A typology of captive financial institutions in Luxembourg: lessons from a new database

Gabriele Di Filippo and Frédéric Pierret, Central Bank of Luxembourg

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A Typology of Captive Financial Institutions in Luxembourg: Lessons from a New Database

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Abstract

The paper draws a typology of captive financial institutions and money lenders (CFIs, sector S127) in Luxembourg from a new database. The latter combines information from three sources: the EuroGroups Register managed by Eurostat, the Statistical Business Register managed by STATEC (the National Institute for Statistics and Economic Studies) and the Central Balance Sheet Register managed by STATEC. The new database enhances coverage of CFIs in Luxembourg. Indeed, it goes beyond the BCL reporting framework (BCL (2014)) by not only including CFIs with total assets larger or equal to EUR 500 million but also those with total assets of less than EUR 500 million. The period of analysis spans 2011 to 2019. Results show that CFIs present different characteristics depending on their balance sheet size. On the one hand, CFIs with total assets larger than EUR 100 million mainly regroup holding companies, intragroup lending corporations, mixed structures and conduits. On the other hand, CFIs with total assets lower than EUR 100 million feature mostly mixed structures. Overall, while holding corporations own the majority of total assets, the largest number of companies consists of mixed structures.

Keywords: Captive financial institutions and money lenders, Sector S127, Typology, EuroGroups Register, Statistical Business Register, Central Balance Sheet Register, Big Data

JEL classification: C80, C81, L22

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1. Introduction

The paper draws a typology of captive financial institutions and money lenders (CFIs, sector S127) in Luxembourg from a new database. The latter combines information from three sources: the EuroGroups Register managed by Eurostat, the Statistical Business Register managed by STATEC (the National Institute for Statistics and Economic Studies) and the Central Balance Sheet Register managed by STATEC. The new database enhances coverage of CFIs in Luxembourg. Indeed, it goes beyond the BCL reporting framework (BCL (2014)) by not only including CFIs with total assets larger or equal to EUR 500 million but also those with total assets of less than EUR 500 million. This larger coverage enables a more comprehensive analysis of CFIs in Luxembourg compared to previous studies that used the BCL reporting framework (Di Filippo and Pierret (2020a, 2020b)).

However, differences prevail between the new database and the BCL reporting framework. Indeed, the new database provides annual data over the period 2011-2019, while the BCL reporting framework features monthly data over the period December 2014-September 2021. Hence, the BCL reporting framework provides data updates with shorter delays. In addition, contrary to the BCL reporting framework, the new database does not include a breakdown of balance sheet items by geographical counterpart, by maturity and by currency. In spite of these limits, the accounting information available in the new database allows implementing the method presented in Di Filippo and Pierret (2020a) to draw a typology of CFIs. In particular, the new database enables investigating whether small CFIs with total assets lower than EUR 500 million share similar features with larger CFIs whose total assets are at least equal to EUR 500 million.

The remainder of the paper is organised as follows. Section 2 presents the data sources used to build the new database of CFIs in Luxembourg. Section 3 defines the potential types of CFIs. Section 4 describes the method used to identify the prototype balance sheets of CFIs. Section 5 presents the results by exposing the typology for CFIs as a whole, and across various ranges of total assets. Section 6 concludes.
2. Building of the new database

The paper builds a new database of CFIs in Luxembourg by combining information from three datasets: the EuroGroups Register, the Statistical Business Register and the Central Balance Sheet Register.

2.1 Selection of CFIs

The selection of CFIs is based on vintage NACE codes from the EuroGroups Register and on current NACE codes from the Statistical Business Register. The paper pinpoints resident entities whose NACE codes fall under the categories [64.20, 64.305], in accordance with statistical standards. The NACE code 64.20 includes entities performing “activities of holding companies”. The NACE code 64.305 includes entities involved in the management of private wealth (“sociétés de gestion de patrimoine familial” (SPFs)).

The EuroGroups Register (EGR)\(^1\) provides annual data on the structure of multinational groups operating within the European Union (EU) member states and European Free Trade Association (EFTA) countries. To create the EGR frames, Eurostat collects data on enterprise groups from the national statistical business registers of EU and EFTA countries. The national statistical institutes provide micro data on the constituent units of the groups and on their relationships.\(^2\) In terms of data content, EGR notably provides vintage NACE codes concerning the economic activity undertaken by entities composing the structure of multinational groups.

The Statistical Business Register (Répertoire des entreprises, SBR) classifies resident companies according to their main economic activity by providing a current NACE code. The STATEC compiles this register and updates it on a monthly basis.

2.2 Accounting information on CFIs

The STATEC compiles and manages the accounting information of resident companies in the Central Balance Sheet Register (or centrale des bilans, henceforward CBSR). This register retrieves information from the annual accounts deposited by

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\(^1\) Bikauskaite et al. (2019)

\(^2\) In Luxembourg, the STATEC performs this task. Eurostat is in charge of the centralization, compilation and management of the data.
resident companies on the electronic platform of the Luxembourg Business Register. These annual accounts comprise a balance sheet (*bilan comptable*), a profit and loss account (*compte de résultats*) and a standardised chart of accounts (*plan comptable*). While companies can deposit a complete or an abridged version of the balance sheet and of the profit and loss account, a complete version of the standardised chart of accounts is mandatory. As a result, the paper resorts to data from the standardised chart of accounts to build the prototype balance sheets of CFIs and identify a given type of CFI. Data are available over the period 2011-2019.

3. Prototype balance sheets of CFIs

Table 1 presents the potential types of CFIs listed in Di Filippo and Pierret (2020a) along with the structure of their respective prototype balance sheets.

Holding corporations can take the form of pure and mixed holdings. While the former confine their role to owning controlling-level amount of equity in one or more affiliates in a passive manner, without providing any other service to their affiliates, the latter can perform other ancillary activities.

Conduits raise or borrow funds from unrelated enterprises or the open market and remit those funds to their 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.

Intragroup lending corporations perform lending from and to affiliated companies.

Captive factoring and invoicing corporations concentrate the accounts receivable (i.e. invoices or sales claims) of a 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.*”. The paper

Captive financial leasing corporations provide a loan agreement in which they, as lessor, purchase the assets on behalf of the lessee for economic use. Since captive financial leasing corporations feature a unique NACE code across the different types of CFIs, the paper identifies captive financial leasing corporations based on the NACE Rev. 2 classification code K6491, provided by STATEC.
Loan origination corporations finance companies external to the group to which they belong, based on funding obtained from the parent or from affiliated enterprises.

Securitisation vehicles carry out securitisation transactions. In Luxembourg, the Law of 22 March 2004 regulates securitisation vehicles. Given that the latter relate to sector S125 “Other financial intermediaries, except insurance corporations and pension funds”, they should not be part of the typology on CFIs.

Wealth-holding entities manage personal wealth for individuals or families by holding financial and non-financial assets. Since wealth-holding entities feature a unique NACE code across the different types of CFIs, the paper identifies wealth-holding entities based on the NACE Rev. 2 classification code K64.305, provided by the STATEC.

Predominant NFA corporations feature non-financial assets as the major item on the assets side of the balance sheet. No condition prevails on the liabilities side.

Extra-group loan origination corporations use 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).

Eventually, Di Filippo and Pierret (2020a) point to the relative importance of CFIs whose balance sheet features mixed activities in Luxembourg. This category labelled as mixed structures, does not cover borderline cases that are difficult to classify in the typology. Rather, it includes specific prototype balance sheets that are unique and distinct from the other types of CFIs. In particular, mixed structures bring together a mix of holding and intragroup lending corporations, companies declaring losses (negative capital) all over their living period and other mixed structures.
# Table 1: Prototype Balance Sheets of CFIs

## Table 1.1: Holding corporations

<table>
<thead>
<tr>
<th>Variants of prototype balance sheet</th>
<th>Assets</th>
<th>Liabilities</th>
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<tbody>
<tr>
<td>Non-Financial Assets</td>
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<tr>
<td>Other investment</td>
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## Table 1.2: Conduit corporations

<table>
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## Table 1.3: Intragroup lending corporations

<table>
<thead>
<tr>
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## Table 1.4: Captive factoring and invoicing corporations

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## Table 1.5: Captive financial leasing corporations

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## Table 1.6: Loan origination corporations

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## Table 1.7: Securitisation vehicle corporations

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## Table 1.8: Personal and family wealth-holding entities

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## Table 1.9: Predominant non-financial assets

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## Table 1.10: Extra-group loan origination

<table>
<thead>
<tr>
<th>Extra-group loan origination</th>
<th>Assets</th>
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Source: Di Filippo and Pierret (2020a), adapted from IMF (2018)
4. Qualitative approach

The identification of a given type of CFI relies on a qualitative approach. The latter analyses the relative predominance of a given balance sheet item over the others. This method 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 applies qualitative criteria to the balance sheet of each CFI at each period. This approach features two steps.

A first step classifies the balance sheet items from the largest to the lowest in terms of proportion in the total balance sheet of a given CFI. Hence:

\[ S = \{s_1, s_2, \ldots, s_N\} \]

Where \( s_i > s_j \) for all \( i > j \), for \( i = 1, \ldots, N \) and \( j = 1, \ldots, N-1 \) and \( i \neq j \)

With \( s_i = \frac{\text{Balance sheet item}_i}{\text{Total Assets}} \) and \( s_j = \frac{\text{Balance sheet item}_j}{\text{Total Assets}} \)
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* verifies 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 fulfil the following conditions:

\[
\text{Existence criterion: } s_1 > 0 \\
\text{Predominance criterion: } s_1 > (1 - s_1) \\
\text{Strong predominance over the second largest item: } (s_1 - s_2) > \frac{\sigma^2}{\mu}
\]

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

\[
\text{Existence criterion: } s_1 > 0 \text{ and } s_2 > 0 \\
\text{Predominance criterion: } s_1 > (1 - s_1) \\
\text{Weak predominance over the second largest item: } (s_1 - s_2) \leq \frac{\sigma^2}{\mu}
\]

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

\[
\text{Existence criterion: } s_1 > 0 \text{ and } s_2 > 0 \\
\text{Non-predominance criterion: } s_1 \leq (1 - s_1) \\
\text{Non-predominance criterion: } s_2 \leq (1 - s_2)
\]

The paper thus identifies the balance sheet layout and links it to the associated prototype balance sheet (Table 1). This enables to draw a typology of CFIs. The advantage of the qualitative approach is to avoid the use of arbitrary quantitative thresholds when analysing the relative predominance of a given balance sheet item over the others.
5. Results from the new database

5.1 Typology of CFIs in Luxembourg

Chart 1.1 presents the typology of CFIs by total assets. On average over the period 2011-2019, the most important asset holders are holding corporations (52%), followed by intragroup lending companies (22%), mixed structures (15%), conduits (9%) and loan origination companies (1%). These corporations represent about 99% of the total assets held by CFIs. The remainder consists of companies with predominant non-financial assets, extra-group loan origination firms, wealth-holding entities, captive financial leasing corporations, and captive factoring and invoicing corporations.

Chart 1.2 presents the typology of CFIs by total number. On average over the period 2011-2019, CFIs regroup mixed structures (49%), holding corporations (20%), intragroup lending companies (13%), conduits (8%) and companies with predominant non-financial assets (5%). These corporations represent about 96% of the total number of CFIs. The remainder consists of loan origination companies, extra-group loan origination firms, wealth-holding entities, captive factoring and invoicing corporations, and captive financial leasing corporations.

Altogether, the relative proportions of the various types of CFIs differ depending on whether the typology is considered by total assets or by total number.
While holding corporations own the majority of total assets, the largest number of companies consists of mixed structures.

5.2 Typology of CFIs across balance sheet sizes

Typology of CFIs: a comparison between the new database and the BCL reporting framework

The paper compares the results of the typology between the new database and the BCL reporting framework (Di Filippo and Pierret (2020a)). As the BCL reporting framework considers only CFIs with total assets larger than EUR 500 million, the paper selects CFIs that suit this balance sheet size in the new database.

Charts 2 and 3 compare the results of the typology between the new database and the BCL reporting framework, by considering respectively the total number and the total assets of CFIs. While data are available in yearly frequency from 2011 to 2019 in the new database, the BCL reporting framework compiles data in monthly frequency from December 2014 to September 2021. For sake of comparison, the paper presents the typology based on the BCL reporting framework in annual frequency, over the period 2014 to 2019.
In terms of total number (Chart 2) and total assets (Chart 3), the typology of CFIs between the new database and the BCL reporting framework shares similar characteristics. Both charts point to the relative importance of holding corporations, intragroup lending companies, mixed structures and conduits.\(^3\)

**Typology of CFIs across ranges of total assets**

Altogether, for CFIs with total assets larger than EUR 500 million, the typology from the new database broadly shares similar characteristics with the typology of CFIs presented in Di Filippo and Pierret (2020a) based on the BCL reporting framework. Hence, a natural question that arises is in what range of total assets does the proportion of mixed structures increase?

To address this question, Charts 4 and 5 present the typology of CFIs across various ranges of balance sheet sizes, spanning \([500;+\infty[, [400;500[, [300;400[, [200;300[, [100;200[ and \([0;100[.\(^3\)

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\(^3\) Only slight differences prevail in the typology of CFIs with total assets larger or equal to EUR 500 million when considering the new database and the BCL reporting framework. For more information regarding these slight differences, the reader can refer to Di Filippo and Pierret (2022).
Chart 4: Total number of CFIs by range of total assets

Units: Total number
The charts show that CFIs feature different types depending on their balance sheet size. On the one hand, CFIs with total assets larger than EUR 100 million mainly regroup holding companies, intragroup lending corporations, mixed structures and conduits. On the other hand, CFIs with total assets lower than EUR 100 million feature mostly mixed structures.
Mixed structures bring together a mix of holding and intragroup lending corporations, companies declaring losses (negative capital) all over their living period and other mixed structures. The prototype balance sheets of mixed structures are distinct from the prototype balance sheets of the other types of CFIs.

In terms of number and on average over the period 2011-2019, mixed structures bring together other mixed structures (49%), companies declaring losses (negative capital) all over their living period (44%) and a mix of holding and intragroup lending corporations (7%).

In terms of total assets and on average over the period 2011-2019, mixed structures represent a mix of holding and intragroup lending corporations (38%), other mixed structures (34%) and companies declaring losses (negative capital) all over their living period (28%).

A possible explanation relating to the use of mixed structures by MNEs is that they reduce costs and increase organisational efficiency. Indeed, mixed structures concentrate on different types of activities within a single structure, instead of resorting to multiple entities that perform a specific activity.4

6. Conclusion

The paper draws a typology of captive financial institutions and money lenders (CFIs, sector S127) in Luxembourg from a new database. The latter retrieves information from three sources: the EuroGroups Register managed by Eurostat, the Statistical Business Register managed by STATEC (the National Institute for Statistics and Economic Studies) and the Central Balance Sheet Register managed by STATEC. The new database enhances coverage of CFIs in Luxembourg. Indeed, it goes beyond the BCL reporting framework (BCL (2014)) by not only including CFIs with total assets larger or equal to EUR 500 million but also those with total assets of less than EUR 500 million. This larger coverage enables a more comprehensive analysis of CFIs in Luxembourg compared to previous studies that used the BCL reporting framework (Di Filippo and Pierret (2020a, 2020b)).

4 For example, a mixed structure could combine the activities of an intragroup lending corporation and a pure holding corporation.
Results show that CFIs present different characteristics depending on their balance sheet size. On the one hand, CFIs with total assets larger than EUR 100 million mainly regroup holding companies, intragroup lending corporations, mixed structures and conduits. On the other hand, CFIs with total assets lower than EUR 100 million feature mostly mixed structures. Overall, while holding corporations own the majority of total assets, the largest number of CFIs consists of mixed structures. Mixed structures bring together a mix of holding and intragroup lending corporations, companies declaring losses (negative capital) all over their living period and other mixed structures. The prototype balance sheets of mixed structures are distinct from the prototype balance sheets of the other types of CFIs.

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**ECB-Eurostat-OECD, 2013**, “Final Report by the Task Force on Head Offices, Holding Companies and Special Purpose Entities (SPEs)”, June 2013


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1. Definition of Captive Financial Institutions (CFIs)

Captive financial institutions and money lenders (CFIs)
Classified in sector S127 (financial sector)

Can be found in MNEs’ structures and located
btw the headquarters and the operating affiliates

Meaning of term « captive »
« Captive » as owned and controlled by and typically for the sole use of an organisation: the parent

Main purpose
▪ Holding and finance activities
▪ e.g. holding of participations, treasury management, cash pooling, intragroup lending, etc.

Geographical location
▪ Financial centres
▪ access to various financing means, infrastructure, tax, regulatory and institutional advantages
2. Importance of CFIs in Luxembourg

- CFIs are the major holder of inward and outward stocks of FDI in the international investment position of Luxembourg, compared to the other sectors
- Their share represent 90% of the assets (outward FDI) and 88% of the liabilities (inward FDI) over the period Q4 2014 - Q4 2020

Chart A: Sectoral decomposition of inward and outward stocks of foreign direct investment in Luxembourg

Source: BCL. Unit: EUR billion. Foreign Direct Investment (FDI) stocks measure the total level of direct investment at the end of a quarter. The outward FDI stock is the value of the resident investors’ equity in and net loans to enterprises in foreign economies (hence residents’ assets). The inward FDI stock is the value of non-resident investors’ equity in and net loans to enterprises resident in the reporting economy (hence residents’ liabilities).
- **Previous work:** Prototype balance sheets of CFIs by IMF (2018)
- **Contribution:** Fine-tuned definitions of the potential types of CFIs
- **Data:** BCL reporting collects balance sheet data for resident CFIs with total assets $\geq$ EUR 500 million

**Coverage rate of the population of CFIs in Di Filippo and Pierret (2020)**
- **BCL reporting** covers a sub-sample of the whole population of CFIs
- Coverage rate in terms of **total assets:** 90% of the total assets held by the whole population of CFIs
- Coverage rate in terms of **number:** 5% of the whole population of CFIs

**Main challenge**
- How to improve the coverage rate of CFIs in Luxembourg?
4. New Database for CFIs in Luxembourg

STEP 1: Data providers gathering entities classified as CFIs
- EuroGroups Register (EGR) by Eurostat
- Statistical Business Register (SBR) by STATEC

STEP 2: Accounting data to build the prototype balance sheet of CFIs
- Central Balance Sheet Register (CBSR) by STATEC
  - Balance Sheet
  - Abridged Balance Sheet
  - Standardised Chart of Accounts

STEP 3: Build the prototype Balance Sheet of CFIs by matching the balance sheet items
- Matching btw Chart of Accounts items & Balance Sheet items in Central Balance Sheet Register
- Matching btw Balance Sheet items in Central Balance Sheet Register & BCL Balance Sheet items
- Matching btw BCL Balance Sheet items & Prototype Balance Sheet items (IMF (2018), BCL (2020))

STEP 4: Apply qualitative method as in Di Filippo and Pierret (2020)
- Screen the balance sheet of each CFI based on qualitative criteria (predominance of balance sheet items)
- Match with the pre-determined prototype balance sheet associated to a given type of CFI
- Advantage: avoid arbitrary quantitative thresholds

CFIs with total assets $\geq$ EUR 500 million and $\leq$ EUR 500 million

Resort to Chart of Accounts as available for more than 99% of CFIs

Improve coverage of CFIs in LU by more than 900% in terms of number and by more than 5% in terms of total assets

Annual data over 2011-2019
5. Typology of CFIs: New Database

Total assets - Main types of CFIs
- Holding corporations (52%)
- Intragroup lending companies (22%)
- Mixed structures (15%)
- Conduits (9%)
- Loan origination companies (1%)

⇒ These entities represent about 99% of the total assets held by CFIs

Proportions of the various types of CFIs differ when considering the typology by total assets or by total number
- Holding entities = largest holder of total assets
- Mixed structures = highest number of companies consists of mixed structures
  - **In terms of number:** other mixed structures (49%), companies declaring losses (negative capital) all over their living period (44%), mix of holding and intragroup lending corporations (7%);
  - **In terms of total assets:** mix of holding and intragroup lending corporations (38%), other mixed structures (34%), companies declaring losses (negative capital) all over their living period (28%)

Total number - Main types of CFIs
- Mixed structures (49%)
- Holding corporations (20%)
- Intragroup lending companies (13%)
- Conduits (8%)
- Companies with predominant non-financial assets (5%)

⇒ These entities represent about 96% of the total assets held by CFIs
6. Typology of CFIs: New Database versus BCL Reporting

Proportions of the various types of CFIs differ when considering the typology by total assets or by total number

- Typology of CFIs btw new database and BCL reporting shares similar characteristics for CFIs with total assets ≥ EUR 500 million
- Relative importance of holding corporations, intragroup lending companies, mixed structures and conduits
- => In what range of total assets does the proportion of mixed structures increase?
- To address this question, the typology of CFIs must be split across various ranges of balance sheet sizes, spanning [500;+∞], [400;500], [300;400], [200;300], [100;200] and [0;100]
CFIs present different characteristics depending on their balance sheet size

- CFIs with total assets $\geq$ EUR 100 million: holding companies, intragroup lending corporations, mixed structures and conduits
- CFIs with total assets $<$ EUR 100 million: mixed structures

=> The typology of CFIs differs, depending on the balance sheet size of CFIs

Mixed structures

- mix of holding and intragroup lending corporations, companies declaring losses (negative capital) all over their living period and other mixed structures

Use of mixed structures by MNEs

- Lower costs and higher organisational efficiency
- Mixed structures concentrate on different types of activities within a single structure, instead of resorting to multiple entities that perform a specific activity