125, SNA 2008, para. 4.59 also considers at least some securitisation vehicles as captive financial institutions (S127). Assuming that the relevant units pass the institutional test, they should be classified as part of S125, if they purchase assets on the open markets while raising funds on the open markets; if they do not operate in the open markets on either assets or liabilities, they should be classified in S127.	ISIC Section K 6499	Sector S125 - Other financial intermediaries except insurance corporations and pension funds or S127 - Captive financial institutions and money lenders

Source: ECB-Eurostat-OECD (2013)

Table C.2: Typology according to ECB-Eurostat-OECD (2013)

Type	Function	Criteria	Industry	Sector
Conduit	Raising or borrowing funds, often from unrelated enterprises, and remitting those funds to its parent or to another related enterprise	According to SNA 2008, para 4.114 c, conduits should be classified in S.127 (captive financial institutions), if they qualify as institutional units and raise funds in open markets to be used by their parent corporation. Conduits typically do not transact on the open markets on the asset side.	ISIC Section K 6499	Sector S127 - Captive financial institutions and money lenders
Captive leasing company (including mobile equipment renting company)	Financial leasing or operational leasing within a group	Financial leasing companies operating on open markets are to be classified under S125 (see SNA 2008, para. 4.110). Captive leasing companies should be classified under S127. Operational leasing company should be classified as non-financial corporations (S11).	ISIC Section K 6491 for financial leasing companies, ISIC Section N 7730 for operational leasing companies	Sector S125 - Other financial intermediaries except insurance corporations and pension funds, S127 - Captive financial institutions and money lenders or S11 - Nonfinancial corporations
Factoring and invoicing company	Concentrating sales claims and invoicing sales of enterprises	An SPE-type of entity providing factoring and invoicing services within a group is classified as captive financial institutions (S127). If the unit deals with counterparties on the open markets, it should be rather classified under S125.	ISIC Section K 6499	Sector S125 - Other financial intermediaries except insurance corporations and pension funds or S127 - Captive financial institutions and money lenders
SPE carrying out other financial functions	Dealing with financial needs of a group, financing particular projects	As these SPE-type of entities are typically providing financial services to group enterprises, they should be classified as captive financial institutions.	ISIC Section K	6499 Sector S127 - Captive financial institutions and money lenders

Source: ECB-Eurostat-OECD (2013)

D. Typology of S127 firms according to IMF (2018)

Table D: Typology according to IMF (2018)

Type	Description/function	Activity code	Can have resident parent?	Can have production?	FDI pass-through investment
Holding corporation	Holding the assets (owning controlling level of equity) of subsidiary corporations (ENT) on behalf of its parent without undertaking any management activities. Passive holdings would be merged with the direct parent entity, unless the parent is non-resident.	ISIC Section K64.20	No	No	Yes
Conduit	Raising or borrowing funds from unrelated enterprises or open market and remitting those funds to its parent or to other related enterprises. According to SNA 2008, para 4.114 c, conduits should be classified in S.127 (captive financial institutions) if they qualify as institutional units and raise funds in open markets to be used by their parent corporation. Conduits typically do not transact on the open markets on the asset side. Synonym: External financing	ISIC Section K64.990	No	No	No
Intragroup lending	Lending from and to related companies. Covers all debt instruments.	ISIC Section K64.20	No	No	Yes
Captive factoring and invoicing	Concentrating sales claims. It involves the sale of sales claims to a company called the factor. An SPE-type of entity providing factoring and invoicing services within a group is classified as captive financial institutions (S127). If the unit deals with counterparties on the open markets, it should be rather classified under (S125)	?	No	No	No
Captive financial leasing	Engaged in lease-in lease-out agreements, or as a financial intermediary in a chain of vehicles in which the end vehicle is involved in the leasing of equipment or fixed asset. The Lessee is considered to have ownership of the asset.	ISIC Section K64.91	No	Yes	No
Loan origination	Funding obtained from the parent or from related enterprises and furthered to external entities (companies). The entity is classified as S.127, Captive Financial Institution. The entity may be linked to S124 investment funds, where it is considered that the entity is a separate institutional unit. (Example LU)	ISIC Section K64	Yes/No	No	No
Securitisation vehicles / financial vehicle corporations	FVC carry out securitisation transactions and its structure is intended to isolate the payment obligations of the undertaking from those of the originator, or the insurance or reinsurance undertaking (in the case of insurance-linked securitisations); It issues debt securities, other debt instruments, securitisation fund units, and/or financial derivatives and/or legally or economically owns assets underlying the issue of these financing instruments that are offered for sale to the public or sold on the basis of private placements. Repackaging (securitisation of securities) are a sub-group group of this category.	ISIC Section K64.99	Yes	No	No
Companies established to manage personal and family wealth	Entities registered or incorporated to manage personal wealth. (individual or family wealth management). This would encompass foundations, limited liability companies etc. Trusts are treated as quasi corporations. According to the 2008 SNA, family trusts are to be treated as captive financial institutions (S127). However, if a trust deals with individuals and families on the open market, it should be classified under the appropriate financial subsector, for example, as Non-MMF investment funds (S124). Incorporated legal entities are recognised as institutional units in their own right when they are owned by a household.	ISIC Section K64.30	Yes	No	No

Source: IMF (2018)

BANQUE CENTRALE DU LUXEMBOURG

EUROSYSTÈME

2, boulevard Royal
L-2983 Luxembourg

Tél.: +352 4774-1
Fax: +352 4774 4910

www.bcl.lu • info@bcl.lu