An International Multi-Sectorial Approach to Financialization[1]

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Abstract

Many studies attempted to measure the degree of *financialization* of an economy, generally on a country by country basis, given the heterogeneity of measures and data availability. In this paper, we provide a simple but common measure of financialization of NFCs, namely, the participation of services provided by the financial sector (both directly and indirectly) on their value-added creation process, inspired by Dávila-Fernández and Punzo (2018) methodology. In order to do this, we use inter-country input-output (ICIO) matrices developed by the OECD, which allows us to understand which role plays the financial sector (local or foreign) in the "value-added production function" of NFCs from 34 industries in 64 countries for the period 1995-2011.

We find three main stylized facts. First, the financial sector plays a relevant role in the value-added creation process of NFCs, and its importance has increased during the last years, although there is high diversity among countries. Second, this process has been heterogeneous when different productive sectors are considered. Primary industries evidenced a low degree of financialization, while manufacturing and the service sector generally presented a higher reliance on finance. Third, between 1995 and 2008, non-financial firms sharply increased their dependence on foreign financial value-added. Moreover, the origin of these exports of financial services changed in the analysed period: while some traditional financial hubs such as the UK, Switzerland and Japan decreased their importance as providers of financial value-added to NFCs, China, Russia and India became important global players.

Keywords: Financialization, Input-Output Analysis, Global Value Chains

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1. Introduction

The 2007 financial crisis and the subsequent global economic depression brought scholars' attention to the increased relevance of financial markets in the functioning of modern capitalism, and its potential disruptive capacity. Indeed, finance has been playing a more central role in most modern economies since the 1970s, both in developed and developing countries (Epstein, 2005; Demir, 2007; Greenwood and Scharfstein, 2013). The term *financialization*, coined in the late 1990s, aims to describe this phenomenon and was used in a broad range of studies, not limited to the field of economics but also in other social sciences (Van der Zwan, 2014).

This varied body of literature shares a common understanding of finance not only as intermediation between economic agents, but as an activity that increasingly permeates other economic sectors and modifies the behaviour of all economic agents, including households, firms (both financial and non-financial) and the government. Regarding households and the government, scholars have focused mainly on the increase in their debt levels and its potential destabilizing effect. Instead, concerning firms, a growing debate on the literature has been whether there is a process of financial activities "crowding out" productive investment.

Particularly, it has been argued that the financialization of non-financial companies (from now on, NFCs) implied a higher relevance of financial flows for these firms, to the detriment of productive operations, leading to a decrease in real investment. The negative impact of financialization on investment takes place through three different mechanisms (Davis, 2017a). First, financialization implied a shift towards shareholder value orientation, leading to a "downsize and distribute" strategy by NFCs (Lazonick and O'Sullivan, 2000; Stockhammer, 2004). Second, financialization led to a higher reliance of NFCs on financial incomes instead of sales —see as an example (Stockhammer, 2004; Davis, 2017b). And finally, financialization implied an increased participation of financial expenditures of NFCs, leaving less room for non-financial expenditures, particularly investment, explaining the low levels of this variable during the last decades (Orhangazi, 2008; Van Treeck, 2008; Onaran, Stockhammer and Grafl, 2011).

Regarding the latter, some authors have claimed that financialization cannot be understood without discussing its international dimension, arguing that the processes of globalisation and financialization go hand by hand, playing complementary roles in the reduction of real investment. Besides some discussion on the destabilizing impact of capital flows on real investment (Demir, 2009) the focus has been put on the connection between offshoring and financialization (Milberg, 2008; Durand and Miroudot, 2015; Auvray and Rabinovich, 2017; Aguiar de Medeiros and Trebat, 2018).

Two connections between financialization and globalisation of production have been highlighted. On the one hand, some authors have argued that the restructuration of global production in global value chains (Gereffi, Humphrey and Sturgeon, 2005), where developing countries play a subsidiary role providing inputs based on cheap labour and natural resources, implied a considerable cost reduction for industrialized countries. This has allowed their NFCs to maintain high profit rates without spending on real investment, implying that they found themselves with a pool of funds that ended up being distributed as profits or used to engage in financial activities (Milberg, 2008; Auvray and Rabinovich, 2017). On its turn, these new dynamics have increased pressure on firms for focusing on their core competences and improving their financial indicators, reinforcing their offshoring process.

On the other hand, it has been claimed that finance, along with other mechanisms such as the payments for intellectual property and royalties, plays a key role in the structure of modern global value chains, allowing central countries, which often control the different productive stages not by direct ownership but through arm-length relationships, to appropriate a higher percentage of the value-added created by NFCs located in developing countries (Aguiar de Medeiros and Trebat, 2018).

Therefore, according to this approach, global financialization and the expansion of global value chains played complementary roles in the last decades. This goes in line with the understanding of financialization as a *subordinate* process in developing countries (Powell, 2013; Lapavitsas, 2016). The concept of *subordinate* financialization implies that, in developing countries, financialization presents distinctive characteristics, related to their role in the global production system, the usual underdevelopment of their domestic financial systems and the volatility of exchange rate, among a number of factors, which generally leads to a higher dependence on international financial markets than in developed countries.

If that is the case, it is necessary to analyse financialization from a global approach, since financial payments from NFCs can be made both to domestic and foreign firms and it is necessary to distinguish between them in order to properly characterize the financialization process. The objective of this paper is to develop a multi-country framework that integrates both financial and non-financial sectors from a number of countries and their interactions. In order to do so, we will take as a baseline the methodology developed by Dávila-Fernández and Punzo (2018), based on input-output matrices, where financialization is understood as the financial content of a monetary unit produced by each sector, allowing to understand the role that the financial sector (both domestic and foreign) plays in the productive process of NFCs of different industries. The authors find, in an application to the United States, a divergent process since the 1980s: while the services sector increased continuously its reliance on financial inputs, the primary and manufacturing industries show an inverted U-shaped relationship, with a reduction of their financial content in the last decades.

This paper offers a further development of this methodology, by applying a similar method to an international framework, using inter-country input-output (ICIO) matrices elaborated by the OECD for the period 1995-2011 (extending the period of analysis to 2015 when possible). Moreover, to narrow down the definition of financial expenditures of NFCs, the analysed variable will not be the required inputs from the financial sector per unit of production, but the participation of the financial sector on the value-added of each sector's production.

Discussing value-added creation from the financial sector is not unproblematic, particularly regarding macroeconomic data given that, in the national accounts, there are several inconsistencies in the way financial sector activities are measured (Assa, 2016). However, the fact that its value-added are composed by the wages plus the operating surplus of the financial sector, and that it is a less comprehensive measure than gross output, allows us to understand it as a measure of its capacity to "capture" value, without engaging in the debate about the actual creation of value by the financial sector (Epstein and Montecino, 2016). A full discussion of the topic can be found in Dávila-Fernández and Punzo (2018, p. 9)

The use of ICIO matrices, besides the advantage of extending the scope of analysed countries, allows us to explore other dimensions of financialization, offering responses to new questions: how much does the global productive structure rely on finance, and how did this evolve during the last decades? Which productive sectors incorporate more financial value-added? Are there

sectorial divergences on the process of financialization in each country? How much of the financial value-added is produced abroad, which countries are exporting it, and how is this phenomenon evolving?

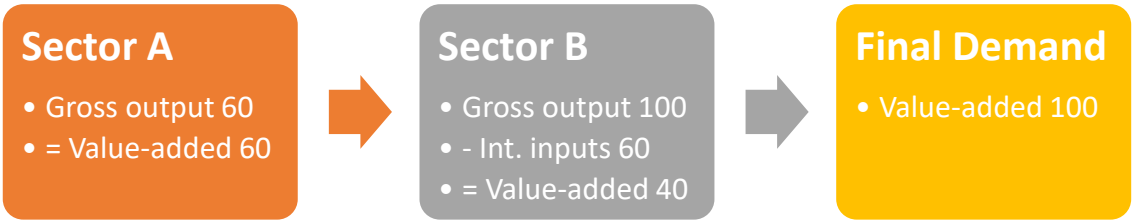
We will try to answer some of these questions in this paper. After a brief explanation of the methodology in section 2, section 3 will deal with the first set of results, regarding the systemic role of finance. Section 4 presents some insights related to sector-level analysis, while section 5 focuses on the national dimension and analyses the evolution of the main financial hubs. Finally, section 6 concludes.

2. Methodological aspects

In a multi-sectorial production economy, different industries offer not only final goods for consumption and investment, but also interact with each other through the exchange of intermediate goods and services, required for production. Therefore, in order to understand the role of a sector in the productive structure, focusing on gross output can be misleading, given that intermediate goods are consumed during the productive process.

On the contrary, analysing value-added (that is, gross output minus intermediate inputs) allows for an analysis of the complete process of creation of an economic surplus, which can be consumed or invested. It should be kept in mind, however, that intermediate goods embody value-added. This way, when a final good is consumed, not all the corresponding value-added is actually generated in the sector that produced the final good, but, on the contrary, this final good embodies value-added from all the sectors that provided intermediate inputs to the final producer. This can be seen in Figure 1, which presents a schematic production process:

Figure 1. Gross output and value-added



Source: the author based on Amar and García Diaz (2018)

In this hypothetical (and highly simplified) situation, sector A produces an intermediate good without using any inputs besides labour and capital, with a value of 60 dollars. Since there are no intermediate inputs, the value-added created is equivalent to the gross output (that is, 60 dollars). Later, it sells it to sector B, which uses it in the production process of a final good, sold on its turn to a final consumer for 100 dollars. However, the corresponding value-added of this final consumption was not fully created in sector B, but, on the contrary, only 40 dollars of value-added correspond to it (100 minus the 60 of the intermediate input). 60 dollars of value-added were created by sector A, but consumed once embodied in the production of sector B.

In this paper, we will analyse the role of the financial industry as “sector A”, while sector B will be all the other industries, which are in practice an aggregation of non-financial corporations (NFCs). This will show how the financial sector plays a role in the value creation of the non-financial one. An inter-country framework will be used, so the financial industry will not be

only one, but all the financial sectors of the considered countries, and the same applies for the non-financial industries. By identifying the value-added generated by the financial sectors but embodied in the production of non-financial ones, what we get is an estimation of the degree of *financialization* of NFCs.

In particular, the analysis will be based on the inter-country input-output (ICIO) matrices elaborated by the OECD, covering the period 1995-2011, considering 71 countries[2] and 34 sectors, and based on the ISIC rev. 3. The total results will also be presented for the period 2005-2015 based on the latest version of the ICIO-OECD (2018), based on the ISIC rev. 4. Due to considerable methodological differences, it is not possible to compare results from both releases, however, considering the new database will provide an illustration of the general trends.

Some algebraic manipulation will allow us to decompose the value-added of each sector and country by its originating industry and identify, particularly, the financial sector(s). The ICIO matrix is structured as follows:

$$\begin{bmatrix} X & f & x \\ y^T & 0 & 0 \\ x^T & 0 & 0 \end{bmatrix}$$

Being X the intermediate transactions matrix, with 2414 rows (34 sectors times 71 countries) and the same number of columns, each row representing the sales of intermediate goods and services from one sector in one country to each sector in each country. This way, the intermediate transaction matrix shows both the exchange of intermediates at a national level (when the buyer and seller country coincide) and foreign trade (when they do not).

Vector f displays final demand, by all countries, for each sector[3]. Adding up intermediate goods sales and final demand, the gross output x of each sector is obtained. Finally, the vector y presents the value-added of each sector. Again, if we add up vertically the X matrix (the intermediate goods demand of each sector) and its value-added, we obtain the gross output of the industry. The total value-added (the sum of y) is equal to global final demand (the sum of f), since all surplus is distributed between factors of production (wages, profits and indirect taxes) and is also consumed or invested.

The input-output matrix reflects the interdependency of all productive sectors, considering that they demand inputs from other industries and vice versa. Since this paper focuses on financialization, we will pay particular attention to one sector, the financial one, represented in the ICIO matrix with the code C65T67FIN (D64T66 in the 2018 version[4]). This will set some limits on the scope of the results, since only the financial activities included in the UN system

[2] Nine of these countries are divisions of Mexico and China's activity, considering their national and exporting sectors, which on its turn are divided among processing areas and national manufacturing. Given the purposes of this study, these countries results have been aggregated when country-level results are presented (at the moment of building the VA matrix), obtaining 64 countries (63 plus a rest of the world region).

[3] The final demand sector in the ICIO is decomposed by countries and 6 types of final demand (household, NPISH and government consumption, gross fixed capital formation, inventories and direct purchases by non-residents). Although further developments could decompose financial value-added by type of final demand, in this case they are added up for simplicity.

[4] The ISIC rev. 4 does not include in the financial sector exactly the same activities than the ones on ISIC rev. 3. Therefore, the results are not directly comparable. For details, see United Nations (2008).

of national accounts are considered: financial intermediation (interest payments and charges by financial institutions, indirectly measured and known as FISIM), financial auxiliary activities and other financial services, insurance schemes and pension funds (United Nations, 2009). Therefore, we omit financial gains and losses associated with capital revaluations and dividend payments or share buybacks, which are generally taken into account in these studies (Orhangazi, 2008; Van Treeck, 2008; Onaran, Stockhammer and Grafl, 2011). In this regard, we consider finance as a "productive" sector, in the sense that it offers financial services both as intermediate inputs for other industries and for final demand (Panico and Pinto, 2015).

Keeping this in mind, we can calculate the productive requirements of each sector in intensive terms, that is, per unit of production. We obtain the matrix of direct requirements, A, which presents on each cell the necessary intermediate inputs to produce one unit of output in each sector[5]:

$$A = X\hat{x}^{-1} \tag{1}$$

Therefore, total production can be analysed as the sum of the final demand and the intermediate inputs required to produce it:

$$x = Ax + f \tag{2}$$

Finally, solving the system, it is possible to represent all output, both intermediate and final, as an integrated production process to satisfy final demand:

$$x = (I - A)^{-1} f = Bf \tag{3}$$

The matrix $(I - A)^{-1}$, identified as B and known as Leontief's inverse, represents the total inputs required both directly and indirectly to produce one unit of final demand in each sector. This expression makes explicit the general interdependency of the productive system, showing the "dependence of each of the gross outputs of the values of each of the final demands" (Miller and Blair, 2009, p. 21).

Then, if we define the requirements of value-added per unit of output as v, we can then calculate the value-added produced by each sector, both directly and indirectly, in order to meet the final demand for each industry, known as the global value-added production matrix (Ahmad *et al.*, 2017, p. 30):

$$VAF = \hat{v}B\hat{f} \tag{4}$$

Therefore, each cell of the VAF matrix presents the gross output produced by the industry in the row, both directly and indirectly, in order to produce one unit of output in the industry in the column, and then the value-added coefficient of the provider industry is applied to the result. Following the example from Figure 1, the value-added produced in sector A to meet final demand of sector B amounts to 40 dollars.

Particularly, we will focus on finance as provider of these goods and services, analysing how important it is in the value-added of other sectors. This way, if we focus on a row of the VAF matrix representing the financial sector of one country, it is possible to identify how is it distributing its value-added among the final demand of each sectors in each country, both

[5] The hat accent indicates a diagonalized vector (a squared matrix with the vector on the diagonal and ceros in the off-diagonal cells).

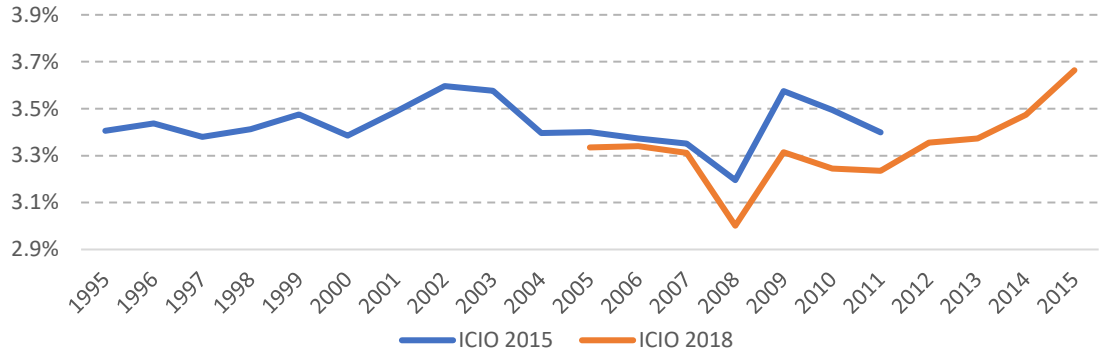
through direct and indirect links. On the contrary, a by-column view represents the origins of the value-added of a sector's final demand, among which we can distinguish the amounts provided by the financial sectors of each country.

Based on the value-added matrix, we can develop a number of indexes to analyse the global importance of finance and its dynamics since the mid-90s. This will be the goal of the following sections.

3. The systemic importance of finance

The literature on financialization has discussed the increased importance on finance in NFCs during the last decades in a number of countries. A first measure of this phenomenon is the participation of this sector in the value-added of the non-financial sectors, represented in Figure 1. It can be seen that the financial sector, at a global level, represented in 2011 a 3,4% of the value-added of non-financial industries, implying that it played a more than relevant role in the production process of NFCs.

Figure 2. Participation of finance on NFCs value-added
World, 1995 to 2015



Source: own calculation based on ICIO-OCDE

Following the previous discussion, this result can also be understood as the capacity, by the financial sector, of "capturing" value-added from NFCs (Epstein and Montecino, 2016), given that it is the surplus distributed by the financial sector in the form of wages and profits but that it is generated in the production of non-financial final goods and services.

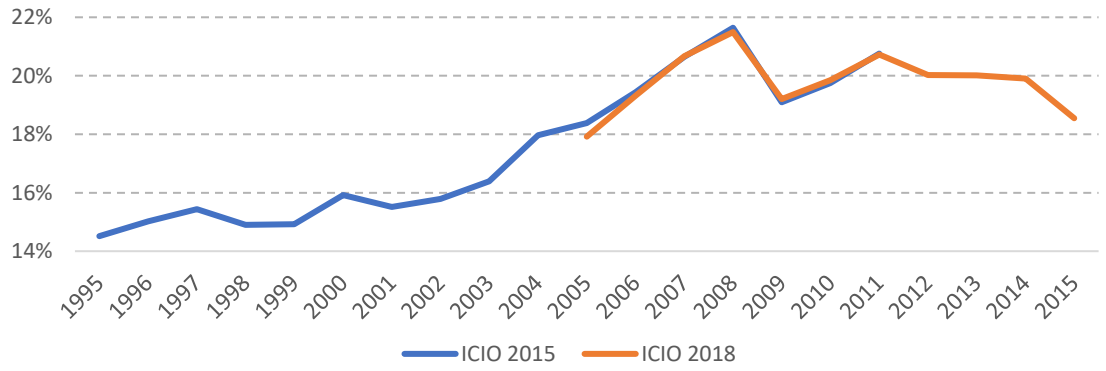
In historical terms, the financial sector share on NFCs value-added is relatively steady. However, it presents a relative increase until 2002, contributing this year with a 3,6% of the value-added of NFCs. Since then, it starts decreasing until 2008 (with a particularly sharp fall in the financial crisis) to be followed by a recovery until 2015, the last year for which there is available information. By this year, and according to the ICIO 2018, the financial sector received 3,7% of the value-added generated for the final demand of NFCs.

This figure overlooks, however, that not all countries and sectors exhibit the same degree of financialization and present different tendencies during the last decades. In sections 4 and 5 we deal with this heterogeneity, finding divergent results for industries and countries.

Keeping future research in mind, it would be relevant to analyse the evolution of this variable since the 70s, since this is the period in which the literature on financialization finds the first evidence of such a process, and also evaluate the evolution of these variables after 2015 (which seems more likely, considering future releases of input-output matrices).

The debate on subordinate financialization (Powell, 2013; Lapavitsas, 2016) can be addressed here by analysing what percentage of this embedded financial value-added is produced abroad, implying a higher dependence of NFCs on foreign financial companies. Figure 4 presents the evolution of this ratio.

Figure 3. Foreign participation in financial value-added embedded in NFCs activities
World, 1995 to 2015



Source: own elaboration based on ICIO-OCDE

In this case, a clear upward trend can be observed until 2008, implying an increasing *globalisation* of finance, in the sense that productive sectors at a global scale not only are incorporating financial value-added on their production, but a growing percentage of that value-added is produced in other countries. Moreover, financial requirements of value added tend to be imported more often than non-financial ones: in 2011, while 20,8% of financial value-added embedded in NFCs production was sourced abroad, only 13,7% of the non-financial value-added was.

Conversely, between 2009 and 2015 this ratio has been slowly falling, although it is still far from its initial levels. This can be related with the slowdown in the expansion of global value chains after the financial crisis (Stöllinger *et al.*, 2018), which played, until 2008, a relevant role in the global expansion of finance. These dynamics raise questions about which countries are exporting financial value-added, and which ones are importing it, which will be discussed in detail in section 5.

To conclude this introductory section, the global results show two stylised facts. First, the financial sector is *systemically* important for NFCs: the financial value-added embedded in their production ranged around 3,5%, with a rising importance during the last years. Second, a relevant part (around one fifth) of this value-added is produced in countries different than the one where the NFC is placed, and this percentage has been growing continuously between 1995 and 2008, followed by a certain reduction since then.

4. A sectoral analysis

The previous section depicted a financial sector which plays a structurally important role in global production, given not only its own activity, but also its importance in other industries production and value-added generation. Moreover, this activity seems to have globalised in the last decades, with a growing importance on financial value-added exports and imports. However, the general picture can overlook differences between productive sectors.

To address this limitation, we calculate the participation of financial value-added in the final production of each industry. Table 1 presents this variable for the years 1995, 2007 (the year before the impact of the financial crisis) and 2011. The two final columns present the

percentual variation of such participation, comparing the initial year with 2007 and 2011, while the colours represent the degree of financialization for the respective column (representing red a higher degree of financialization — or rate of growth, in the last column — and green a lower level).

The period 2012-2015 will be excluded from these calculations, since it can only be estimated from a different database (the 2018 version of the ICIO by the OECD) and, as it was mentioned above, results are not comparable due to methodological differences.

Table 1. Participation of financial sector in NFCs value-added, by sector

Sector	1995	2007	2011	1995-2007	1995-2011
Agriculture, hunting, forestry and fishing	2.8%	2.5%	2.4%	-10.3%	-13.0%
Mining and quarrying	2.2%	0.0%	0.9%	-100.1%	-57.3%
Food products, beverages and tobacco	3.5%	3.4%	3.4%	-3.1%	-3.8%
Textiles, leather, footwear	4.1%	4.0%	4.3%	-2.9%	3.7%
Wood and products of wood and cork	4.0%	3.7%	3.9%	-8.0%	-2.9%
Pulp, paper, printing, publishing	3.2%	3.5%	3.4%	10.1%	7.2%
Refined petroleum	3.4%	2.6%	2.5%	-24.6%	-26.0%
Chemicals	3.7%	3.3%	3.3%	-12.5%	-11.9%
Rubber and plastics products	3.8%	3.4%	3.5%	-9.3%	-7.9%
Non-metallic minerals	3.7%	3.2%	3.5%	-14.2%	-6.8%
Basic metals	3.6%	3.4%	3.7%	-4.0%	2.8%
Fabricated metal products	3.7%	3.4%	3.4%	-8.2%	-8.5%
Machinery and equipment, nec	3.8%	3.4%	3.5%	-10.0%	-6.6%
Computer, electronic and optical eq.	3.7%	3.7%	4.1%	0.4%	12.6%
Electr. machinery, nec	3.4%	3.6%	3.8%	5.4%	13.0%
Motor vehicles, trailers and semi-trailers	3.8%	3.5%	3.7%	-7.4%	-2.8%
Other transport equipment	3.5%	3.6%	3.6%	1.3%	1.3%
Manufacturing nec; recycling	3.7%	3.5%	3.7%	-4.8%	-0.8%
Electricity, gas and water supply	3.5%	2.8%	2.7%	-18.2%	-21.1%
Construction	3.5%	3.3%	3.5%	-5.5%	0.1%
Wholesale and retail trade; repairs	4.0%	3.7%	3.6%	-7.8%	-10.4%
Hotels and restaurants	3.5%	3.1%	3.1%	-12.1%	-10.8%
Transport and storage	4.7%	4.2%	4.0%	-10.9%	-14.0%
Post and telecommunications	2.4%	2.7%	2.8%	14.9%	17.1%
Real estate activities	4.0%	4.7%	4.9%	17.4%	23.5%
Renting of machinery and equipment	5.6%	5.7%	4.9%	1.8%	-13.5%
Computer and related activities	3.3%	2.7%	3.0%	-18.3%	-10.7%
R&D and other business activities	3.8%	3.5%	3.7%	-7.7%	-3.5%
Public admin.	2.6%	2.9%	3.1%	11.1%	18.1%
Education	1.7%	1.8%	1.8%	7.8%	9.2%
Health and social work	2.9%	3.2%	3.1%	9.5%	7.5%
Other comm., social and personal services	3.4%	3.6%	3.2%	6.1%	-4.7%
Private households with employed persons	0.0%	0.0%	0.0%	0.0%	0.0%

Source: own calculation based on ICIO-OCDE

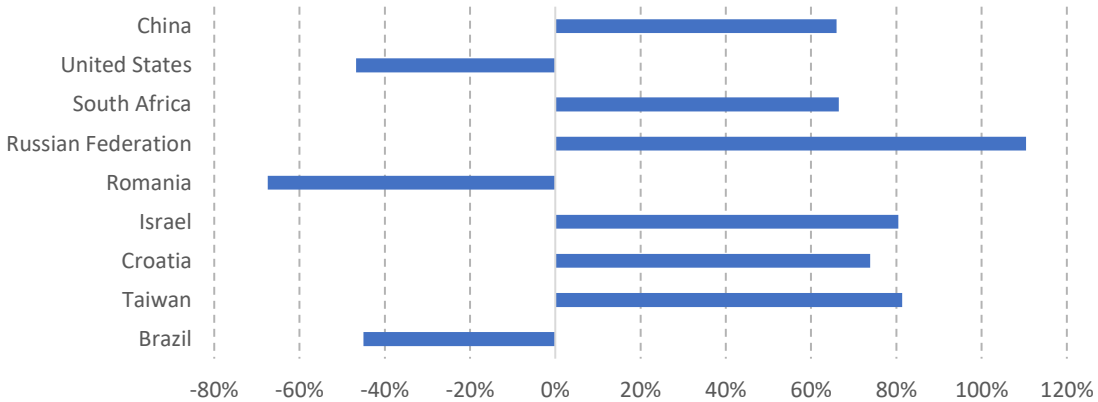
Several stylised facts emerge from these results. First, primary industries present a much lower participation of finance than others, and, moreover, this participation decreased in the analysed period (particularly in the mining sector). This is probably explained by the increase in

commodity prices, which took place without a corresponding increase in the financial needs of the primary sector. Conversely, manufacturing industries show a higher participation of finance, with a relatively low degree of variability among industries, although some of them, particularly those more engaged in globalisation of production (such as textiles or electronics) present higher levels than the average and a tendency towards financialization.

The services sector presents a similar average than the manufacturing ones, but with a higher variance among industries. Real estate, renting of machinery and transport show the highest participation of finance in their value-added. It should be noted that some particular industries experienced an important increase in their reliance on finance: real estate, post and telecommunications and, surprisingly, public administration increased their financial value-added requirements around 20% between 1995 and 2011, and the same happens for education and health, although at a lower scale.

However, these processes have not been homogeneous, but, on the contrary, some countries led sectorial financialization, while others show no changes, or even the opposite tendency. An example of this is the computer, electronic and optical equipment sector, which increased its reliance on financial value-added by 12,6% between 1995 and 2011. However, not all countries experienced the same process, and some even reduced the participation of finance in their sectoral value-added. While Russia, Israel, Taiwan, Croatia, South Africa and China acted as drivers of the process of financialization of this sector, Romania, the United States and Brazil experienced the opposite process. This analysis can be extended to all productive sectors, although here only one industry is presented for illustrative purposes.

Figure 4. Participation in financial value-added on computer, elec. and optical eq. sector
Selected countries, 1995 to 2011



Source: own calculation based on ICIO-OCDE

The divergences between countries, even at a sectorial level, lead to a more general question: did all countries present the same trend in regard to financialization or, on the contrary, we can identify diverse national trajectories? The following section aims to respond these questions.

5. A national perspective

The literature on financialization rarely compares national experiences, given their intrinsic heterogeneity, regarding both the process itself and the data availability. However, the methodology applied here provides a basis of comparison, considering the participation of finance in the value-added of NFCs from different countries. Table 2 reports the results of this estimation, applying a colour scale in the same way than in the previous table.

Table 2. Participation of financial sector in NFCs value-added, by country

	1995	2011	1995-2011
United States	3.1%	3.3%	6.0%
Canada	3.5%	4.0%	13.2%
Mexico	3.7%	1.9%	-48.5%
Russia	1.4%	2.9%	110.3%
Iceland	2.9%	4.0%	38.1%
Switzerland	2.8%	2.9%	4.5%
Lithuania	2.2%	2.1%	-1.0%
Latvia	3.0%	2.5%	-18.9%
Croatia	2.9%	4.0%	37.9%
Poland	2.1%	2.4%	19.1%
Italy	2.7%	3.6%	37.0%
Ireland	4.7%	6.0%	28.0%
Portugal	4.0%	4.1%	0.7%
Hungary	3.3%	3.3%	-0.8%
France	2.9%	3.6%	27.3%
Czech Republic	2.9%	4.0%	35.8%
Greece	3.7%	3.4%	-10.3%
Estonia	2.6%	2.3%	-11.4%
UK	3.8%	3.8%	1.8%
Korea	4.2%	4.0%	-6.1%
Bulgaria	5.7%	5.6%	-2.5%
Denmark	3.8%	4.2%	8.8%
Malta	3.4%	3.3%	-2.9%
Finland	2.9%	2.1%	-28.9%
Spain	4.2%	2.6%	-39.2%
Luxembourg	2.0%	1.7%	-16.3%
Germany	3.3%	2.4%	-28.0%
Sweden	3.2%	2.7%	-16.6%
Slovenia	4.1%	2.8%	-31.0%
Belgium	3.9%	3.4%	-13.3%
Norway	4.2%	3.0%	-28.6%
Austria	4.8%	2.7%	-44.1%

	1995	2011	1995-2011
Slovak Rep.	3.1%	2.2%	-30.7%
Netherlands	4.3%	4.0%	-5.8%
Romania	5.2%	2.4%	-53.7%
Taiwan	1.2%	3.4%	192.9%
Philippines	1.6%	2.9%	84.8%
Cambodia	1.4%	2.1%	53.5%
Cyprus	0.9%	2.1%	141.8%
Hong Kong	3.7%	3.9%	7.0%
Saudi Arabia	2.9%	3.9%	34.7%
Viet Nam	2.1%	2.3%	9.5%
India	3.7%	4.1%	10.5%
Israel	4.2%	4.8%	13.4%
China	3.8%	4.3%	11.9%
Brunei	6.6%	6.3%	-4.8%
Singapore	5.2%	6.1%	17.8%
Japan	3.2%	2.4%	-25.0%
Indonesia	3.0%	2.5%	-16.3%
Malaysia	5.3%	4.2%	-20.9%
Thailand	7.0%	5.0%	-29.1%
Turkey	6.0%	2.7%	-55.4%
Costa Rica	4.1%	5.3%	28.6%
Chile	3.5%	3.5%	0.2%
Peru	2.9%	3.3%	17.1%
Colombia	4.3%	3.7%	-12.9%
Argentina	2.3%	1.8%	-18.0%
Brazil	6.7%	3.6%	-46.5%
Australia	3.2%	4.9%	53.9%
New Zealand	3.2%	3.7%	15.4%
South Africa	3.7%	4.9%	31.5%
Tunisia	3.5%	2.9%	-18.3%
Morocco	5.3%	4.0%	-24.2%
RoW	3.5%	3.4%	-0.5%

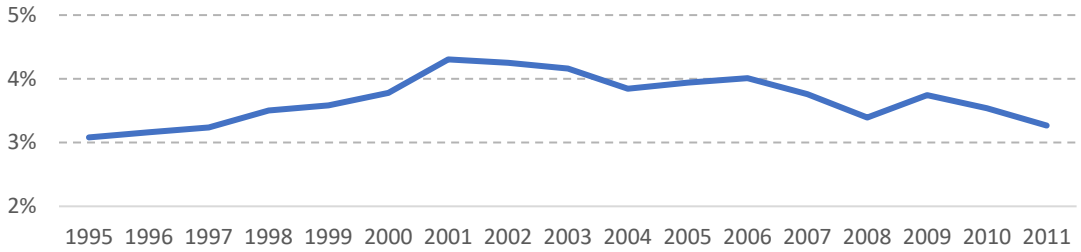
Source: own calculation based on ICIO-OCDE

The countries with a higher degree of financialization, according to our indicator, are small economies identified as tax havens: it is the case of Brunei, Singapore and Ireland. Naturally, we cannot say that the same mechanisms are in operation here than in the rest of the countries, given their particularities. Besides them, China is the bigger economy of the top 10, with 4,3% of the value-added from NFCs being generated in the financial sector. Some countries, such as Taiwan, Cyprus, Russia, Philippines and Australia experienced particularly strong processes of financialization in the considered period. Generally, most Asian countries experienced an increase in their degree of financialization.

On the contrary, the participation of finance in value-added decreased considerably in countries like Romania, Turkey, Mexico and Brazil. Although there are no clear regional tendencies, it should be noted that the 4 biggest economies of Latin American (Mexico, Brazil, Argentina and Colombia) evidenced such a tendency.

The case of the US is surprising, since it concentrates most of the literature on financialization but, in 2011, it was slightly below the world average, representing value-added only 3,3% of the value-added produced by NFCs. It should be noted, however, that in this country the participation of finance on NFCs value-added increased 40% between 1995 and 2001, presenting since then a decreasing tendency. These dynamics are consistent with the findings of Dávila-Fernández and Punzo (2018) who show that most of the financialization process in the US took place until the late 90s, presenting since then a certain reversion.

Figure 5. Participation of finance in non-financial sectors VA
United States, 1995 to 2011



Source: own calculation based on ICIO-OCDE

Following the literature on subordinate finance, the results presented in Figure 3 put in evidence that a growing part of this financial value-added (presented in table 2) is not produced in the same country where the NFC is located but abroad, in foreign financial systems. Now we can consider the national dimension of this phenomenon, by evaluating which countries' financialization process relies more on foreign financial value-added. Table 3 presents the 10 countries with higher and lower participation of foreign financial sectors in the financial value-added of NFCs.

Table 3. Participation of foreign countries in the financial value-added of NFCs, by country

	1995	2007	2011	1995-2007	1995-2011
Luxembourg	86.7%	96.2%	96.4%	10.9%	11.2%
Ireland	26.7%	70.3%	76.7%	163.2%	187.1%
Cambodia	60.7%	74.8%	71.4%	23.3%	17.6%
Viet Nam	46.4%	71.5%	60.2%	54.1%	29.8%
Malta	58.9%	70.3%	58.6%	19.3%	-0.5%
Slovak Republic	25.9%	62.2%	55.7%	140.4%	115.4%
Singapore	42.1%	58.1%	54.4%	37.9%	29.1%
Saudi Arabia	31.1%	46.7%	46.8%	49.9%	50.2%
Tunisia	24.3%	35.6%	42.9%	46.7%	76.9%
Hungary	31.6%	38.0%	41.4%	20.3%	31.0%
Portugal	23.5%	18.6%	17.3%	-20.9%	-26.5%
Japan	8.1%	13.9%	16.8%	71.8%	107.5%
Croatia	26.8%	21.8%	16.6%	-18.6%	-38.1%
United States	10.3%	14.6%	16.3%	42.6%	58.7%
France	17.6%	18.3%	16.1%	4.0%	-8.6%
Peru	15.7%	21.1%	15.8%	34.3%	0.8%
Morocco	10.3%	11.8%	13.3%	14.3%	28.6%
South Africa	19.5%	12.9%	12.4%	-33.9%	-36.3%
Brazil	4.0%	9.7%	11.3%	145.6%	185.8%
Australia	17.5%	12.9%	9.3%	-26.2%	-46.5%

Source: own calculation based on ICIO-OCDE

Countries like Luxembourg, Ireland, Cambodia and Vietnam present an extremely high degree of *foreignization*, with more than 50% of the financial value-added embedded in their NFCs production produced abroad. Moreover, some of these nations show a sustained increase in their reliance on foreign financial value-added, such as Brazil, Slovak Republic, Japan and Ireland, supporting the hypothesis of subordinate financialization.

The reasons for this increase in the reliance of foreign financial value-added is probably divergent among countries. In some countries like Ireland, Luxembourg and Malta, it is related to their importance for tax avoidance and profit shifting, which necessarily implies transactions with global financial centres (UNCTAD, 2015). In others, it seems to be associated with their engagement in global value chains as subordinate providers, for example in Cambodia, Vietnam, the Slovak Republic and Hungary (Milberg, 2008; Aguiar de Medeiros and Trebat, 2018). And a third and simpler reason, for countries like Singapore and Saudi Arabia, seems to be the small size of some countries and their high degree of economic openness.

Brazil, despite a considerable increase in the foreign participation in financial value-added, is among the group of countries with a more *nationalized* provision of financial value-added to its NFCs, along with Australia, South Africa and other countries among which we can identify important financial hubs, such as the US, Japan, the United Kingdom and China.

The fact that some countries' NFCs are incorporating a higher participation of foreign financial value-added (that is, importing it) implies that, simultaneously, other nations are increasing these exports. Table 4 presents the participation in the global exports of financial value-added to non-financial sectors.

Table 4. Participation in global exports of financial value-added to non-financial sectors, by country (selected countries)

	1995	2007	2011	1995-2007	1995-2011
United States	16.6%	15.2%	15.4%	-8.6%	-7.2%
United Kingdom	8.0%	12.0%	8.9%	49.7%	11.3%
China	1.4%	4.5%	6.3%	229.0%	365.4%
Switzerland	5.6%	5.3%	5.7%	-4.7%	2.8%
Germany	7.0%	4.7%	4.9%	-33.2%	-30.3%
Netherlands	2.6%	2.1%	3.3%	-16.5%	27.1%
France	4.7%	3.5%	3.2%	-26.1%	-32.6%
Russia	0.6%	2.8%	3.1%	361.4%	403.9%
Canada	3.3%	3.2%	3.0%	-3.6%	-8.8%
Japan	7.8%	3.7%	3.0%	-53.0%	-62.2%
Ireland	1.0%	3.1%	2.4%	220.2%	144.5%
India	0.7%	1.6%	2.3%	143.3%	250.9%
Rest of the world	40.8%	38.4%	38.6%	-6.0%	-5.4%

Source: own calculation based on ICIO-OCDE

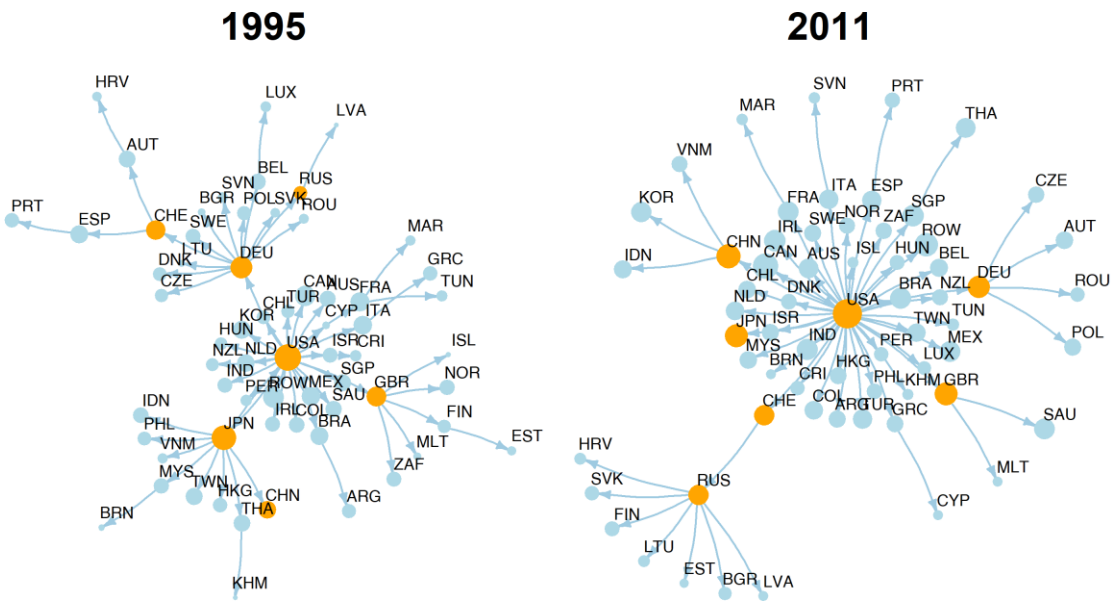
It is clear from the table the key role of the United States and the United Kingdom as vectors of financialization in other countries, since together they concentrate around 25% of the global exports of financial value-added to NFCs. The traditional role as global financial hubs of Switzerland, Germany, the Netherlands and France is also confirmed by these results.

It should be noted, however, that the participation of these countries stagnated or decreased between 1995 and 2011 (being the Netherlands an exception). Simultaneously, a new group of

financial players emerged during this period, such as China (which was in the 22nd position in the rank in 1995 and moved to the 3rd place in 2011, making 6,3% of the global exports of financial value-added to NFCs), Russia, India and Ireland.

Figure 6 compares the configuration of the global financial provision of value added to NFCs in 1995 and 2011. It is displayed, for each country, its relationship with its main provider of financial value added for its NFCs, showing considerable changes.

Figure 6. Evolution of Main Financial Hubs



Source: own calculation based on ICIO-OCDE

In 1995, we find a structure organized around the US, the main foreign supplier of value-added for the NFCs of 25 countries (out of 63). However, other 4 important players disputed the leadership: Japan was the main provider of financial value-added for most Asian countries, and Germany, the UK and, to a lesser extent, Switzerland, played a relevant role in Europe.

Instead, in 2011, the structure of finance looks more concentrated: even though the US slightly decreased its total share of financial value-added global exports (as shown in table 4), it became the main supplier for 41 countries out of 63 (65% of the total). The UK, Germany, Switzerland, France and particularly Japan suffered a considerable decrease on their area of influence, given the expansion of the US but also due to the emergence of two new players: Russia, which became a relevant supplier for Eastern European countries (mainly at expense of Germany), and China, which gained markets in Asia.

It can be concluded, considering the aforementioned results, that there has been a weakening of the traditional financial hubs (Germany, the United Kingdom, Switzerland and particularly Japan). The exception was the US, which displayed a slight reduction of its share of global financial value-added exports to NFCs, but a geographical expansion. On the contrary, China, Russia and, up to a certain point, India, increased their participation in global exports of financial value-added, particularly to Eastern Europe and East Asia.

6. Conclusions

Part of the literature on financialization has focused on the financial expenditures of non-financial companies (NFCs), such as interest payments, fees and commissions, share buybacks and distribution of dividends. Some authors have also discussed the connection between this phenomenon and the globalisation of production, arguing that the two are complementary processes. In this paper, we considered these claims and discussed them in the context of a multi-sectoral, inter-country analysis (with help of ICIO matrices), by computing the value-added provided by the financial sector to the production process of non-financial industries. This methodology also implied a drawback, since only financial services considered in the national accounting framework are taken into account, excluding, for example, share buybacks and dividends.

This analysis showed several stylised facts, while also opening many questions. First, it was found that the financial sector captures a considerable part of the value-added of non-financial companies, ranging between 3% and 4% for the considered period (1995-2015). Moreover, there has been a sustained increase in this percentage in the aftermath of the financial crisis.

Second, this process has been heterogeneous when different productive sectors are considered. The primary sector evidenced a low degree of financialization, while manufacturing and services industries showed a higher reliance on financial value-added. The latter, however, was characterized by a high variance among different industries, and some (such as post and telecommunications, real estate and, surprisingly, public administration) evidenced an accelerated process of financialization in the considered period.

Third, non-financial sectors rely considerably on imports for their requirements of financial value-added, and this percentage has increased sharply until 2008. Since then, it has declined but it is still far from its original levels. Moreover, not all countries' NFCs evolved in the same way, and while some of them reduced their reliance on foreign financial value-added, others increased it sharply, in what can be identified as a process of subordinated financialization, particularly evident in countries engaged as suppliers in global value chains.

In this regard, the results showed significant changes in the global financial network, with the stagnation of traditional financial hubs and the emergence of new ones. The former, such as the UK, Switzerland and Japan, decreased their participation on global exports of financial value-added to NFCs, while China, Russia and India became important global players. The US experienced a slight decrease on its share of exported financial value-added, but a geographical expansion.

Many questions remain to be answered. Particularly, an extension of the period of analysis would be desirable, since according to the literature a considerable part of the process of financialization took place before the 90s. Although multi-country matrices are not available (and probably, they will not be), some insights could be obtained from national matrices.

Also, it would be enriching to know if most of the trade of financial value-added is due to exports of the financial sector itself, or if, on the contrary, an important percentage is embedded in exports of intermediate goods which require domestic financial services on their production. Finally, comparing our measure of financialization with each sector's integration into global value chains would allow to study in more depth deeply the relation between both.

6. References

Aguiar de Medeiros, C. and Trebat, N. (2018) 'Las finanzas, el comercio y la distribución del ingreso en las cadenas globales de valor: implicancias para las economías en desarrollo y América Latina', in Abeles, M., Perez Caldentey, E., and Valdecantos, S. (eds) *Estudios sobre financierización en América Latina*. Santiago de Chile, Chile: CEPAL, pp. 171–201.

Ahmad, N. *et al.* (2017) *Indicators of Global Value Chains: A guide for empirical works*, *OECD Statistics Working Papers*. 84. Paris.

Amar, A. and García Diaz, F. (2018) *Integración productiva entre la Argentina y el Brasil*. Ciudad Autónoma de Buenos Aires.

Assa, J. (2016) *The Financialization of GDP and its Implications for Macroeconomic Debates*. 10/2016.

Auvray, T. and Rabinovich, J. (2017) *The financialisation-offshoring nexus and the capital accumulation of U . S . nonfinancial firms*. Paris.

Dávila-Fernández, M. J. and Punzo, L. (2018) *A multi-sectoral approach to financialisation*. 794.

Davis, L. E. (2017a) 'Financialization and Investment: a Survey of the Empirical Literature', *Journal of Economic Surveys*, 31(5), pp. 1332–1358.

Davis, L. E. (2017b) 'Financialization and the non-financial corporation: An investigation of firm-level investment behavior in the United States', *Metroeconomica*, 69(1), pp. 270–307.

Demir, F. (2007) 'The rise of rentier capitalism and the financialization of real sectors in developing countries', *Review of Radical Political Economics*, 39(3), pp. 351–359.

Demir, F. (2009) 'Financial Liberalization, Private Investment and Portfolio Choice: Financialization of real Sector in emerging markets', *Journal of Development Economics*, 88(2), pp. 314–324.

Durand, C. and Miroudot, S. (2015) 'Is labour the fall guy of a financial-led globalisation? A cross-country inquiry on globalisation, financialisation and employment at the industry level', *Review of World Economics*, 151(3), pp. 409–432.

Epstein, G. (2005) 'Introduction: Financialization and the World Economy', in Epstein, G. (ed.) *Financialization and the World Economy*. Northampton: Edward Elgar Publishing, pp. 1–16.

Epstein, G. and Montecino, J. A. (2016) *Overcharged: the high cost of finance*.

Gereffi, G., Humphrey, J. and Sturgeon, T. (2005) 'The governance of global value chains', *Review of International Political Economy*, 12(1), pp. 78–104.

Greenwood, R. and Scharfstein, D. (2013) 'The Growth of Finance', *Journal of Economic Perspectives*, 27(2), pp. 3–28.

Lapavitsas, C. (2016) *Beneficios sin producción. Cómo nos explotan las finanzas.*, *Prácticas Constituyentes*. Madrid: Traficantes de sueños.

Lazonick, W. and O'Sullivan, M. (2000) 'Maximizing shareholder value: A new ideology for corporate governance', *Economy and Society*, 29(1), pp. 13–35.

Milberg, W. (2008) 'Shifting sources and uses of profits: Sustaining US financialization with global value chains', *Economy and Society*, 37(3), pp. 420–451.

Miller, R. E. and Blair, P. D. (2009) *Input–Output Analysis*. Cambridge: Cambridge University

Press.

Onaran, Ö., Stockhammer, E. and Grafl, L. (2011) 'Financialisation, income distribution and aggregate demand in the USA', *Cambridge Journal of Economics*, 35(4), pp. 637–661.

Orhangazi, Ö. (2008) 'Financialisation and capital accumulation in the non-financial corporate sector: 1973-2003', *Cambridge Journal of Economics*, 32(6), pp. 863–886.

Panico, C. and Pinto, A. (2015) 'Income Inequality and the Financial Industry', *Metroeconomica*, 69(1), pp. 39–59.

Powell, J. (2013) *Subordinate Financialization: A study of Mexico and its non-financial corporations*. SOAS University of London.

Stockhammer, E. (2004) 'Financialisation and the slowdown of accumulation', *Cambridge Journal of Economics*, 28(5), pp. 719–741.

Stöllinger, R. *et al.* (2018) *Global and Regional Value Chains: How Important, How Different?* Vienna.

Van Treeck, T. (2008) 'Reconsidering the investment–profit nexus in finance-led economies: An ardl-based approach', *Metroeconomica*, 59(3), pp. 371–404.

UNCTAD (2015) *World Investment Report 2015: Reforming International Investment Governance*. Geneva.

United Nations (2008) *International Standard Industrial Classification of All Economic Activities (ISIC) (No. 4)*. United Nations Publications.

United Nations (2009) *System of National Accounts 2008*. New York: United Nations.

Van der Zwan, N. (2014) 'Making sense of financialization', *Socio-Economic Review*, (12), pp. 99–129.