

## THE IMPORTANCE OF THE BUSINESS SECTOR OF ACTIVITY IN FINANCIALISATION. A MULTILEVEL ANALYSIS OF BRITISH AND SPANISH CORPORATIONS

MATILDE MASSÓ

*Universidade da Coruña*

[m.mass@udc.es](mailto:m.mass@udc.es)

ORCID iD: <http://orcid.org/0000-0003-3163-7023>

FERNANDO BRUNA

*Universidade da Coruña*

[f.bruna@udc.es](mailto:f.bruna@udc.es)

ORCID iD: <https://orcid.org/0000-0002-6433-0987>

## LA IMPORTANCIA DEL SECTOR DE ACTIVIDAD EN LA FINANCIARIZACIÓN. UN ANÁLISIS MULTINIVEL DE EMPRESAS BRITÁNICAS Y ESPAÑOLAS

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### ABSTRACT

Despite the increase in literature on financialisation, most fails to cross theoretical paradigms with empirical data at firm level. Furthermore, very few sectorial studies have been conducted to date. This paper aims to bridge this gap by estimating the importance of sectorial affiliation in explaining the financialisation of large companies in the United Kingdom and Spain. As the definition of financialisation is often imprecise and unclear, we begin with a discussion of the limitations of indicators used in financialisation literature. Secondly, we build a financialisation ratio based on a unique dataset obtained from balance sheets and income statement variables of the companies listed on the FTSE -100 and Continuous Market index of 2000-2015. Finally, and for the first time in literature, we have applied a multilevel methodology in order to study similarities between the estimated sectoral patterns for Spain and the United Kingdom. Preliminary results reveal a relevant influence of the corporate sector in financialisation ratio variability. The paper opens up a new theoretical and methodological research agenda for analysing financialisation.

### RESUMEN

A pesar del aumento de la literatura sobre financiarización, la mayoría de las contribuciones no ofrecen una vinculación satisfactoria de los paradigmas teóricos con los datos empíricos a nivel de empresa. Además, hasta la fecha se han realizado muy pocos estudios sectoriales. El objetivo de este trabajo es cerrar esta brecha estimando la importancia de la afiliación sectorial en la financiarización de las grandes empresas en el Reino Unido y España. Dado que la definición de financiarización suele ser imprecisa y poco clara, comenzamos con una discusión de las limitaciones de los indicadores utilizados en la literatura sobre financiarización. En segundo lugar, construimos un indicador de financiarización basado en un conjunto de datos único, obtenido de los balances y las variables de las cuentas de resultados de las empresas que cotizan en los índices FTSE -100 y del mercado continuo de 2000-2015. Finalmente, y por primera vez en la literatura, hemos aplicado una metodología multinivel para estudiar las similitudes entre los patrones sectoriales estimados para España y Reino Unido. Los resultados preliminares revelan una influencia relevante del sector empresarial en la variabilidad del indicador de financiarización. El artículo propone una nueva agenda de investigación teórica y metodológica para analizar la financiarización.

### KEYWORDS

Financialisation; Multilevel model; Non-financial corporations; Shareholder value.

### PALABRAS CLAVE

Financiarización; Modelo multinivel; Empresas no financieras; Valor del accionista.

## 1. INTRODUCTION

The concept of financialisation is widely used to describe certain structural changes in advanced economies. The process of financialisation is associated not only with an expansion of the financial system, but also with a change in the behaviour of non-financial actors, the source of their monetary earnings and the structure of their balance sheets (Davis, 2017, 2018).

Most of the contributions on financialisation studies fail to cross appropriately theoretical approaches with empirical data at firm level. The aim of this paper is to discuss some of the difficulties involved in measuring the financialisation of non-financial corporations (NFCs) and to propose a multilevel modelling approach for estimating the importance of sectorial affiliation to explain financialisation. These difficulties have to do basically with two features of different nature: the imprecision of the literature in defining financialisation from an operational way and the characteristics and nature of the available data. Our proposed methodology of measurement is illustrated by estimating sectorial financialisation ratios in two different countries, namely, Spain and the United Kingdom, for one of the possible channels of corporate financialisation, related to income origin.

Studies carried out to date have linked financialisation to a management model based on a shareholder value firm approach that emerged in the 1980s. However, the empirical measure of financialisation in existing scientific literature is often unclear and imprecise (Davis, 2016). Approaches to financialisation are very frequently limited to a theoretical insight, ignoring a systematic and empirical discussion on how to measure the financialisation of NFC, especially outside the context of the USA.

Some authors have pointed out the importance of considering the role of the corporate sector in financial investment and the differences between listed and non-listed firms (Davis, 2018; Demir, 2009; Lin and Tomaskovic-Devey, 2013). Nevertheless, there are still major gaps in the literature available in that area. More particularly, little has been done to shed light on how the structure of certain sectors and their productive roles within global production networks can foster financialisation at firm level, for instance by monetizing their productive assets and recycling their new gains into financial investments. This process is more frequent in certain more globalised and less intensive productive investment sectors. Those competing in local markets and with a greater dependency on technological innovation and fixed investment are supposedly less financialised. This has been shown by Soener (2015) in the case of the footwear industry, Do Carmo et al. (2019) for the automotive sector, and Bowman (2018) for extractive industries.

The principal studies in this area have summarised corporate financialisation in a few “stylized facts” (Davis, 2016) regarding investment decisions, portfolio composition and income origin. Three key stylized facts have been presented in financialisation studies. First, the rise in the share of financial assets relative to fixed capital; second, the increase in liabilities; and third the growth of financial income. However, those facts are not exclusive to financialised behaviour and most contributions reflect significant variability in their interpretation (Lin and Tomaskovic-Devey, 2013; Tomaskovic-Devey and Lin, 2011; Davis, 2016, 2017). This paper focuses on the discussion of the third stylized fact regarding income origin. More specifically, we have built a financialisation ratio calculated as the relation between financial earnings and net sales, in order to analyse *where profits are generated*, either in financial investments or in core business operations<sup>1</sup>. Our empirical application uses firm level data for Spain and the UK. We have built a unique dataset of listed firms for the period 2000-2015. NFC information was provided by Thomson Reuters Eikon, a virtual desktop which offers historical information on financial data including balance sheets and income accounts of listed companies. Main limitations to measure financialisation come from the opacity of NFC's income accounts to offer a faithful reflection of the financial behaviour of NFC, the volatility of some financial and non-financial business gains data, and the low number of observations for certain sectors. These facts have produced many outliers in the financialisation measures by sector and, as a consequence, difficulties in getting a robust measure from a statistical viewpoint. Under these conditions, the precision-weighted estimates of a multilevel model allow for the calculation of sectorial financialisation ratios that are more robust to the presence of these data problems. We examine and discuss these methodological issues that are not exclusive of our paper, but they are present in most of the literature on financialisation (Lin and Tomaskovic-Devey, 2013; Tomaskovic-Devey and Lin, 2011; Davis, 2016, 2017).

The fundamentals of the case selection process lay on our aim of analysing to what extent financialisation is more dependent of the structural characteristics of the sector of activity rather than the institutional settings that situate the UK as an accumulation model dominated by finance (Jessop, 2013) and Spain as a mix market economy (Molina and Rhodes, 2007). According to comparative political economy studies (Kalinowsky, 2013), both countries represent different varieties of capitalism, revealing different intensities of the NFC financialisation processes. Most of the literature on financialisation has been focused on Anglo-American cases ignoring other institutional settings such as Southern Europe and more particularly, the Spanish case. In addition, comparative political economy studies consider national states as a unit of analysis, simplifying

the variety of industries and productive processes. This paper will fill this gap by analysing the process of financialisation of big companies in different sectors of activity and national contexts.

The main contributions of our research are the following. Firstly, the paper provides crucial yet hitherto unavailable evidence for measuring financialisation in sixteen industries. For first time in the literature, we use multilevel modelling techniques to study whether part of the variability of the firm level financialisation ratios is given by sectoral variability. Secondly, we use those sectoral estimates to compare their patterns in two samples of listed firms from Spain and the United Kingdom. Thirdly, we propose a new theoretical and methodological research agenda for analysing financialisation in various corporate sectors, using firm-level data and multilevel modelling.

We show that 13-14% of the dispersion of the (logarithms of the) financialisation ratios of the firms in our samples of Spanish and UK corporations is attributable to differences between sectors. Additionally, we find preliminary evidence of a significant moderate positive correlation between the sectoral financialisation structures of both countries.

The paper is organised as follows. Section two discusses the definition of financialisation, introducing two main approaches: the regulation theory and shareholder value contributions. Section three presents a methodological discussion of financialisation at firm level, detailing the strengths and weakness of existing indicators. Sections four and five introduce the main hypothesis and the characteristics of dataset drawn up using firm level data of listed businesses in the UK and Spain. Section six details the multilevel methodology developed to measure the influence of sectorial affiliation to explain the financialisation ratio. Sections seven and eight present the main results and conclusions regarding the sectoral convergence of firm financialisation.

## 2. DEFINING FINANCIALISATION

Financialisation can be broadly understood as the spread of the financial system, new legal and technological structures, as well as new models of relationships and interaction between economic actors and the financial sphere.

In this section we introduce two main approaches to the concept of financialisation in order to contextualise the specific objective of this paper. The first approach has been developed by the regulation theory and discussed by comparative political economy approaches. The second is centred on the shareholder value approach to firms based on contractual or agency theory and discussed in financialisation studies.

We aim to explore some elements of both approaches that have received scant attention to date.

On the one hand, we attempt to shed light on financialisation within the varieties of institutional settings and more specifically within the varieties of sectors of activity. Unfortunately, there is no specific literature available on sectoral characteristics and the process of financialisation, thereby indicating a gap that must be filled in the future. A further objective is to identify the main indicators of the shareholder approach. Both insights provide the theoretical basis for a new research agenda on financialisation based on identifying regularities and differences at industry level in different spaces of financialisation.

### The regulation theory and comparative political economy approaches

According to this approach, the increasing role of financial motives, financial markets, financial actors and financial institutions in the operation of domestic and international economies is a consequence of economic globalisation and de-regulation (Epstein, 2005), a common trend in the world economy, supported by the shift towards Neo-liberalism that occurred in the 1980s.

The regulation theory approach has provided a useful conceptual structure and indicators for analysing the changing nature of the economy. Within this framework, studies on financialisation have addressed the relationship between falling profitability in the productive system and the search for new sources of profitability of non-financial firms in financial markets. More specifically, Krippner (2011, p. 27) uses the term financialisation to refer to the growing importance of financial activities as a source of profit in the economy. The author posits two aggregate measures of financialisation: a) the growth of financial sector profits and b), the growing reliance of non-financial firms on financial activities to subsidise profits generated through more traditional productive activities.

Evidence provided by Krippner (2011) reflects financialisation as a form of structural change. However, her contribution is limited to a descriptive scope. It is not clear how big the rise in financial earnings should be in order to talk about the financialisation of the economy and there is a lack of discussion about how financial income interacts with other key elements such as fixed investment or indebtedness in the case of productive companies.

Comparative political economy approaches (CPE) reject the idea of convergence towards financialised capitalism insofar as finance-led capitalism is in itself an idiosyncratic form of capitalism (Kalinowski, 2013). Since 1970, varieties of capitalism have reacted differently to the collapse of the Bretton Woods system and the challenges of globalisation, lower growth rates and saturated domestic markets in Europe, depending on the characteristics of political

regimes and democratic institutions (Acemoglu and Robinson, 2012; Acemoglu et al., 2004). Additionally, although regulation theory and comparative political economy (CPE) approaches are complementary, they are also based on the identification of idealised types that may oversimplify the complex and unstable nature of different economies, cultures and organisations. Regulation theory approaches focus on the US case, ignoring the idiosyncrasies of other countries and institutional settings. Similarly, CPE tends to treat national states as hermetically sealed and formed by coherent economic models, such as the post-Fordism or Atlantic models. This fails to consider the variety of industries, productive processes and the complex and heterogeneous character of economic organisational models.

In addition, regulation theory and political economy approaches do not provide an explanation as to why firms financialise and why certain corporate structures and their position within production chains allows them more latitude to financialise (Soener, 2015). For example, branded marketers like Nike are better positioned to grow through financial channels and are therefore more likely to financialise by reinvesting intangible asset gains in short term investments in order to stay competitive. Conversely, retailers who sell to Nike are under greater pressure to recycle cash and other investments back into productive operations rather than financial investments such as new stores, and investing in technology, logistic and management systems.

The functionalist assumption of an evolution towards a single model of financial capitalism is based on a generalisation that cannot be applied to all industries and the behaviour of all non-financial corporations. Comparative political economy studies consider national states as a unit of analysis, simplifying the variety of industries and productive processes or the relationship between firm productive roles and global production. As with other reductionisms, financial capitalism is more a conceptual tool in exemplifying a process of change encompassing a wide variety of structures and strategies of business growth.

Given these limitations of the comparative political economy and regulation theory approaches, the present paper tries to identify possible similarities and differences in sectoral patterns of financialisation under two different institutional settings, Spain and the UK, that allegedly represent different models of financialisation.

### Shareholder value orientation

The second approach to the concept of financialisation has a narrower scope. It focuses on the emergence of a management paradigm called “shareholder value” (Lazonick and O’Sullivan, 2010). The term was coined in the 1980s by finan-

cial analysts as a model to increase the profitability of listed companies (Williams, 2000). However, as Ertuk et al. (2008) have shown, the history of shareholder discourse can be traced back to the 1930s and the work of Tawney, who was the first to distinguish ownership from management in the context of the interwar era. The critique of financialised capitalism, the dominance of finance and the critique to the financier and the rentier also dates back to that period.

Recent reinterpretations of the shareholder value orientation stem from contractual corporate theories, such as agency theory<sup>2</sup>, whereby corporations must be run exclusively for the private benefit of shareholders despite their social and public nature (Ireland, 2008). Agency Theory claims that for efficient corporate performance and to mitigate the effects of conflicting interests between ownership and management, shareholders (owners) and managers should align their interests through a set of internal control mechanisms including more equity ownership for managers, promoting activist investors or limiting management prerogatives (Jensen, 2008). Within this frame, any enforcement of shareholder objectives would automatically deliver social benefits.

Later, in the 1990s, the Agency Theory was associated with processes of corporate restructuring and downsizing, justified because they guaranteed high returns for capital owners and managers. This approach brings together a large and diverse number of contributions focused on the study of the relationships between non-financial companies, the financial sector and the rules that govern the employment relationship and give rise to a new model of wage relations (Ruesga, 2012). They all share the critique of the effects of the shareholder value ideology provided that it develops a new conception of companies as a set of financial assets rather than as an organisation intended for production. In addition, the acquisition of non-financial companies by equity funds has caused profound changes in areas such as corporate strategy, productive investment, workforce remuneration and workers’ representation and participation (Gospel et al., 2011). In this regard, literature on financialisation indicates a number of effects on employment relationships which involve a reduction in the number of employees and downward wage adjustment, which lead to a redistribution of income that is far more favourable to financial capital than corporate productivity targets. In turn, the interest in this model of corporate management lies in its implications for identifying the varieties of capitalism and its main transformations, not only on an organisational as well as an institutional level and regarding workforce management.

In sum, literature on financialisation has linked changes in corporate financial behaviour to share-

holder value orientation (Lazonick and O'Sullivan, 2010), and particularly to the diversion of productive investment for financial purposes.

### 3. MEASURING NFC FINANCIALISATION

Despite the growing interest in the process of financialisation in socio-economic literature, there is a lack of consensus regarding how to measure financialisation at firm and industry level from a quantitative and qualitative approach. One of the main reasons for that is the lack of consensus on how the process of financialisation has changed the behaviour of NFCs (Barradas, 2016, 2017; Barradas and Lagoa, 2017). Acknowledging the need for a clearer definition of financialisation at firm level has been the starting point of relevant albeit insufficient advances made in recent years to measure the financial orientation of productive firms (Crotty, 2005; Orhangazi, 2008; Baud and Durand, 2012; Davis, 2016, 2017, 2018; Stockhammer, 2005; Soener, 2015).

Literature highlights three different channels of NFC financialisation (Orhangazi, 2008; Hein and van Treeck, 2010; Hein, 2012 among others): the increasing trend of financial investments and the decreasing trend of retention ratios; the increasing leverage of corporate balance sheets and the increasing investment gains relative to operating income.

As mentioned above, studies conducted to date on the changing behaviour of NFCs are based on considerations regarding the evolution of those stylized facts that depict a broad process of structural change (Davis, 2017). This paper focuses on the third ele-

ment: the investment gains, namely, financial income from interest, dividends and other financial investments. The reason of focusing on one of these three channels has to do with the specificity of the literature and the empirical measures associated, including the variable "industry" with sixteen sectors of activity in two different countries.

Table 1 outlines the main indicators of financialisation used in literature. These ratios tend to be accompanied by an analysis of the stylized facts mentioned above, but again, there is a lack of precision in their interpretation and how they interact with other variables that represent corporate financial orientation.

For the purpose of this paper, we have created a financialisation ratio in order to find synthetic evidence of financial sources of income. Following some of the most influential contributions (Stockhammer, 2004; Orhangazi, 2008; Krippner, 2011; Lin and Tomasovic-Devey, 2013), the financialisation ratio has been calculated as a measure of financial income in relation to non-financial income, defined as the ratio of non-operating income to net sales. The financialisation ratio measures the profit realized by financial activities; in other words, those earnings that are not related to the operating activities of the company, relative to net sales and a proxy of operating earnings.

Most studies focus the discussion of this ratio on whether the increase in financial profits is done at the expense of physical investment (Davis, 2018). This is known as the "crowding out thesis" (Van der Zwan, 2014; Stockhammer, 2004; Demir, 2009). The results indicate that there is no definite conclu-

**Table 1.**  
*Main indicators of non-financial corporations' financialisation*

Author	Indicator	Country and period analysed	Unit of Analysis
Álvarez, 2015	Gross operating surplus relative to added value minus Gross fixed capital formation relative to added value	France (2004-2013)	Firm
Barradas, 2017	Interests and dividends relative to gross value added	27 European Union countries (1995-2013)	Aggregate
Davis, 2017	Financial assets relative to fixed capital, total gross debt relative to capital stock and stock repurchases	USA (1971-2014)	Firm
Krippner, 2011	Interest, dividends and capital gains on investments relative to corporate cash flow	USA (1950-2001)	Aggregate
Lin and Tomasovic-Devey, 2013	Financial receipts/business receipts	USA (1970-2008)	Firm-Industry
Orhangazi, 2008	Financial profits relative to capital stock	USA (1973-2003)	Firm
Stockhammer, 2004	Interest and dividend income relative to value added	Germany (1963-1990) France (1979-1997) UK (1971-1996) USA (1963-1997)	Aggregate

Notes: The table does not include an exhaustive review of literature. Instead, it highlights some of the main contributions cited in the literature of non-financial corporation financialisation that use empirical data.

sion regarding a possible negative relationship between real and financial earnings. In some papers, financial earnings are more a complement of physical earnings (Krippner, 2011; Davis, 2017, 2018), whilst others specify that this relationship is significant only for large firms (Orhangazi, 2008). We would like to contribute to this literature by analysing the importance of the structural characteristics of corporate sector to explain financialisation ratio differences. As Lin and Tomaskovic (2013) indicate, there are nontrivial industry differences with regard to the trajectory of financialisation which have been largely overlooked in the literature. However, both authors do not quantify the importance of sector of activity to explain financialisation because their focus is the relationship between income inequality and financialisation of NFCs at an aggregate level. Both authors avoid an in-depth discussion of the results of the financialisation measure for different industries showing a great variability for the period analysed.

In addition, analysing the financial earnings has a limited scope because these instruments are not always a faithful reflection of the financial behaviour of NFC, fundamentally for three reasons: 1) accounting practices allow for different ways of calculating profits and amortizations (Miller, 1998); 2) NFCs very often record financial revenue through separate associate companies with separate accounting; and 3) there is a certain opacity in public access to the financial information available on NFC balance sheets and income accounts.

Finally, the volatility and uncertainty of financial earnings is a key issue for consideration. To date it has not been addressed by literature and it is extremely difficult to find a robust interpretation of the financialisation ratio.

#### 4. HYPOTHESES

In order to fill the gaps in existing literature, we seek to test empirically the hypothesis that there are certain patterns of behaviour which are common to particular industries that depend more heavily on financial markets. The comparative approach of this paper leads to a dual hypothesis.

The first refers to the influence of sectorial affiliation to explain financialisation ratios. We hypothesize that the likelihood of financialising is conditioned not only by firm level decisions as a consequence of the declining of profitability rates, as stated by most literature (Crotty, 2005; Krippner, 2011), but also by certain sectoral structural patterns that characterise firms' behaviour regarding market competitiveness. Examples include the organizational structure, the importance of intangible assets such as the brand or patents, or their location within production chains.

#### Hypothesis 1: The sector of activity has a relevant role to explain the variability of the financialisation ratio in the UK and Spain

The second hypothesis refers to the existence of similar patterns of sectoral financialisation in the UK and Spain. This hypothesis would reinforce the previous one, provided that the existence of similar degree of sectoral influence in different national spaces confirms the existence of structural sectoral characteristics to face the worldwide challenges of big companies competing in a global market.

#### Hypothesis 2: There are similarities in the financialisation ratios by sectors of activity in the UK and Spain

### 5. DATA

We compiled integrated time series at a corporate level from 2000 to 2015, from Thomson Reuters Eikon Desktop. This virtual desktop contains key economic data about the firms listed on the FTSE index in the case of the UK, and the Continuous Market for Spain. The only data cleansing was the exclusion of cases with a non-positive financialisation ratio. That was enough to exclude the firms in the financial and insurance sectors.

Table 2 shows descriptive statistics for the sample of Spanish firms and table 3 the analogous statistics for the British firms sample. We have 426 observations for 144 firms from Spain and 417 observations for 182 firms from the United Kingdom, which we have aggregated in 16 sectors. We have included the financial services sector merely in order to extend the sample size, as our focus is on non-financial corporations. Those observations ('cases' or 'occasions') are the financialisation ratios of firms for one or more of the following years: 2000, 2005, 2008, 2010 and/or 2015. On average, we have 3 years per firm for Spain compared with just 2.3 for the United Kingdom. However, there are sectors, such as sector 15 in Spain or sector 4 in the United Kingdom, with a very small sample size.

Firm level data of our financialisation ratio is volatile. For instance, specific large-scale corporate transactions may increase the ratio from 0.5 to 3.0 from one year to the next. The variation coefficient fails to provide an exhaustive vision. Firms with only one year of data will have a missing coefficient, so the sectoral mean of this indicator may be given by the data of one or a very small number of firms. Additionally, firm level coefficients across time can be calculated for 2, 3, 4 or 5 years, and not necessarily sequentially. However, the indicator is enough to illustrate the heterogeneous volatility of the data. In this context, we have included those sample cases with an extreme financialisation ratio, namely higher than 10 or 30. On the one hand, the volatile nature

of the data prevents us from establishing a criterion regarding a “sensible” range of data to clean the data bank from outliers. On the other hand, the data do not allow us to distinguish between certain operations or accounts which are essential for measuring financialisation from others that should be ignored. We have therefore kept all financialisation ratio observations as they were calculated. This is also appropriate in order to show the strength of multilevel modelling when dealing with unbalanced and fuzzy data.

The four central tendency measures in the descriptive table statistics show the consequences of this data heterogeneity (see the footnote of Table 2 for details). Each has a different interpretation and generally varying figures. However, these indicators reveal a problem of comparability. For instance, the sample mean of the financialisation ratio in Spain for sector 15 is around 20, because two of the four observations present ratios higher than 30. However, the small sample size and high within-sector variance of the data make it difficult to conclude that 20 is a representative figure of the level of financialisation in the population of firms of this sector. Multilevel modelling provides a more precise sectoral indicator of financialisation.

## 6. METHODOLOGY

In the previous section we saw that our data on financialisation have a wide range of sample sizes for each sector and variation across both firms and time. Our first research question addresses the possibility of some degree of sectoral correlation in those data: what proportion of the total dispersion of the data is due to sectoral heterogeneity? Moreover, the theory outlined in section 2 predicts the possibility of similar sectoral patterns of financialisation in different countries, which requires estimating and comparing sectoral financialisation ratios.

While standard regression models ‘average’ the data, multilevel (mixed or hierarchical) modelling takes into consideration the sample size of each group and several types of data variability. This makes it a suitable technique for modelling complexity and heterogeneity. Multilevel modelling is the appropriate technique when considering nested or clustered data, breaking away from the traditional assumption of independent observation owing to data dependency (correlation) at different levels of data aggregation.

**Table 2.**  
*Descriptive statistics of the financialisation ratio in the Spanish sample*

Sector	Firms (1)	Cases (2)	Cases by firm (3)	Mean (firm) (4)	Mean (case) (5)	Median (firm) (6)	Median (case) (7)	Coeff. of variation (8)
1 Oil & Gas	7	26	3.7	0.65	0.64	0.42	0.42	73
2 Chemicals	4	13	3.2	0.37	0.43	0.23	0.37	71
3 Basic Resources	14	41	2.9	3.30	1.32	0.30	0.23	76
4 Construction & Materials	14	46	3.3	1.14	1.18	0.71	0.76	73
5 Industrial goods & services	22	69	3.1	0.67	0.72	0.57	0.54	61
6 Food & Beverage	14	42	3.0	0.85	0.91	0.32	0.24	99
7 Personal & Household Goods	6	15	2.5	2.96	3.43	1.08	0.89	105
8 Health Care	9	28	3.1	2.14	1.85	0.64	0.69	81
9 Retail	7	18	2.6	0.26	0.28	0.18	0.19	64
10 Media	8	21	2.6	0.65	0.56	0.32	0.28	60
11 Travel & Leisure	8	21	2.6	0.68	0.82	0.66	0.77	53
12 Telecommunication	3	9	3.0	1.76	1.73	1.65	1.64	53
13 Utilities	11	38	3.5	1.33	1.29	0.93	0.77	61
14 Real State	8	13	1.6	1.82	1.84	1.11	1.02	99
15 Financial Services	3	4	1.3	19.86	20.26	21.45	19.07	118
16 Technology	6	22	3.7	4.41	4.31	0.42	0.51	125
TOTAL	144	426	3.0	2.68	2.60	0.60	0.62	80

Note: The means in column (4) are first calculated by each firm, across years, and then those firm averages are later averaged for the sector. The means in column (5) are averaged for all available cases in each sector. The analogous is true for the medians in columns (6) and (7). The coefficient of variation is first calculated for each firm across time, as in (4) and (6), and then averaged for the sector. The row TOTAL includes the sum of columns (1) and (2), the ratio of those totals for column (3), the mean for columns (4), (5) and (8), and the medians for columns (6) and (7).

**Table 3.**  
*Descriptive statistics of the financialisation ratio in the sample of UK*

Sector	Firms (1)	Cases (2)	Cases by firm (3)	Mean (firm) (4)	Mean (case) (5)	Median (firm) (6)	Median (case) (7)	Coeff. of variation (8)
1 Oil & Gas	11	30	2.7	1.49	1.22	0.37	0.28	79
2 Chemicals	4	9	2.2	0.67	0.59	0.63	0.42	41
3 Basic Resources	14	40	2.9	0.88	0.95	0.34	0.40	78
4 Construction & Materials	2	2	1.0	0.38	0.38	0.38	0.38	
5 Industrial goods and services	24	51	2.1	0.82	0.65	0.41	0.34	72
6 Food & Beverage	9	22	2.4	0.99	1.01	1.01	1.00	74
7 Personal & Household Goods	9	14	1.6	1.90	1.39	1.06	0.60	106
8 Health Care	10	31	3.1	1.34	0.90	0.73	0.70	98
9 Retail	14	35	2.5	0.45	0.32	0.19	0.20	56
10 Media	14	32	2.3	1.13	0.85	0.64	0.59	62
11 Travel & Leisure	17	35	2.1	0.55	0.57	0.33	0.33	99
12 Telecommunication	7	19	2.7	0.91	0.95	0.58	0.70	63
13 Utilities	12	32	2.7	2.09	2.54	0.81	0.75	93
14 Real State	5	16	3.2	8.56	4.40	3.88	2.52	50
15 Financial Services	19	29	1.5	2.21	2.17	1.00	1.26	58
16 Technology	11	20	1.8	5.24	3.46	0.82	0.81	69
TOTAL	182	417	2.3	1.85	1.40	0.64	0.60	73

Note: see the note of Table 2.

We are going to consider three-level data of a financialisation ratio  $Y_{tfs}$ . Level one observations are the occasions  $Y_{t..}$ , which are statistics for different years  $t$  ( $t = 1, \dots, T$ ). Occasions are nested in firms  $f$  ( $f = 1, \dots, N_f$ ), where  $N_f$  is a different number of firms for the samples of Spain and the United Kingdom. Therefore, we have repeated measures of financialisation for the same firm ( $Y_{tfr}$ ). Additionally, this level two data is nested in sectors  $s$  ( $s = 1, \dots, N_s$ ) where  $N_s$  is the number of sectors, 16 in our data. We may expect some correlation (similarity, clustering) in the data of the same firm. Additionally, there is likely to be some correlation in the data of different firms belonging to the same sector. Multilevel modelling allows for the study of variances within and between groups in order to identify heterogeneous patterns for each group, both in the mean of the dependent variable (random intercepts) and in the effects of explanatory variables (random slopes). The term 'random' means that we assume that the data are a sample from a population, and belong to the same probability distribution, with zero mean and common variance.

Here we are only interested in estimating a sensitive financialisation ratio by sector. This is done with an empty random intercept model, in which the term 'empty' (or 'null') model refers to the absence of explanatory variables.<sup>3</sup> The level one model for occasion  $t$  is as follows:

$$Y_{tfs} = \beta_{fs} + \epsilon_{tfs} \quad \epsilon_{tfs} \sim N(0, \sigma^2) \quad (1)$$

where  $\beta_{fs}$  is the intercept for each firm of sector  $s$ , the average value of  $Y_{tfs}$  across periods for each firm.  $\epsilon_{tfs}$  are the (random) deviations (residual) of the occasions from that firm average and  $\sigma^2$  is the occasion variance. Our data are not balanced, in the sense that we do not have  $T$  cases for each firm. Therefore, the total number of individual cases in each sample is lower than  $T \times N_f$ .

The level two model allows us to estimate a financialisation ratio  $\beta_{fs}$  for each of the  $N_f$  firms, through the following equation:

$$\beta_{fs} = \beta_s + u_{fs} \quad u_{fs} \sim N(0, \sigma_{fs}^2) \quad (2)$$

where  $\beta_s$  is a sectoral intercept for all the firms in sector  $s$  and  $u_{fs}$  are the (random) deviations of each firm from that sectoral intercept and  $\sigma_{fs}^2$  is the sector-firm variance.

Finally, the level three model identifies a financialisation ratio for each of the  $N_s = 16$  sectors:

$$\beta_s = \beta_0 + u_s \quad u_s \sim N(0, \sigma_s^2) \quad (3)$$

where  $\beta_0$  is a global intercept for all the observations (cases of firms in sectors) and the  $N_s$  values of  $u_s$  are the (random) deviations of each sector to the global financialisation ratio.  $\sigma_s^2$  is the sector variance.

Putting them all together provides us with a full model:

$$Y_{ifs} = \beta_0 + u_s + u_{fs} + \epsilon_{ifs} \quad (4)$$

where we are interested in the  $N_s = 16$  sectoral estimates of financialisation ( $\beta_0 + u_s$ ). The  $N_f$  terms of the sum  $\beta_0 + u_s + u_{fs}$  are the financialisation ratios for each firm and  $\epsilon_{ifs}$  are the deviations in each period from those firm-level financialisation ratios. The total variance of the financialisation ratio can be broken down as in equation (5):

$$\text{var}(Y_{ifs}) = \sigma_s^2 + \sigma_{fs}^2 + \sigma^2 \quad (5)$$

The Intraclass Correlation Coefficient (*ICC*) is a measure of within-group dependence: the degree of similarity or homogeneity ('correlation') of the financialisation ratios within a given cluster ('intra classes'). At the firm level (level two), the sector-firm correlation is  $ICC_{fs}$  and gives the correlation between two occasions of the same firm and therefore the same sector. It can also be defined as the proportion of the total variance given by the variability between firms nested in sectors, as in the following equation:

$$ICC_{fs} = (\sigma_s^2 + \sigma_{fs}^2) / (\sigma_s^2 + \sigma_{fs}^2 + \sigma^2) \quad (6)$$

We focused on the proportion of the dispersion of the financialisation ratio given by the variability between sectors, which is given by the following sectoral *ICC*:<sup>4</sup>

$$ICC_s = (\sigma_s^2) / (\sigma_s^2 + \sigma_{fs}^2 + \sigma^2) \quad (7)$$

As mentioned above, each of the group 'random effects'  $u_{fs}$  and  $u_s$  are assumed to come from a common probability distribution, with zero mean and variances  $\sigma_{fs}^2$  and  $\sigma_s^2$ , for firms and sectors, respectively. The parameters for estimation are global intercept  $\beta_0$  (the global average of  $Y_{ifs}$ ) and variance terms. Conversely, the group effects are not parameters, but firm-and-sectoral-level residuals, deviations from the sectoral and from the global intercept, respectively.

Estimates of group effects are weighted averages that combine information from the group itself with information from the mean for all groups. Estimating with random effects is a conservative approach, giving less weight to less reliable data. The random effects are precision-weighted residuals called 'posterior residuals', 'empirical Bayes estimates' or 'shrunken residuals'. When the sectors are very similar (low between-sector variance), sectoral residuals  $u_s$  shrink towards zero, so, in the limit, by equation (3), the sectoral residuals are identical to the global intercept  $\beta_0$ :  $\beta_s = \beta_0 + u_s$ . The same occurs when a sector has a low number of cases and/or its data are very heterogeneous (high within-sector variance): in-

formation for that sector is not considered very reliable when estimating a specific value for the sector, so  $u_s \rightarrow 0$  and  $\beta_s \rightarrow \beta_0$ . In other words, if the data of a sector are not reliable, the estimate for that sector borrows information from the global sample. That is an advantage over the alternative estimation with sectoral fixed effects or dummy variables, in which the sectoral estimates are arithmetic means, independent of the data reliability.<sup>5</sup> Here, the assumption of a common probability distribution for the sectors of the same country allows for a more precise albeit conservative estimation of group effects, considering the information of the total sample. Moreover, the standard errors of the estimates (and significance tests) are more reliable, because the data dependence structure is not ignored.

Our goal is to estimate global and sectoral financialisation ratios in a way more robust to data problems than the arithmetic means showed in Tables 2 and 3. The random effects methodology will allow us to estimate the uncertainty of those estimates. Indeed, the results below will show a relevant sectoral component of the firm-level data of financialisation, compatible with uncertain point estimates of the difference between each precision-weighted national global ratio and the sectoral ratios ( $u_s$ ). Our sectoral estimates will be more useful for international comparisons that arithmetic means because they consider the information of the whole sample in each country, even if the test of equality among sectors in a country cannot be rejected.

We estimate these models by restricted maximum likelihood using the "lme4" package (Bates et al., 2015) of R.

## 7. RESULTS

Our dependent variable is the natural logarithm of the financialisation ratio, which has an approximately normal distribution for our samples of cases in Spain and the United Kingdom. Table 4 shows the empty random intercept models. They are the estimates of  $\beta_0$  and the (weighted) global mean of the logarithm of the financialisation ratio.

The Intra-class Correlation Coefficient at sectoral level ( $ICC_s$ ), defined in equation (7), shows that around 13-14% of the dispersion of the (log) financialisation ratios is due to sectoral heterogeneity; in other words, to differences in financialisation between sectors. Therefore, we have identified a sectoral pattern in both countries, emerging from volatile data at the firm-level.

From the models shown in Table 4, it is possible to estimate the sectoral financialisation ratios (FR), as shown in Table 5. The columns for Ln(FR) show the estimated sectoral intercepts  $\beta_s = \beta_0 + u_s$ , as in equation (3). They are the multilevel weighted aver-

**Table 4.**  
Multilevel empty models for the logarithm of the financialisation ratio

Predictors	Spain		UK	
	Estimates	p value	Estimates	p value
(Intercept)	-0.69	<0.001	-0.60	<0.001
<b>Random Effects</b>				
$\sigma^2$	1.37		1.22	
$\sigma_{fs}^2$	0.66		0.53	
$\sigma_s^2$	0.32		0.26	
$ICC_{fs}$	0.41		0.39	
$ICC_s$	0.14		0.13	
$N_f$	141		175	
$N_s$	16		16	
Observations	426		417	
Conditional R <sup>2</sup>	0.414		0.392	
Deviance	1480.9		1402.2	

**Table 5.**  
Multilevel estimates of sectoral financialisation ratios (FR)

Sector	Ln(FR)		FR		Ranking	
	Spain	UK	Spain	UK	Spain	UK
1 Oil & Gas	-0.81	-0.98	0.45	0.38	7	4
2 Chemicals	-1.18	-0.67	0.31	0.51	3	6
3 Basic Resources	-1.02	-0.64	0.36	0.52	5	7
4 Construction & Materials	-0.47	-0.72	0.63	0.49	12	5
5 Industrial goods and services	-0.84	-1.06	0.43	0.35	6	3
6 Food & Beverage	-1.18	-0.36	0.31	0.70	2	12
7 Personal & Household Goods	-0.74	-0.51	0.48	0.60	8	11
8 Health Care	-0.56	-0.64	0.57	0.53	11	8
9 Retail	-1.38	-1.41	0.25	0.24	1	1
10 Media	-1.12	-0.53	0.33	0.59	4	10
11 Travel & Leisure	-0.59	-1.07	0.55	0.34	10	2
12 Telecommunication	-0.28	-0.62	0.76	0.54	14	9
13 Utilities	-0.41	-0.25	0.66	0.78	13	14
14 Real State	-0.19	0.31	0.82	1.37	15	16
15 Financial Services	0.42	-0.30	1.52	0.74	16	13
16 Technology	-0.70	-0.15	0.50	0.86	9	15
Correlation	0.484		0.412		0.457	
p value	0.029		0.056		0.038	

Note: Correlations between the figures for both countries are Pearson correlations for the logarithm of the financialisation ratio and for its exponential. Spearman correlation was used for the sectoral rankings. The p values of those correlations compare the null hypothesis of zero correlation with the alternative of correlation greater than zero. A p value smaller than 0.05 implies the acceptance of positive correlation.

ages of the logarithms of the financialisation ratios for each sector. The columns labelled FR are the exponentials of those logarithms; the multilevel sectoral ratios, comparable to the central tendency sectoral measures shown in Tables 2 and 3.

The arithmetic mean of financialisation for Spain was 2.6 (Table 2) while the exponential of the global intercept for Spain in Table 4 is 0.5 ( $e^{-0.69} = 0.50$ ). This

shows that the arithmetic mean of financialisation was severely affected by extreme values, while the multilevel estimate implies that listed Spanish corporations tend to have a financial income equivalent to the 50% of their net sales. That is similar to the multilevel estimate for the United Kingdom, which is 55% ( $e^{-0.60} = 0.55$ ), even though the arithmetic mean of cases in Table 3 was 1.4, almost half the value for

the Spanish sample. Similarly, the weighted average ratio (FR) for sector 15 in Spain is 1.5 (Table 5), still three times greater than the global mean, but very different from the ratio around 20 shown in Table 3. All this is the consequence of precision weighted sectoral estimates of financialisation ratios.

The multilevel sectoral estimates can be used to study possible similarities between the estimated sectoral patterns for Spain and the United Kingdom. For this purpose, we considered both the sectoral ratios and the sectoral rankings of those ratios, in which number one corresponds to the sector with lower financialisation and number 16 to the sector with the highest ratio. We found preliminary evidence of a significant moderate positive correlation (see the note in Table 5) between the sectoral financialisation structures of Spain and United Kingdom.

In terms of the sectoral ranking, technological, telecommunication and real estate industries in both countries have the highest financialisation ratio. These similarities are attributable to the structural characteristics of the technological and telecommunication sectors, which are based heavily on brand imagining and on a particular innovation and risk structure (Mazzucato, 2014). The case of the real estate sector is understandable, as this sector includes companies that invest directly or indirectly in real estate through development, investment or ownership, and companies that provide services to real estate companies but do not own the properties themselves. Utilities, health care and personal and household goods occupy middle positions in the rankings for both countries, whilst the chemical, oil & gas, basic resources, industrial goods and retail sectors display a comparatively low corporate financialisation ratio behaviour. As mentioned above, explanations for these patterns lie beyond the objectives of this paper, although they open up a future research agenda on the specificity of each sector.

A sectoral pattern in the data, with an  $\alpha$  of around 10-15% of the total variance of the (log) financialisation ratio, is a robust finding in our multilevel models for some estimations after cleaning outliers or making small sectoral aggregation changes. However, specific results about sectoral similarity should be taken with caution. Our sample size is limited and multilevel techniques behave better when the number of groups is high.<sup>6</sup>

Indeed, the confidence intervals of our estimated sectoral deviations from the global intercept (estimates of  $u_s$ ) tend to include zero, indicating insufficient precision for ensuring that the population sectoral financialisation ratios are different from the aggregate. As pointed out at the end of section 6, this is not surprising. The hypothesis of equality between the sectoral estimates and the global estimate for each country cannot be rejected in our models. This is a strength of the random effects approach:

we can assess the uncertainty of our estimates. In a context of data volatility, small samples for some sectors and influential outliers, the estimates are uncertain. However, the multilevel methodology allows us to evaluate the role of sectors in explaining firm-level data and provides precision-weighted estimates more comparable between countries. We cannot get anything of that using the arithmetic means or medians in Tables 2 and 3.

Moreover, even if the statistical results were more conclusive, we could not make any assertions regarding causality. Similar sectoral patterns of financialisation between different countries might be the consequence of a process of sectoral convergence towards a common global market and business structure. However, they might also be due to common technical characteristics of the firms in those sectors: technological processes; the business cycle; regulation trends; trade patterns; cash flow features; sensitivity to global, regional or local conditions; particular strategies of leading companies in each sector and so on.

## 8. CONCLUSIONS

Despite the growing amount of literature on financialisation, most fails to address theoretical paradigms with empirical data at firm level. Additionally, sectorial studies are very scarce. In this paper, we have argued that financialisation is a structural process of change of NFC behaviour, that affects a range of industries to a greater or lesser extent, depending on their structural characteristics. These include the productive roles played by firms in global production chains or the importance of intangible assets such as brands or patents relative to physical assets. Following Soener (2015), sectoral affiliation complements the understanding of why firms financialise. Those reasons can be found in sectoral features and not merely in single firm decisions to compensate low profitability and the underperformance of productive markets, or, as regulation theory claims, in response to uncertainty. The extent to which those features are global is also part of a new comparative theoretical research agenda that will shed light on the transformation of global markets, the structural dynamics of certain industries and their financial behaviour, outcomes, and likelihood of financialising.

This paper describes a multilevel analysis of a sample of 843 companies to examine the influence of the sector in the variability of a firm-level financialisation ratio. We have selected 326 listed companies from the United Kingdom and Spain between 2000 and 2015. The data reveal the difficulties associated with measuring financialisation at firm level such as the problem of data volatility, the existence of extreme cases and abundant missing data.

After calculating a financialisation index for each firm in each period, we applied a multilevel model to estimate precision-weighted sectoral financialisation ratios for Spain and the United Kingdom. Those estimated sectoral financialisation ratios are more robust than firm-level arithmetic means to the data problems noted above.

The results confirm our first hypothesis: around 13-14% of the dispersion of firms' (log) financialisation ratios is due to sectoral heterogeneity; namely to differences in financialisation between sectors. This implies that the structure and nature of certain industries may shape the financialisation process. In addition, and in line with our second hypothesis, the sectors with the highest and lowest financialisation ratios are similar in both countries.

Our analysis has a series of shortcomings, attributable to a number of factors: the availability of data, their unambiguous interpretation in terms of the financialisation theories, the influence of outliers and the impact of using a particular classification of sectors. However, the results are encouraging. From the point of view of a methodological research agenda, multilevel modelling can be a suitable technique to study financialisation at firm level, both in order to compare the trends in a country over time and to

compare countries for several possible sectoral aggregations. Empirical financialisation literature may benefit greatly from applying these techniques to larger firm samples, focusing on detailed sectors for a broad sample of countries over extended sample periods. Empirical studies should also model changes in financialisation, rather than merely the level, and study firm-and-sectoral-level covariates. This approach will provide the necessary evidence to rebuild financialisation theories close to the data. Only a vast accumulation of empirical evidence will allow us to disentangle the varying and complex causal relationships and trends operating simultaneously at different levels of aggregation.

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## NOTES

- [1] This measure has been used by Alvarez (2015) and Orhangazi (2008), among others.
- [2] Following Ertuk et al. (2008), the agency concept of the firm cannot be considered a theory but a set of principles to manage the conflict of interest between principals and managers.
- [3] A complete description of the model assumptions can be found in Snijders and Bosker (2012), among other books. Robson and Pevalin (2015), for instance, provide an introductory text. The Centre for Multilevel Modelling of the University of Bristol offers a comprehensive list of free resources on multilevel modelling.
- [4] Technically, the variance partition coefficients (*VPC*) are the proportions of the response variance that lie at each level of the model hierarchy. Therefore,  $ICC_s = VPC_s$ , but  $VPC_f = \sigma_{f_s}^2 / (\sigma_s^2 + \sigma_{f_s}^2 + \sigma^2)$ , which is not the same as the  $ICC_{f_s}$  defined in equation (6). See Leckie (2019), among others.
- [5] In the same token, in a model without explanatory variables, the global intercept  $\beta_0$  estimated by ordinary least squares is the arithmetic mean of  $Y_{f_s}$ , while the estimated multilevel  $\beta_0$  gives more weight to the groups with the most reliable data.
- [6] See Stegmueller (2013) or Bryan and Jenkins (2016).

## REFERENCES

- Acemoglu, D., S. Johnson and J. Robinson. 2004. "Institutions as the Fundamental Cause of Long-Run Growth". *National Bureau of Economic Research Working Paper* 10481. <https://doi.org/10.3386/w10481>
- Acemoglu, D. and J. Robinson. 2012. *Why nations fail: the origin of power, prosperity and poverty*, New York: Crown Publishers.
- Alvarez, I. 2015. "Financialization, non financial corporations and income inequality: the case of France". *Socio-economic review* 13(3), 449-475. <https://doi.org/10.1093/ser/mwv007>
- Barradas, R. 2016. "Evolution of the Financial Sector – Three Different Stages: Repression, Development and Financialisation". Chapter 8 in *Advances in Applied Business Research: the L.A.B.S. Initiative*, edited by O. Gomes and H. F. Martins. New York: Nova Science Publishers.
- Barradas, R. and S. Lagoa. 2017. "Financialisation and The Portuguese Real Investment: A Supportive or Disruptive Relationship?". *Journal of Post Keynesian Economics* 40(3): 413-439. <https://doi.org/10.1080/01603477.2017.1286940>
- Barradas, R. 2017. "Financialisation and Real Investment in the European Union: Beneficial or prejudicial Effects?". *Review of Political Economy* 29(3): 376-413. <https://doi.org/10.1080/09538259.2017.1348574>
- Barradas, R. 2019. "Financialization and Neoliberalism and the Fall in the Labour Share: A Panel Data Econometric Analysis for the European Union Countries". *Review of Radical Political Economics* 51(3): 383-417. <https://doi.org/10.1177/0486613418807286>
- Bates, D., M. Maechler, B. Bolker and S. Walker. 2015. "Fitting Linear Mixed-Effects Models Using lme4". *Journal of Statistical Software* 67(1): 1-48. <https://doi.org/10.18637/jss.v067.i01>

- Baud, C. and C. Durand. 2012. "Financialization, globalization and the making of profits by leading retailers". *Socio-Economic Review* 10(2): 241-266. <https://doi.org/10.1093/ser/mwr016>
- Bowman, A. 2018. "Financialisation and the extractive industries: The case of South African platinum mining". *Competition and change* 22(4): 388-412. <https://doi.org/10.1177/1024529418785611>
- Bryan M. L. and Jenkins S. P. 2016. Multilevel Modelling of Country Effects: A Cautionary Tale. *European Sociological Review* 32(1), 3-22. <https://doi.org/10.1093/esr/jcv059>
- Crotty, J. 2005. "The neoliberal paradox. The impact of destructive product market competition and modern financial markets on non financial corporation performance in the neoliberal era". Pp. 77-110 in *Financialisation and the world economy*, edited by G. Epstein. London: Edward Elgar.
- Davis, L. 2016. "Identifying the 'financialization' of the nonfinancial corporation in the US economy: A decomposition of firm level balance sheets". *Journal of Post Keynesian economics* 39(1): 115-141. <https://doi.org/10.1080/01603477.2015.1116370>
- Davis, L. 2017. "Financialisation and investment: A survey of the empirical literature". *Journal of Economic Surveys* 31(5):1332-1358. <https://doi.org/10.1111/joes.12242>
- Davis, L. 2018. "Financialisation and the non-financial corporation: an investigation of firm-level investment behavior in the United States". *Metroeconomica. International Review of Economics* 69(1): 1-38. <https://doi.org/10.1111/meca.12179>
- Demir, F. 2009. Capital market imperfections and financialisation of real sectors in emerging markets: private investment and cash flow relationship revisited. *World development* 37(5): 953-964. <https://doi.org/10.1016/j.worlddev.2008.09.003>
- Do Carmo, M., M. Sacomano and J. C. Donadone. 2019. "Financialisation in the Automotive Industry: Shareholders, Managers, and Salaries". *Journal of Economic Issues* 53(3): 841-862. <https://doi.org/10.1080/00213624.2019.1646609>
- Epstein, G. 2005. "Introduction: Financialisation and the World Economy". Pp. 3-16 in *Financialisation and the World Economy*, edited by G. Epstein. Cheltenham, UK: Edward Elgar.
- Ertuk, J., J. Froud, S. Johal, A. Leaver and K. Williams. 2008. *Financialization at work. Key texts and commentary*. London: Routledge.
- Gospel, H., A. Pendelton, S. Vitols and P. Wilke. 2011. "New Investment Funds, Restructuring, and Labor Outcomes: A European Perspective". *Corporate governance. An international Review* 19(3): 276-289. <https://doi.org/10.1111/j.1467-8683.2011.00848.x>
- Hein, E. 2012. "'Financialization,' Distribution, Capital Accumulation, and Productivity Growth in a Post-Kaleckian Model". *Journal of Post Keynesian Economics* 34(3): 475-496. <https://doi.org/10.2753/PKE0160-3477340305>
- Hein, E. and T. van Treeck. 2010. "Financialisation and rising shareholder power in Kaleckian/Post-Kaleckian models of distribution and growth". *Review of Political Economy* 22(2): 205-233. <https://doi.org/10.1080/09538251003665628>
- Ireland, P. 2008. "Whose company is anyway?". Pp. 134-150 in *Financialization at work. Key texts and commentary*, edited by I. Ertuk, J. Froud, S. Johal, A. Leaver and K. Williams. London: Routledge.
- Jensen, M. 2008. "Making internal control system work". Pp. 93-109 in *Financialization at work. Key texts and commentary*, edited by I. Ertuk, J. Froud, S. Johal, A. Leaver and K. Williams. London: Routledge.
- Kalinowski, T. 2013. "Crisis management and the varieties of capitalism. Fiscal stimulus packages and the transformation of East Asian State-led capitalism since 2008", WZB Discussion Paper, SP III 2013-501.
- Krippner, G. 2011. *Capitalizing on Crisis: The Political Origins of the Rise of Finance*. Harvard: Harvard University Press. <https://doi.org/10.2307/j.ctvj2x23>
- Lazonick, W and M. O'Sullivan. 2010. "Maximizing Shareholder Value: A New Ideology for Corporate Governance". *Economy and Society* 29(1): 13-35. <https://doi.org/10.1080/030851400360541>
- Leckie G. 2013. *Three-Level Multilevel Models: Concepts. LEMMA VLE Module 11*. Centre for Multilevel Modelling, University of Bristol. <http://www.bristol.ac.uk/media-library/sites/cmm/migrated/documents/11-concepts-example.pdf>
- Lin, K-H. and D. Tomaskovic-Devey. 2013. "Financialization and U.S. Income Inequality, 1970-2008". *American Journal of Sociology* 118(5): 1284-1329. <https://doi.org/10.1086/669499>
- Mazzucato M. 2014. *The entrepreneurial state*. New York: Anthem Press.
- Miller, P. 1998. "The margins of accounting". Pp. 174-194 in *The laws of the markets*, edited by M. Callon. Oxford: Blackwell Publishers.
- Molina O. and M. Rhodes. 2007. "The Political Economy of Adjustment in Mixed Market Economies: A Study of Spain and Italy". Pp 223-252 in *Beyond Varieties of Capitalism. Conflicts, Contradictions and Complementarities in the European Economy*, edited by R. Hancké, M. Rhodes and M. Thatcher. Oxford: OUP.
- Orhangazi, O. 2008. "Financialisation and capital accumulation in the non financial corporate sector". *Cambridge Journal of Economics* 32(6): 863- 886. <https://doi.org/10.1093/cje/ben009>
- Robson K. and Pevalin D. 2015. *Multilevel Modeling in Plain Language*, SAGE Publications Ltd.
- Ruesga, S. 2012. "La financiarización de las relaciones laborales". *Cuadernos de Relaciones Laborales* 30(2): 409-429. [https://doi.org/10.5209/rev\\_CRLA.2012.v30.n2.40207](https://doi.org/10.5209/rev_CRLA.2012.v30.n2.40207)
- Snijders T. A. B. and Bosker R. 2012. *Multilevel Analysis: An Introduction to Basic and Advanced Multilevel Modeling*, SAGE Publications Ltd.
- Soener, M. 2015. "Why do firms financialize? Meso level evidence from the US apparel and footwear industry, 1991-2005". *Socio-Economic Review* 13(3): 549-573. <https://doi.org/10.1093/ser/mvw006>
- Stegmuller D. 2013. How Many Countries for Multilevel Modeling? A Comparison of Frequentist and Bayesian Approaches. *American Journal of Political Science* 57(3), 748-761. <https://doi.org/10.1111/ajps.12001>
- Stockhammer, E. 2004. "Financialisation and the slowdown of accumulation". *Cambridge Journal of Economics* 28(5): 719-741. <https://doi.org/10.1093/cje/beh032>

Stockhammer, E. 2005. "Shareholder value orientation and the investment profit puzzle". *Journal of Post Keynesian economics* 28 (2): 193-215. <https://doi.org/10.2753/PKE0160-3477280203>

Tomaskovic-Devey, D. and K-H. Lin. 2011. "Income Dynamics, Economic Rents, and the Financialization of the U.S. Economy". *American Sociological Review* 76(4), 538-559. <https://doi.org/10.1177/0003122411414827>

Van der Zwan, N. 2014. "Making sense of financialisation". *Socio-Economic Review* 12(1): 99-129. <https://doi.org/10.1093/ser/mwt020>

Williams, K. 2000. "From Shareholder Value to Present Day Capitalism". *Economy and Society* 29(1): 1-12. <https://doi.org/10.1080/030851400360532>

**MATILDE MASSÓ** is Associate Professor of Sociology at the University of A Coruña and a member of the Bauman Institute at the University of Leeds. She has expertise in economic sociology, specifically in alternative finance and financialisation studies. She has been a Marie Skłodowska Curie fellow at the University of Leeds in 2017-2018. She is a founding member of the Economic Sociology Network and vice-president of Research and Publications of the Spanish Sociological Association. She has extensive experience in coordinating and collaborating in research projects and providing academic support and leadership to undergraduate students. She is the principal investigator of the project 'Social consequences of financialisation: monetary accumulation, lack of employment, social inequality' funded by the Ministry of Economy of the Government of Spain CSO2016-78122-R.

**FERNANDO BRUNA** is professor of Economic Growth and Spatial Economics at the Universidade da Coruña, Spain. He is PhD. in Economics; Master's in Applied Modelling; Bachelor's in Economics, Sociology and Political Sciences; and Foreign Trade Manager. He was researcher at the Institute of Economic Forecasting *Lawrence R. Klein*, and at the world network of economic modelling *Project LINK* (Toronto). As a manager of a consulting firm, he organized the 2009 elections to the regional Parliament of Galicia. He is author of several books about management, development and macroeconomics, and teaches workshops on spatial modelling using R. His current lines of research focus on economic geography, socioeconomics and innovation.