The effects of financialisation and financial development on investment: evidence from firm-level data for Europe

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May 2016

Abstract

In this paper we estimate the effects of financialisation on physical investment in selected European countries using panel data based on balance-sheets of publicly listed non-financial companies (NFCs) supplied by Worldscope for the period 1995-2015. We find robust evidence of an adverse effect of both financial payments (interests and dividends) and financial incomes on investment in fixed assets by the NFCs. This finding is robust for both the pool of all Western European firms and selected single country estimations. The negative impacts of financial incomes are non-linear with respect to the companies' size; financial incomes crowd-out investment in large companies, and have a positive effect on the investment of only smaller, relatively more credit-constrained companies. Moreover, we find that a higher degree of financial development is associated with a stronger negative effect of financial incomes on companies' investment. This finding challenges the common wisdom on 'finance-growth nexus'. Our findings support the 'financialization thesis' that the increasing orientation of the non-financial sector towards financial activities is ultimately leading to lower physical investment, hence to stagnant or fragile growth, as well as long term concerns for productivity.

Keywords

Financialization, Investment, Non-financial sector, Firm data, Europe, Financial development

Acknowledgments

JEL codes

C23, D22, G31

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1. Introduction

This paper estimates the effects of financialisation on physical investment using panel data based on balance-sheets of non-financial publicly listed companies for the period of 1995-2015 in Europe.

Back in the 1950s Joan Robinson (1952:86) stated that "where enterprise leads finance follows", describing a financial system that was merely supporting trajectories already planned by the productive sector. In contrast, recent structural changes in the functioning of capitalism mark the growing prominence of the 'financial motives' over the traditional productive purposes. Instead of being merely a vehicle for more efficient production plans, in the last decades the financial activities have grown disproportionately compared to the financing requirements of the rest of the economy. This new configuration raises the question of how this imbalance affected the accumulation processes in the non-financial sector.

The conventional literature asserts that financial markets facilitate the financing and the efficient allocation of investment (King and Levine, 1993; Gilchrist and Himmelberg, 1995; Beck et al., 2000; Love, 2003; Beck and Levine, 2004; Levine, 2005). However, Arestis and Demetriades (1997) warn against the robustness of these results based on cross-country evidence, which do not take into account the institutional peculiarities. Moreover, the effect of stock market development on growth is found to be weaker than that of the banking sector (Arestis et al., 2001). Recently after the 2007-2008 crash, the disproportionate growth of the financial system has been questioned in some conventional contributions as well (Cecchetti and Kharroubi, 2012; Beck et al., 2014; Arcand et al., 2015). In particular, Law and Singh (2014) and Arcand et al. (2015) argue that there is a 'threshold effect' in the relationship between the extension of financial resources and growth; thus the expansion of the financial system is beneficial to growth only up to a point (e.g. the size of the financial system should not exceed 100% of the GDP). Recently, a similar argument has been put forward by an IMF discussion

note with respect to developing and emerging markets (Sahay et al., 2015), which argues that 'too much finance' increases both economic and financial volatility.

The Post-Keynesian literature on 'financialization' illustrates the negative impacts of expanding financial sector on the economic systems (Epstein, 2005), on income distribution and demand (Onaran et al., 2010; Hein, 2013), and in particular on investment (Stockhammer, 2004, 2006; Orhagnazi, 2008a; Dallery, 2009; Cordonnier and Van de Velde, 2015). 'Financialisation' is a self-reinforcing socio-economic process, which manifests itself in the growing prominence of behaviours derived from the functioning of the financial sector. A similar argument can be found in the marxist literature, for which the long-term trajectories of the economies gravitate more around the financial sector and less around the productive one (Foster, 2010). Since the 1980s, the slow down in investment and growth went along with a rise in the interest and dividend payments and share buybacks of the non-financial corporations (NFCs), which 'punctured' the value generated by NFCs (Duménil and Levy, 2004). Consequently, companies experienced a significant reduction in available funds for physical investments.[1]

Despite an expanding theoretical literature on the effects of financialization, the empirical evidence is predominantly relegated to a macro perspective, especially in the case of physical investment. The origins of the theoretical microeconomic approach to the impact of finance on investment can be traced back to the seminal works of Fazzari and Mott (1986) and Ndikumana (1999). To the best of our knowledge only Orhangazi (2008b) and Demir (2009) analyse directly the effects of financialization on accumulation from a microeconomic perspective.

We identify four novelties of this paper is. Firstly, we provide a model of firm-level investment, which extends the Post-Keynesian model by Fazzari and Mott (1986) by integrating the effects of financial incomes as well as payments in a coherent fashion. Second, we use the Worldscope database for firm balance sheets, which allows us to build a consistent measure for

companies' financial activities regarding both inflows and outflows. Third, we provide the first micro-econometric evidence for a large sample of European NFCs (as well as some single countries) on the effects of financialisation on investment using firm data. Fourth, we explore the interactions between increasing financial development (FD, defined conventionally as the financial market activities) and the effect of financial incomes on NFCs' investment.

The remainder of the report is organized as follows. Section 2 discusses the key theoretical and empirical contributions in the literature. Section 3 presents the alternative models of investment to be estimated. Section 4 introduces the data and the stylized facts of our samples. Section 5 discusses the estimation methodology. Section 6 presents the estimation results. Section 7 concludes.

2. Accumulation of fixed assets, liquidity, and financialisation

In the earlier 'accelerator investment models' (e.g. Kuh and Meyer, 1955; Evans, 1967) the capital expenditure was almost entirely explained by expected profitability measured by sales. In contrast, the early neoclassical approach modelled the firm's investment decision as a static maximization problem of discounted flows of profits over an infinite time horizon (Jorgenson, 1963; 1971). As an alternative, investment models, based on the maximization of the expected cash flows (or market value) in the presence of adjustment costs and expectations, which take the dynamic process explicitly into account, have been proposed (Chirinko, 1993). Within this group, the so-called 'Q model' of Brainard and Tobin (1968), which models investment using the Tobin's Q variable, defined as the ratio of the firm's stock market valuation to its capital replacement cost, has been widely used. However, firm-level empirical analysis has failed to provide evidence of a strong explanatory power of the Q variable (Hayashi and Inoue, 1991; Bond et al., 1992). Possible mainstream explanations focused on the bias of the stock market evaluation due to asymmetric information (Stiglitz and Weiss, 1981) and periodic 'financial

bubbles' (Bond and Cummins, 2001; Bond et al., 2004). But more importantly, as argued by Hubbard (1998), the source of financing matter for investment.

Empirical evidence shows that cash-flows, i.e. internal funds, are important determinants of investment (Fazzari et al., 1988; Blundell et al., 1992; Brown et al., 2009). In particular, the seminal contribution by Fazzari et al. (1988) shows that fluctuations in internal finance, as reflected by cash-flows, are statistically more important than the stock market evaluation in determining the level of accumulation. Liquidity constraints play a crucial role in determining investment (Fazzari and Petersen, 1993; Chirinko and Schaller, 1995; Kadapakkam et al., 1998). In addition, the empirical evidence shows that cash flow always has a signficant positive effect on accumulation, whilst the effects of the stock market evaluation and debt are mixed (Devereux and Schiantarelli, 1990; Bond and Meghir, 1994; Bond et al., 2003; Bloom et al., 2007). The mainstream investment literature argues that companies' financing issues mainly derive from agency problems, and the development of financial markets can relax these constraints (Devereux and Schiantarelli, 1990; Love, 2003; Pawlina and Renneboog, 2005; Love and Zicchino, 2006; Guariglia and Carpenter, 2008; Bond et al., 2003). In particular, Beck et al. (2005) find that firms with higher financing obstacles shows slower growth, but this relationship is weaker in countries with relatively more developed financial systems. In addition, these authors finds that FD is more effective in alleviating financing constraints especially for smaller firms. Nonetheless, according to theor findings the effect of financial development on firms' growth is always-positive. However, while some studies find a significant and positive effect of FD on economic growth and investment (Levine, 2005; Arestis et al., 2015), both the statistical significance and size of the estimates vary widely due to methodological heterogeneity (Valickova et al., 2015).

In both the analysis of investment and financial development discussed above, companies' financial flows are not directly taken into account. As a result of the transformation of the economies towards a financialized stage in the last decades, the conventional models of

investment may be misspecified due to their neglect of some important factors in the firms' financing and investment decision.

The Post-Keynesian literature offers a more holistic approach to the analysis of the effect of financial markets on investment, where NFCs are far from passive players under the control of oversized financial markets. In addition to (or even partially substituting) physical investments, NFCs can readily accumulate financial assets. The Post-Keynesian literature conceives the firm as a 'battlefield' for different vested interests (Stockhammer, 2006).[2] The most visible type of internal conflict is reflected in shareholders' preference for short-term profitability, which undermines the accumulation of fixed capital (Dallery, 2009; Hein and van Treeck, 2008). There is a 'growth-profit trade-off' within the managerial decision-making process of firms (Lavoie, 2014). The increasing involvement of the NFCs in finance-related activities has to be understood primarily as a consequence of a change in the corporate governance (Lazonick and O'Sullivan, 2000). From the early 1980s onwards, there has been a legitimization of the rule of maximizing the 'shareholder value' (Rappaport, 1999). While the former imperative has been to 'retain and re-invest', under the shareholder rule, to 'downsize plants and distribute earnings' is paramount. The management has to please the shareholder's requests by distributing dividends and boosting share prices through share buyback operations (De Ridder, 2009). Furthermore, financialisation offers a fall back option to firms to invest in reversible short-term financial assets instead of irreversible long-term fixed assets, and thereby financial assets crowd out physical accumulation. This behavioural twist negatively affected the long-term investment plans.

As already said in the introduction, the vast majority of the empirical literature on the impacts of financialization on investment is based on a macroeconomic framework (Stockhammer, 2004; van Treek, 2008; Orhangazi, 2008a; Arestis et al., 2012). Regarding firm level effect of finance on investment, the seminal paper by Fazzari and Mott (1986) models the three key components of the Post-Keynesian theory of investment: a positive effect of sales (as

a proxy for capacity utilization), a positive and independent effect of internal finance, i.e. 'less expensive' retained earnings, and a negative impact of interest expenses.[3] In particular, they introduce a flow measure for interest payments to define a 'committed constraint' on the available cash flow. In another Post-Keynesian microeconomic investment model, Ndikumana (1999) finds negative effects of both stock and flows of debt. Firm's indebtedness not only reduces the cash flow (via interest payments), but also affects the sustainability of investments.

However, Fazzari and Mott (1986) and Ndikumana (1999) do not model the impact of financial revenues, which is an important dimension of financialisation. To the best of our knowledge, there are only two microeconomic analyses of the effects of financial incomes of NFCs. Orhangazi (2008b) finds a negative effect of financial payments and long-term debt on accumulation in the NFCs in the USA, whereas the effects of financial incomes on investment depend on the firm size and sector, with a significant negative crowding out effect for larger firms, and a positive effect for the smaller firms in the non-durables sector, indicating its dual role as a source of internal finance. Demir (2007, 2009) focuses on Argentina, Mexico, and Turkey. The author finds that financial liberalization in these three emerging countries channelled savings from the productive sector towards financial speculation, thus reducing the availabilty of funds for long-term physical investment (Demir, 2007). Moreover, increasing returns on financial assets relative to fixed assets significantly reduced accumulation in these emerging markets' NFCs (Demir, 2009).

Event though the available evidence depict financialization as a phenomenon common to almost all developing and developed economies, the different institutional settings at country or/and regional level reveal the presence of 'varieties of financialization' (Lapavitsas and Powell, 2013). One contribution of this paper is to analyse whetherfinancialization had similar effects in Europe to those found in the case of the USA.

Building on the reviewed literature, in the next section we describe the specifications of different models of investment, all of which take explicitly into account the effects of financialisation including both financial incomes and payments.

3. Models of investment

Within the Post-Keynesian theory, capital accumulation is an intrinsically dynamic process (Kalecki, 1954; Lopez and Mott, 1999). Physical investment is an irreversible phenomenon. There is a path dependency that link past and future levels of accumulation, as confirmed by the previous empirical literature (Ford and Poret, 1991; Kopcke and Brauman, 2001; Orhangazi, 2008b; Arestis et al., 2012). Therefore, in all the models to be estimated, we include the lagged investment. Also all other explanatory variables are lagged in order to depict the 'adjustment processes'.

To analyze the potential effects of financialisation, we start with a basic investment model based on Fazzari and Mott (1986). Next, by progressively enriching this basic version, we present our final model of 'financialized investment'. Equation (1) presents our specification, where the rate of accumulation, I/K, is:

$$\left(\frac{I}{K}\right)_{it} = \beta_0 + \beta_1 \sum_{j=1}^{2}\left(\frac{I}{K}\right)_{it-j} + \beta_2 \sum_{j=1}^{2}\left(\frac{\pi - CD}{K}\right)_{it-j} + \beta_3 \sum_{j=1}^{2}\left(\frac{S}{K}\right)_{it-j} + \beta_4 \sum_{j=1}^{2}\left(\frac{\pi_F}{K}\right)_{it-j} + \beta_5 \sum_{j=1}^{2}\left(\frac{F}{K}\right)_{it-j} + \beta_t + \varepsilon_i \quad (1)$$

where I is the addition to fixed assets, K is the net capital stock, S is net sales, π is net operating income and CD is cash dividends paid, F is the sum of cash dividends and interest paid on debt, whilst π_F is the total non-operating (financial) income as the sum of interest and dividends received by the company. i is the firm index, B_t identifies a set of time-dummies to control for unobservable time-specific effects common to all firms in the different estimations, whilst the standard disturbance term ε_{it} captures firm-specific fixed effects and idiosyncratic

shocks. All variables are introduced in lags to reflect the time consideration in the investment plans. The net operating income/fixed assets ratio (retained earnings) is a measure of the after dividends profit rate, the sales/fixed assets ratio is a proxy reflecting capacity utilization, financial payments/fixed assets and non-operating income/ fixed assets are the two measures of the impact of financialization. Table 1A in the appendices contains variables' descritpions and codes. We expect positive effects of the lagged accumulation rate, profit rate, and sales on investment. In contrast, in the light of the macroeconomic and microeconomic Post-Keynesian literature, we expect the impact of total financial payments (or 'cash commitments') to be negative. In this model cash dividends are conceived both as a reduction of available internal funds, and as reflecting behavioural changes due to the 'shareholder value orientation' (henceforth SVO) as suggested by Lazonick and O'Sullivan (2000). The composite measure for outward financialization, *F,* which is the sum of interest and dividend payments (as a ratio to *K*), capturing a) the liquidity effect of interest payments, and b) the additional behavioural effect of the SVO. In brief, *F* reflects the financial outflows, while π_F reflects the financial inflows. Not only do NFCs use part of their funds to pay interest and dividend to the financial sector, but they can also more than before pursue non-operating financial investment themselves, thus receiving financial incomes. We include the sum of interests and dividends received by the NFCs (π_F) as a ratio to *K* as an additional explanatory variable[4]. Theoretically, the sign of the effect of financial incomes on investment is ambiguous. On the one hand, these incomes may have a positive impact on the accumulation of fixed assets by easing the liquidity constraint faced by firms. In particular, this can be the case for relatively smaller companies, which are more likely to experience liquidity restrictions compared to larger corporations. On the other hand, financial activities can also be detrimental to physical accumulation, since NFCs will be attracted by short-term, reversible financial investment, instead of engaging in long-term, irreversible physical investment. In order to explore the potential different effect of financial payments in small vs. large companies, we estimate an extended version of specification (1) as,

$$\left(\frac{I}{K}\right)_{it} = \beta_0 + \beta_1 \sum_{j=1}^{2}\left(\frac{I}{K}\right)_{it-j} + \beta_2 \sum_{j=1}^{2}\left(\frac{\pi - CD}{K}\right)_{it-j} + \beta_3 \sum_{j=1}^{2}\left(\frac{S}{K}\right)_{it-j} + +\beta_4 \sum_{j=1}^{2}\left(\frac{\pi_F}{K}\right)_{it-j} + \beta_{4.1} \sum_{j=1}^{2}\left[\left(\frac{\pi_F}{K}\right) * D_n\right]_{it-j} + \beta_5 \sum_{j=1}^{2}\left(\frac{F}{K}\right)_{it-j} + \beta_t + \varepsilon_{it} \quad (2)$$

where the dummy variable D_n takes the value 1 if the average total assets of company *i* lies in the lower *n* percentile of the distribution, and takes the value 0 otherwise. In our estimations, this size-dummy is interacted with the financial incomes variable, as well as with other explanatory variables included in the above specification (the rationale of the dummy is the same). We interacted financial incomes with different levels of total assets for each country or pool. In this specification, while β_4 is the effect of financial incomes (or other variables) in larger companies, $\beta_4 + \beta_{4.1}$ capture the effect of financial incomes (or other variables) in smaller companies.

In addition, the effect of financial incomes on NFCs rate of accumulation can differ depending on the degree of FD of the country in which the NFCs are based. In this paper, we analyse the relationship between the development of the financial system and physical investment by estimating the impact of NFCs financial incomes on investment at different levels of financial development. The financial system acts as a provider of long-term liquidity to finance investment but, when its size and development is detached from the requirements of the real-sector, a perverse effect may emerge. In fact, NFCs may take advantage of a growing and developing financial system to engage even more in non-operating financial activities, causing a strong negative effect on their core capital accumulation. To explore this additional effect we estimate equation (3) in which we interact our variable for financial incomes $\left(\frac{\pi_F}{K}\right)$ with the dummy variable D_{LFD}. The latter takes the value 1 if company *i* is located in a country with relatively low level of FD, and takes value 0 otherwise (i.e. if company *i* is located in a country with higher level of FD).

$$\left(\frac{I}{K}\right)_{it} = \beta_0 + \beta_1 \sum_{j=1}^{2}\left(\frac{I}{K}\right)_{it-j} + \beta_2 \sum_{j=1}^{2}\left(\frac{\pi - CD}{K}\right)_{it-j} + \beta_3 \sum_{j=1}^{2}\left(\frac{S}{K}\right)_{it-j} + +\beta_4 \sum_{j=1}^{2}\left(\frac{\pi_F}{K}\right)_{it-j} + \beta_{4.1} \sum_{j=1}^{2}\left[\left(\frac{\pi_F}{K}\right) * D_{LFD}\right]_{it-j} + \beta_5 \sum_{j=1}^{2}\left(\frac{F}{K}\right)_{it-j} + \beta_t + \varepsilon_{it} \quad (3)$$

In order to split our sample into countries with low and high financial development, we refer to the traditional index proposed by Demirgüc-Kunt and Levine (1996) and used in Love and Zicchino (2006) among others. Even though more disaggregated indeces have been introduced (see Beck et al., 2010), we opted for the traditional version for two reasons: first, this index is more parsimonious and help us in interpreting the results. Second, in line with the aim of this study, we are interested in taking into account the 'depth' of the financial sector. Although important, the efficiency and stability of the financial system used in other indeces are less relevant categories in this respect. The FD index is the sum of Index 1 and Findex 1 from Demirguc-Kunt and Levine (1996). Index 1 summarizes the stock market development and is the sum of (standardized indices of) market capitalization to GDP, total value traded to GDP, and turnover (i.e. total value traded/market capitalization). Findex1 account for the financial intermediary development and is the sum of (standardized indices of) ratio of liquid liabilities to GDP (i.e. M3/GDP), and ratio of domestic credit to private sector to GDP.[5] If a country has a FD index above the mean, it will be considered to have a high-developed financial system. We discuss the stylized facts of this index in the next section.

With equations (1), (2), and (3) we aim at introducing a full model of firm-level investment that is coherent with the Post-Keynesian tradition of investment analysis, and that a) takes into account the inherent irreversibility of physical investment, b) controls for the independent effect of profitability and demand, c) highlights the effects of financial relations, d) makes a clear distinction between operating and non-operating activities, and e) treats

financial outflows and inflows, i.e. both outward and inward financialization, as fundamental determinants.[6]

4. Data and stylized facts

Our sample consists of the following western EU member states (EU14): Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, the Netherlands, Portugal, Spain, Sweden, and the UK.[7] We extracted our data from the Worldscope database of publicly listed firm's balance sheets, which contains standardized accounting information about not only investment, sales, profits, interest, and dividend payments but also companies' financial incomes. Standardized data on financial payments and, in particular, financial incomes are difficult to find; our database allows us to have a comprehensive variable for our estimations. Worldscope database has been acknowledged as a valuable source in the literature on firm-level investment analysis (e.g. Cleary 1999; Pawlina and Renneboog, 2005; Love, 2003; Love and Zicchino, 2006). Our data are annual for the period of 1995-2015. Due data availability, the individual country cases is limited to large economies with high numbers of publicly listed NFCs, as reliable estimations using dynamic panel data methodology requires a substantial number of cross sections, which makes country specific estimations unreliable for small countries.

It is well known that the presence of outliers usually characterizes firm-level data. To prevent biased estimations, we apply a data screening process, by excluding extreme outlier observations from the sample.[8] First, we select firms that have at least three consecutive observations for the dependent variable (I/K), which is also required for econometric purposes (see Roodman, 2009). Second, we excluded companies with rate of accumulation (I/K) higher than 2.5, representing a growth rate of capital stock higher than 250%. Third, we drop all the companies with a permanent negative mean operating income for the whole period. Finally, we

exclude observations in the upper and lower 1% of each variable's distribution. With these adjustments, we finally have a total number of 25726 observations and 2881 companies. Table 2A, 3A, and 4A in the appendix show more specific descriptive statistics and coverage of our sample. Next, we present the stylized facts of our sample for the EU14 pool, and selected countries where we have relatively large numbers of NFCs.

Figure 1a shows the trends of the ratio of investment (addition to fixed assets) to operating income. The evidence from our sample is of a continual fall inthe rate of invested profits in both the EU14 pool and selected major economies. In the period considered, the highest fall is in Sweden (49%), the UK (32%), and Italy (28%). French and German NFCs experience a similar magnitude (19%), whilst Spanish NFCs experienced the smallest decline (5%). Overall, the slowdown has been remarkable in Europe, with 32% decline in the re-investment rate on average. A common feature of the last twenty years has been a reduction in the reinvestment of profit of NFCs in all major economies.

[Figure 1a]

One of the arguments in the financialization literature is that NFCs have been engaging in non-operating activities, i.e. accumulating financial assets, to an increasing extent. As can be seen in Figure 1b, in general the ratio of financial assets to fixed assets clearly increased albeit with some differences: onaverage in the EU14 the ratio increased by 93%.The NFCs in Sweden, The UK and Germany experienced the strongest rise in this ratio (423%, 324%, and 285% respectively). The NFCs in Spain and France experience a relatively more modest increase (268% and 225%), whilst the lowest rate of increase is in the NFCs in Italy (149%). To summarize, this preliminary descriptive analysis shows that, in general, NFCs diverted funds from real investment towards the accumulation of non-operating financial assets.

[Figure 1b]

Figures 3 to 3.6 show the relationship between the rate of accumulation of physical capital and our two measures of financialization - financial payments and incomes as a ratio to total assets- to analysethe double-sided impact of financialisation.

[Figure 2]

First, focusing on the aggregate European sample, during the period considered the NFCs rate of accumulations have been stagnant around an average value of 0.24. At the same time, NFCs' financial payments (dividends plus interests) have been increasing significantly. With respect to the level of non-operating incomes (as a ratio to fixed assets), European NFCs experience a sharp increase in this ratio before the crisis (200%). The 2007-8 crisis has led to a reversal in the NFCs' financial incomes, although they are slowly recovering towards the levels of the early 2000s.

[Figures 3.1 to 3.6]

In the UK (figure 3.1), the rate of accumulation has remained stagnant around an average of 0.25 for the whole period, and the reinvested profits declined. In sharp contrast, the stock of financial assets increased substantially, reaching 3.6 times higher than fixed assets in 2015. This substantial involvement in the accumulation of financial assets resulted in increasing non-operating income for the NFCs until the 2007-2008 crisis. Financial payments of the NFCs in the form of interests on debt and dividends paid to the shareholders increased substantially since the mid-1990s, also partially recovering from a decline during the crisis period.

Also in France (figure 3.2) the rate of accumulation of NFCs remained stagnant around 0.31. In contrast, in the last twenty years financial payments increased substantially, reaching

33% of fixed assets. Also financial incomes increase, peaking in 2008 when they represented 4% of fixed assets. After the crisis, these incomes stabilized aound the levels of the mid-1990s.

In Germany, NFCs experiencedecreasing rate of accumulation, which dropped by 50% in the period considered (figure 3.3). At the same time, financial payments increased by almost 80%, without being seriously affected by the crisis. As the NFCs, in the UK and France, also in Germany corporations have seen their financial incomes increasing before the crisis, here peaking in 2007 at a value of 8% of fixed assets.

Also NFCs in Italy experience a declinign rate of accumulation (-30%), along with an increase in financial payments, although the trend in the latter is relatively modest in comparison to other countries analayzed above (figure 3.4). Financial incomes reached the highest value in 2002 (3.3% of fixed assets) and after that stabilized around 2%, without being too much affected by the crisis.

In Spain, NFCs' rate of accumulation stagnated around the average value of 0.18, slighlty declining in the last twenty years (-7%). Financial payments increased particularly in the mid-2000s and, almost unaffected by the economic downturn, they stabilized at a value of 40% as a ratio to fixed assets (figure 3.5). Financial incomes had a volatile trend, increasing by 19% in the full period.

From the analysis of stylized facts, Swedish NFCs appear to be the most severly involved in the process of financialization (figure 3.6). Along with a stagnant average rate of accumulation of 0.29 (and a decreasing rate of re-investment), accumulated financial assets reached the value of more than 5 times as a ratio to fixed assets. Also financial payments increased substatially and, after a decrease in 2008, fully recovered stabilizing around a value of 100% of fixed assets. Financial incomes have a trend similar to the one offinancial payments, although after the 2007-8 crisis the former normalized around 7% of fixed assets. Nonetheless, this represent the highest value across the six main European economies.

The FD index is a combination of standardized measures of five components, namely market capitalization over GDP, total value traded over GDP, total value traded over market capitalization, ratio of liquid liabilities to GDP, and credit to the private sector over GDP. The source of these variables is the Global Financial Development Database of the World Bank (GFDD). We split the European countries into two groups, to which we refer as countries with 'high' and 'low' FD, according to their average FD value from 1995 to 2007. We thus excluded the effect of the financial crisis. Figure 1 below shows the different standardized values of FD for the countries included in our sample.

[Figure 4]

Countries with relative highly developed financial system are the UK, Spain, Sweden and Germany; countries with relative low developed financial system are the Netherlands, France, Ireland, Denmark, Portugal, Italy, Belgium, Austria, and Greece. It has to be noted that the classification described above is relative, and conditional on both the standardization process and the average level of FD computed among the countries included in the sample.

In conclusion, the stylized facts show a) a stagnant or declining rates of accumulation b) declining rates of reinvestment of operating income c) an increase in the overall degree of financialization in terms of financial assets, financial incomes as well as financial payments both in the EU14 pool as well as in the major economies.

These stylized facts suggest a negative relationship between the rate of accumulation and the non-operating financial activities of NFCs, which will be investigated further via econometric estimations in the next section.

5. Estimation methodology

The three specifications presented in Section 3 are estimated using a dynamic panel-data model including the lag of the accumulation rate as explanatory variables. As explained in section 3, investment is an intrinsically dynamic phenomenon.

In dynamic panel data models, the unobserved panel-level effects are correlated with the lagged dependent variables. Therefore, standard estimators (e.g. Ordinary or Generalized Least Squares) would be inconsistent. Therefore, we estimate our models using a difference-GMM estimator (Arellano and Bond, 1991). This methodology is suitable for analyses based on a 'small time/large observations' sample.[9] GMM is a powerful estimator for analyses based on firm-level data mainly for three reasons (Roodman, 2009). First, GMM is one of the best techniques to control for all sources of endogeneity between the dependent and explanatory variables, by using internal instruments, namely the lagged levels of the explanatory variables, which allows us to address dual causality, if rising financial payments and incomes is also a consequence of the slowdown in the capital accumulation. The instrument set consists of instruments that are not correlated with the first difference of the error term, but correlated with the variable we are estimating. Second, by first-differencing variables, this estimator eliminates companies' unobservable fixed effects. Third, GMM can address autocorrelation problems. We apply two tests to assess the appropriateness of the instrument sets, and lag structures. First, we check for second-order serial correlation with the Arellano-Bond test (Arellano and Bond, 1991). Second, we verify the validity of the instruments sets through the Hansen test.[10] In all models, the lagged dependent variable enters the instrument set as endogenous while all other explanatory variables enter as predetermined regressors. Consistently, the instrument sets include the second and third lags of the lagged dependent variable, and the first and second lags of the other lagged explanatory variables. We test the joint significance of the time dummies, and the consistency of the interaction dummies on financial incomes using a Wald test.

All the variables are in logarithmic form to allow for non-linear relationships between the dependent and the explanatory variables. Furthermore, the logarithmic scale enables us to reduce the disturbances coming from the presence of heteroskedasticity. Robust standard errors are calculated through a two-step procedure after a finite-sample correction (Windmeijer, 2005).

All the estimations comes from weighted regression, with the weights equal to 1 over the available observations for a specific country. This procedure mitigates the bias in the results coming from the highest data availability for core countries.

Finally, we applied a general-to-specific estimation procedure, thus dropping from the specification the explanatory variable with the highest level of statistical insignificance at each step until we arrive at a specification with only significant variables. By doing this we get to the most parsimonious lag structures for different specifications.

6. Estimation results

This section presents our estimation results based on the three equations discussed in Section 3. First, we discuss the estimations based on our baseline specification (equation 1), and the specification with size effects (equation 2) for the EU14 pool. Second, we focus on the results of estimations of equation (3), regarding the effect of financial development. Third, we present the results for equation (1) estimated for our six major countries.

The effect of financialization on investment in Europe

Table 1 presents the results for the EU14 pool. As can be seen in column 1, the lagged level of accumulation, sales, and net operating profit have positive effects on investment, as expected. Aggregated financial payments (dividends and interest) have a significant and negative effect on the rate of accumulation. The impact of non-operating financial incomes (π_F/K) on investment is also negative and significant. Results in column 2 show that these

results are robust to the inclusion of Tobin's Q as an additional control variable[11]. The results indicate that financialization has negatively affected NFCs' capital accumulation in Europe. The results are consistent with previous research showing that there is a widespread common tendency in investment and. the negative impact of financialization in both developed and developing countries (e.g. Orhangazi, 2008b; Demir, 2007, 2009).

However, as already discussed in Section 3, theoretically the sign of the effect of non-operating income on physical accumulation is ambiguous. On the one hand, relatively smaller companies may use this additional source of income to partially ease liquidity constraints. On the other hand, the larger and more flexible non-financial companies may see short-term and reversible financial investment as an attractive alternative to physical investment. This choice may then come at the expense of long-term physical investment, and thus has an adverse effect on the rate of accumulation of these large corporations. We explored this possible dual, non-linear effect, by including an interaction dummy variable to account for the potentially different effect of financial incomes with respect to the size of the company (in terms of total assets). In these alternative specifications as described in Equation (2) in Section 2, the coefficient associated with the variable π_F/K show the effect of companies in the different top percentiles of the distribution. To compute the elasticity for the remaining companies we sum the coefficient for $(\pi_F/K)*D_n$ with the coefficient for π_F/K, and then check for statistical significance of the new measure with a Wald test. The evidence suggests that negative impacts of financial incomes are non-linear with respect to the companies' size. In this table, we present the result after the inclusion of a dummy that is 0 if the company lies in the top 30% and 1 if it is in the lowest 20% of the distribution in terms of total assets. These results are reported in columns 3 and 4 of Table 1 respectively. There is a statistically significant difference between the large and small companies with respect to the impact of financial incomes. In particular, top 30% companies in terms of size (Column 3) experienced a strong negative effect of financial incomes (-0.30), whilst for the remaining part of the sample this effect has been positive, although small

(0.04). On the contrary, the negative effect of financial payments is stronger in relatively smaller firms (-0.12). Turning to the results for companies in the lowest 20%, we find that the estimated effect of financial incomes is equal to 0.22. Financial incomes crowded-out physical investment for the remaining 80% of the companies (-0.07). Again, smaller companies' investments suffer more from financial payments (-0.10 vs. -0.03). Given these results, we can conclude that financial incomes are negatively affecting NFCs' rate of accumulation in Europe, although there is a positive effect for relatively smaller companies.

Financialization and financial development in Europe

Table 2 presents the results based on equation (3). With these estimations, we aim at contributing to the literature on the impact of financial development on growth, by exploring the effect of the development of the financial system on European NFCs' physical investment. As we have seen before, the conventional argument within this literature is that FD has a general positive effect on economic growth. In particular, FD is good for companies' investment given an enhanced allocation of resources (Levine, 2005) and reduced cash-flow constraints (Love and Zicchino, 2006). However, to the best of our knowledge, none of the available literature takes into account the novel features of NFCs' investment behaviour, i.e. their growing non-operational financial activities.

Column 1 of Table 2 shows the results for specification (3) for the EU14 pool. Here we interacted NFCs' financial incomes (π_F/K) with a dummy that takes value 1 if company *i* is based in a country characterized by a low FD index, and 0 otherwise. In order to better characterize our specification, we interacted also retained earnings and financial payments with the same dummy, and the interpretation is the same. Similar to the results presented in Table 1, the positive effects of the lagged rate of accumulation, sales, and retained earnings are confirmed. In addition, we find that the effect of retained earnings is significantly stronger in companies operating in an environment with relatively low financial development (0.57 vs. 0.04). With

respect to the interacted effect of financial incomes, we find that for companies based in countries with high FD the effect is highly negative (-0.25). On the contrary, a lower degree of FD is associated with a positive, yet small, effect of financial incomes on investment (0.05). In addition, the negative effect of financial payments on NFCs' accumulation is more than double in less financially developed, i.e. more financially constrained, countries (-0.11 vs -0.04).

In column 2 and 3 of Table 2 we present the results we obtained by splitting the sample in 'low' and 'high' FD. In this exercise, we also introduced our size-dummies, to test for the differences in the impact of financial incomes with respect to size of the company in the context of different FD. Given the results described above, we expect that for the majority of companies in the countries with low FD the effect of financial incomes would be positive in general, and vice versa negative in the countries with high FD. In line with this premise, for the countries with low FD we interacted financial incomes in order to estimate the effect for the top 30% of the companies in terms of size. We find that financial incomes have a positive impact in the companies in the lowest 70% of the total assets distribution (0.16). The effect remains negative for relatively larger companies (-0.43). In the countries with 'high FD', as expected we find a negative effect of financial incomes for almost all companies (-0.11). For companies in the lowest 30% of the size distribution the effect is lower, but still negative (-0.02). However, the *p*-value for the Wald test of joint significance shows that the interacted coefficient is statistically not different from zero (0.53).[12]

The effect of financialization on investment: the cases of the UK, France, Germany, Italy, Spain, and Sweden

In Table 3, we present the estimation results based on equation (1) for selected countries, for which the number of firms is large enough.[13] We kept the specification including Tobin's Q whenever it was significant. As expected there is a positive effect of lagged rate of accumulation, sales and retained earnings (although the latter effect is not statistically robust across

countries). The negative crowding-out effect of financial incomes is a robust significant finding in all countries. Even though a straight comparison between estimates maybe statistically distorted, we find the strongest negative effect of non-operating income in the NFCs in Sweden and France (-0.17 and -0.13 respectively). Our other financialization variable, i.e. financial payments have a negative effect on NFCs' investment in all countries apart from Italy and Sweden, where we did not find significant effect. Overall, these single country estimations confirm our previous findings of a negative impact of both financial incomes and payments on NFCs' rate of accumulation. In addition, since the negative effect of financial incomes is common to countries with different levels of FD, we suppose that the positive effect of non-operating income found in the estimations based on equation (3) (see Column 1 of Table 2) is driven by companies based in countries with low data availability.

7. Conclusion

In this paper we presented empirical evidence on the effects of financialisation on firm-level investment in the publicly listed NFCs in Europe. We show that financialization, depicted as the increasing orientation towards external financing, share holder balue orientation and the internal substitution of fixed investment by financial activity, had a fundamental role in suppressing investment in the NFCs. The lower availabilty of internal funds constrains the investment decision. On the one hand, the increase in financial payments for external finance and to favor the shareholders (interest and dividends) reduce the NFCs internal funds, and thus accumulation. On the other hand, the negative crowding-out effects of financial investment on accumulation more than offset the gains from relaxing the cash-flow constraint. Financial incomes have a positive effect on investment only for the smaller companies, but a significant negative effect in the large companies. It has to be noted that larger companies create the vast majority of capital, and the crowding-out of physical investment of these companies by financial

activity is a substantial drag on the investment performance and productivity of the European countries.

These results provide support to the theoretical arguments regarding the negative effects of financialization and confirm previous empirical findings at the macro and microeconomic levels in the literature. The increasing interrelations between the financial markets and the NFCs are progressively reducing fixed capital accumulation, and thus growth. These results contrast with the convetiaonal arguments regarding the beneficial effects of financial liberalization and financial deepening.

One novelty of this paper is a unique contribution to the literature on the 'finance-growth nexus'. We presented robust evidence of a negative effect between financial development (as measured by the FD index) and NFCs' capital accumulation via an amplified crowding-out effect of financial incomes. When companies' financial (non-operating) activities are taken into account, the virtuous cycle between FD and investment described in Love and Zicchino (2006) is not confirmed. On the contrary, our results suggest that higher level of FD may induce NFCs to accumulate more financial assets, receive non-operational incomes, and use this liquidity to buy additional financial assets as opposed to physical assets related to their core business. As already said, some authors belonging to the conventional literature put forward reservations about the positive effect of a growing financial sector (see also Arcand et al., 2015). At the macroeconomic level, if exceeding a threshold (e.g. 100% of the GDP) financial depth has a negative effect on growth. Our finding at the microeconomic level highlight a further mechanism through which FD negatively affects investment behavior.

To reach a stable and vigorous dynamic of investment, a de-financialization of the non-financial sector is desirable. This requires an extended regulation of companies' non-operating financial activities along with financial regulation. In addition, the robust connection between past and present levels of accumulation ('hysteresis' of the investment processes) increases the potential effectiveness of de-financialisation economic policies.

Clearly, our analysis does not exhaust the need for a deeper analysis about financialisation of the NFCs, and further research is needed to assess the multifaceted feature of this phenomenon. In particular, the investigations of the determinants of companies' 'financial accumulation', as well as the sources of businesses' financial assets are important questions for future research.

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Figures and Tables

Figure 1a. Additions to fixed assets/operating income (I/π), NFCs, Europe14 pool and selected countries, 1995-2015

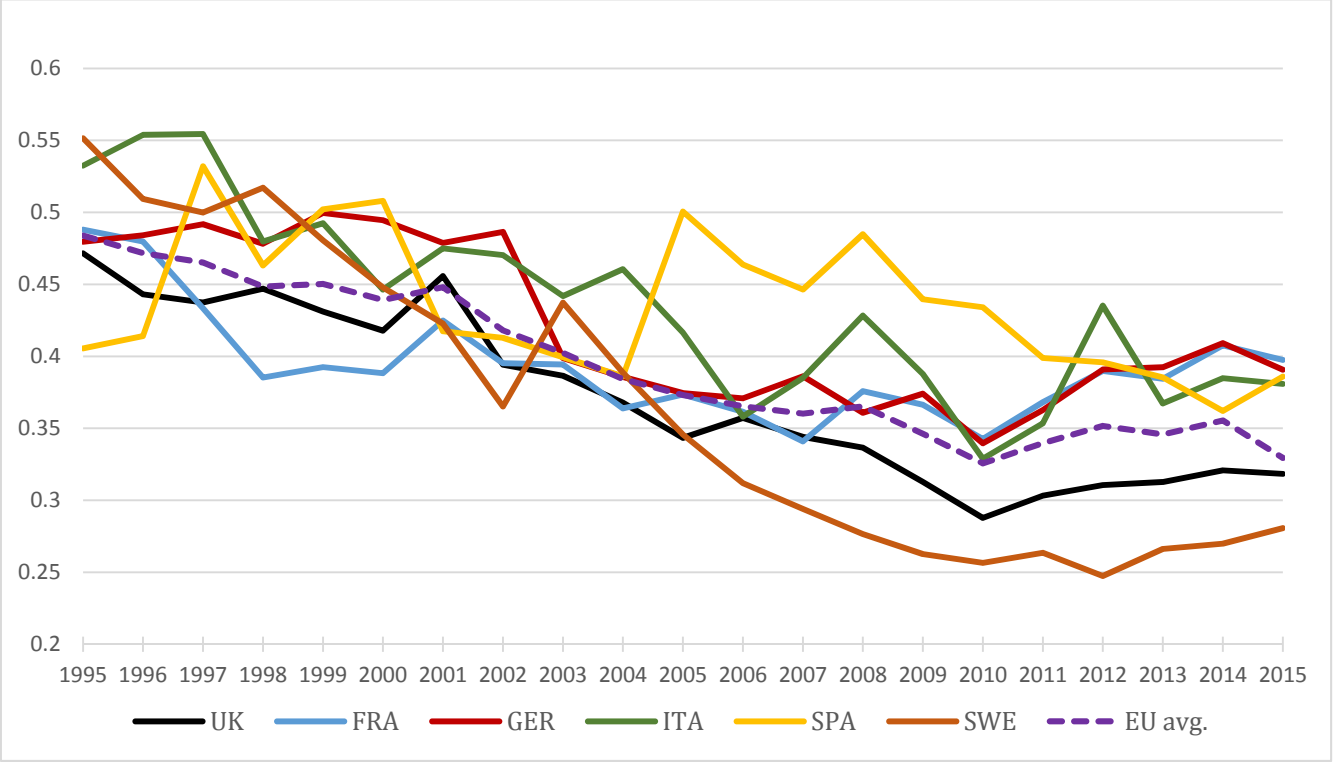
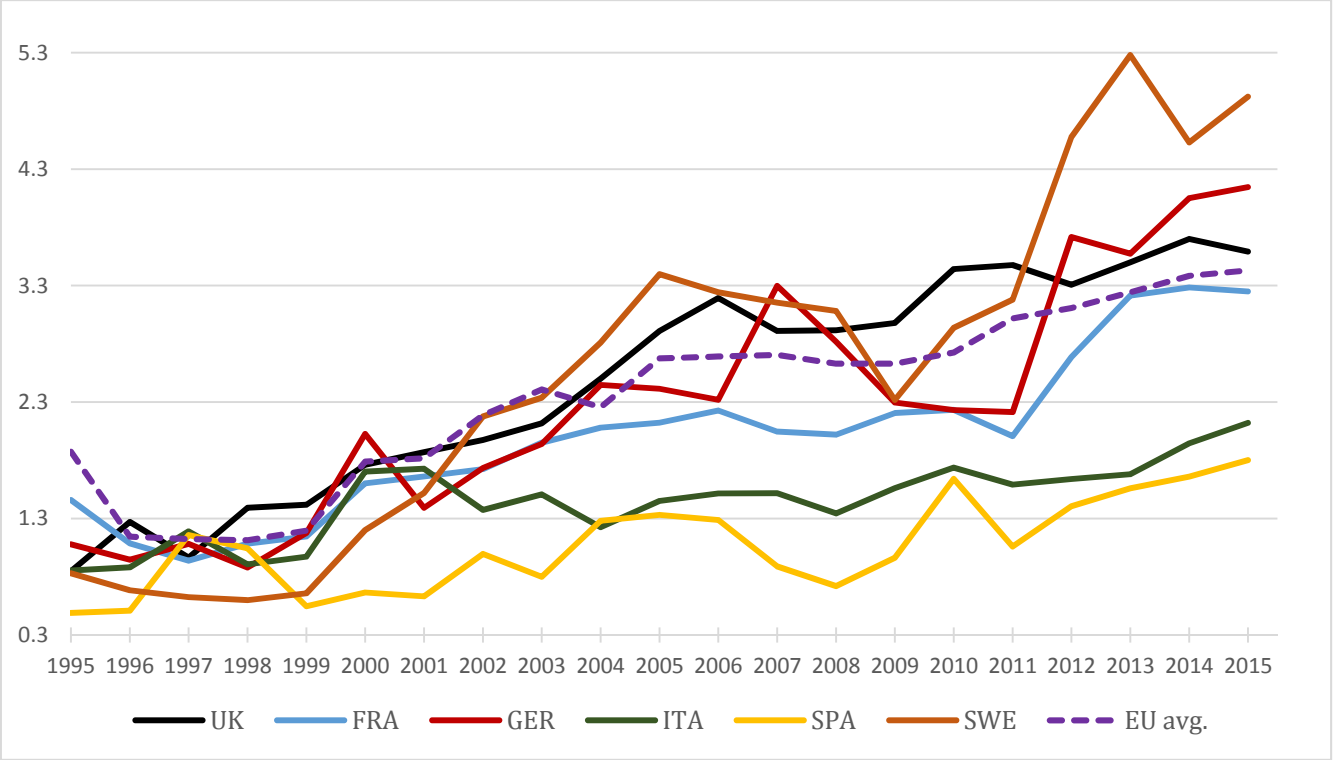
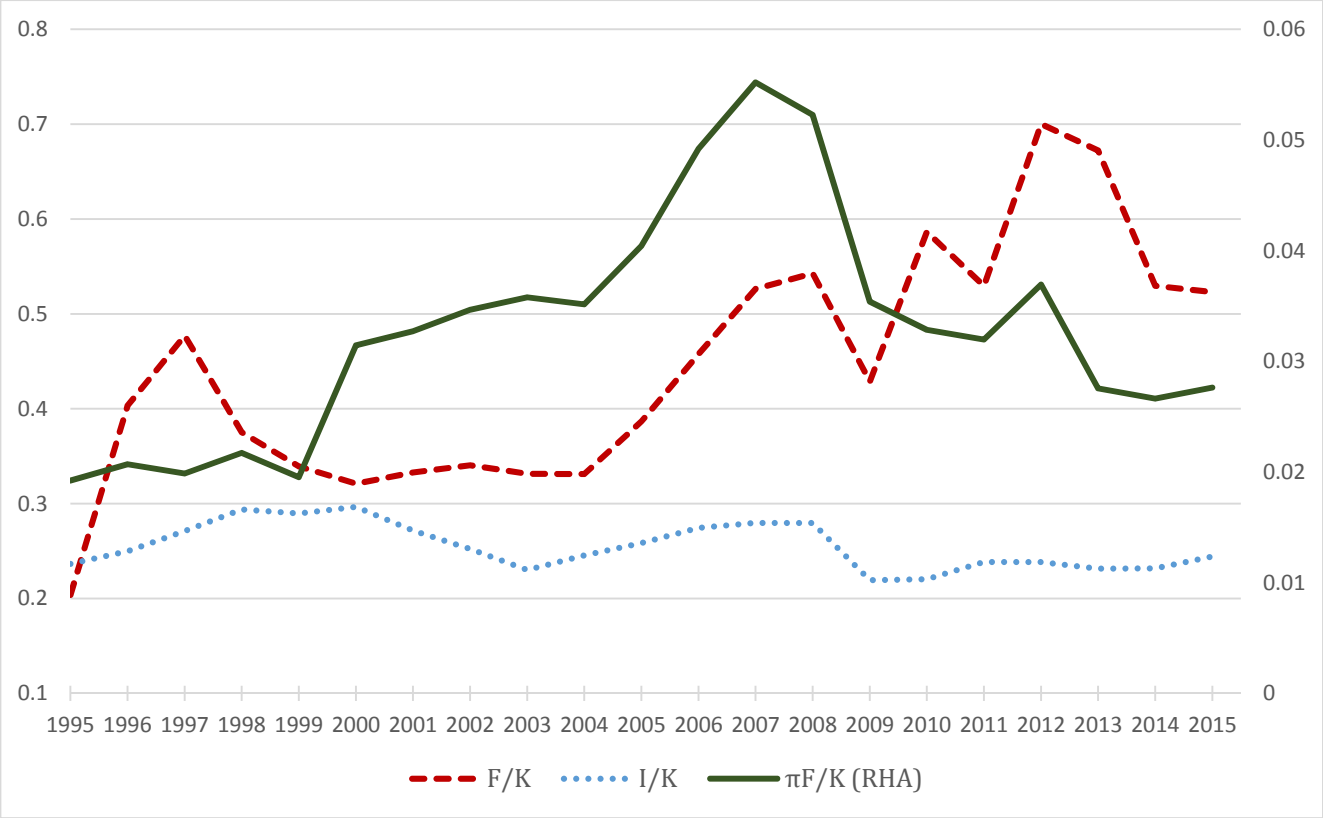


Figure 1b. Financial assets/fixed assets (FA/K), NFCs, EU14 pool and selected countries, 1995-2015



Source: authors' calculation based on Worldscope data

Figure 2. Additions to fixed assets/Fixed Assets (I/K), total financial payments (F/K), and total financial profits (π_F/K), NFCs, EU14 pool, 1995-2015



Source: authors' calculation based on Worldscope data

Figure 3.1. Additions to fixed assets/Fixed Assets (I/K), total payments(F/K), and total financial profits (π_F/K), NFCs, UK

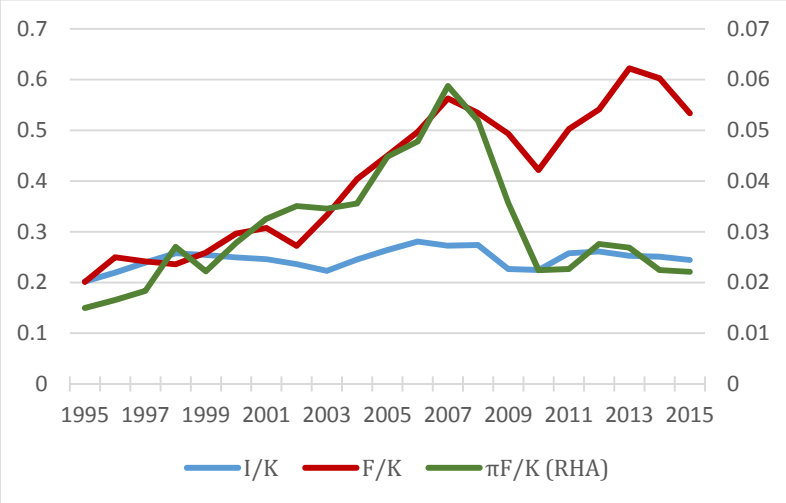


Figure 3.2. Additions to fixed assets/Fixed Assets (I/K), total payments(F/K), and total financial profits (π_F/K), NFCs, France

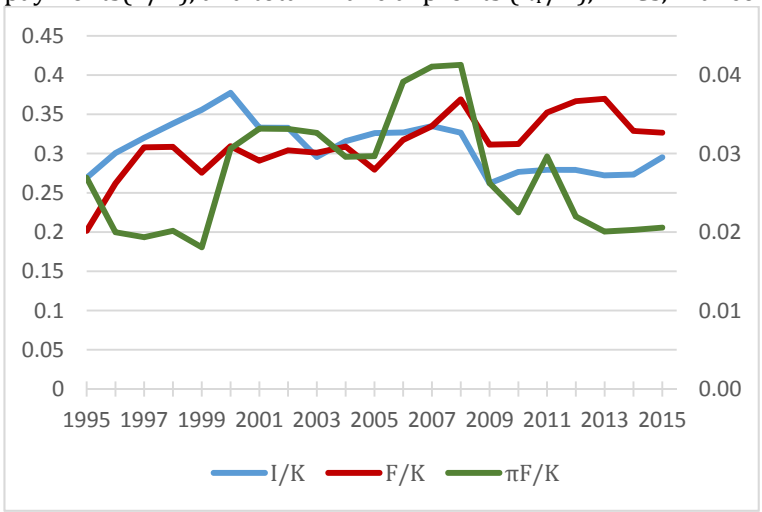


Figure 3.3. Additions to fixed assets/Fixed Assets (I/K), total payments (F/K), and total financial profits (π_F/K), NFCs, Germany

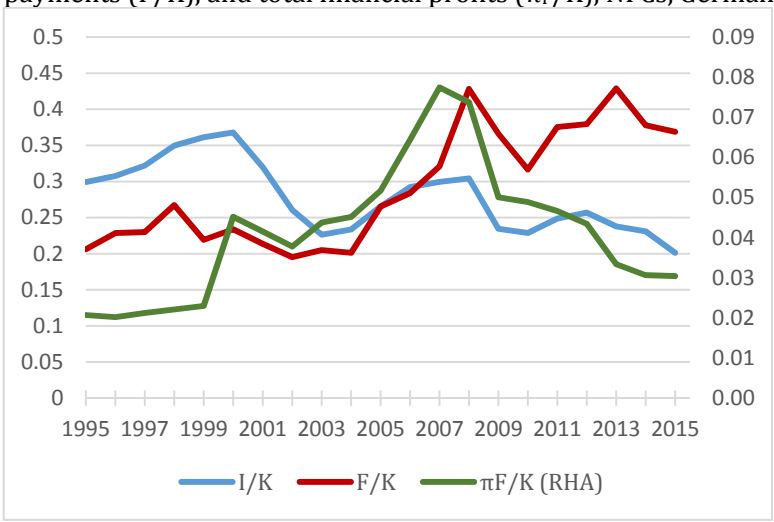


Figure 3.4. Additions to fixed assets/Fixed Assets (I/K), total payments(F/K), and total financial profits (π_F/K), NFCs, Italy

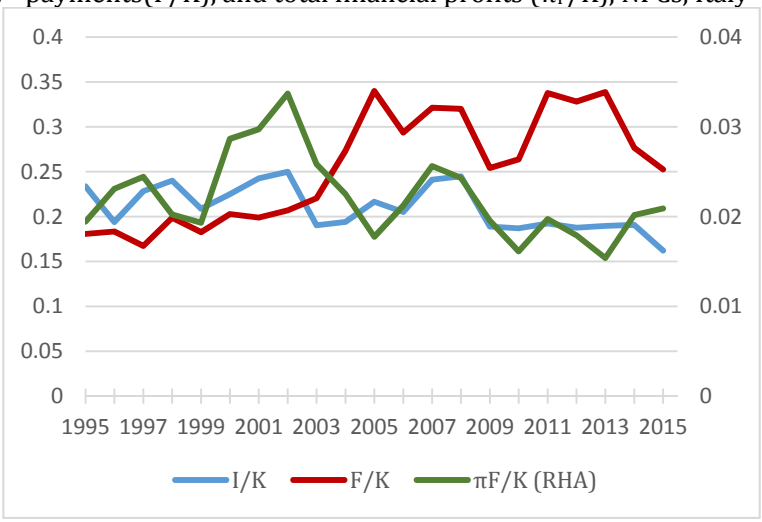


Figure 3.5. Additions to fixed assets/Fixed Assets (I/K), total payments(F/K), and total financial profits (π_F/K), NFCs, Spain

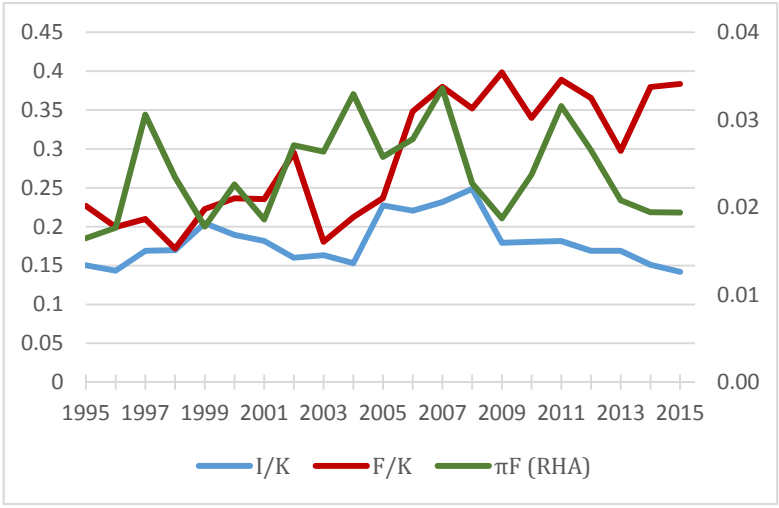
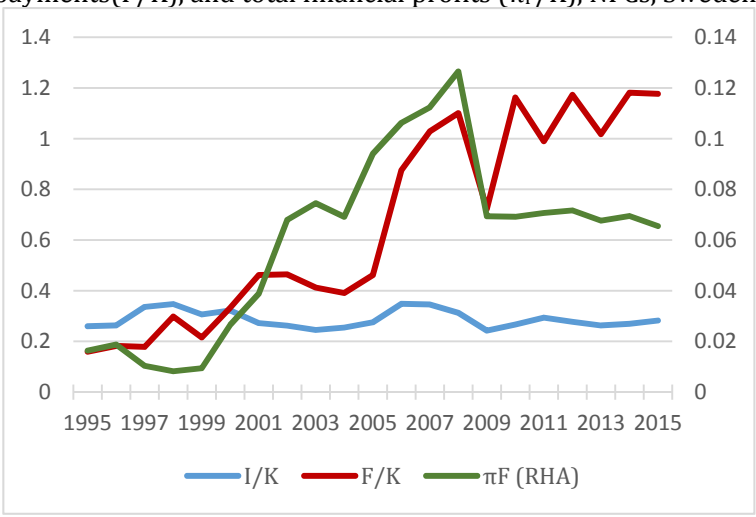
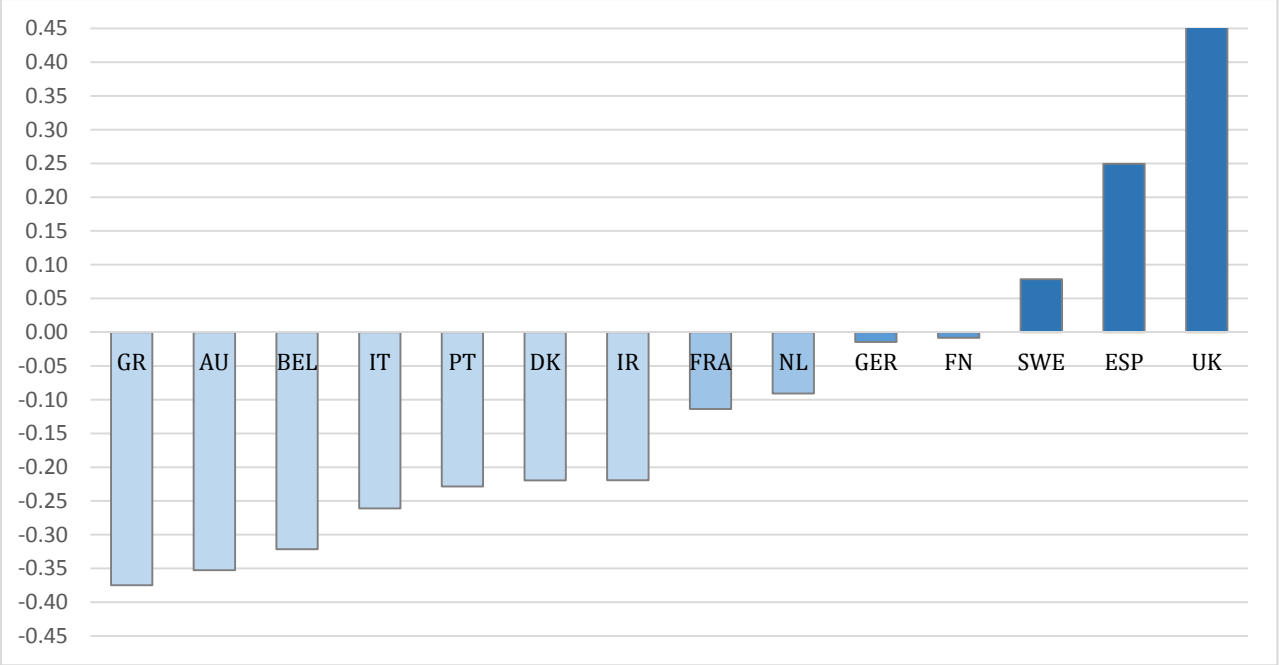


Figure 3.6. Additions to fixed assets/Fixed Assets (I/K), total payments(F/K), and total financial profits (π_F/K), NFCs, Sweden



Source: authors' calculation based on Worldscope data.

Figure 4. Financial development index (averages 1995-2007)



Source: authors' calculation based on World Bank data, Global financial development database

Table 1. Estimation results, Europe pool, 1995-2015, dependent variable $(I/K)_t$

	(1)[I]	(2)[II]	(3)[III]	(4)[IV]
$(I/K)_{t-1}$	0.414*** (0.034)	0.395*** (0.033)	0.339*** (0.032)	0.400*** (0.032)
$(S/K)_{t-1}$			0.235*** (0.051)	0.153*** (0.052)
$(S/K)_{t-2}$	0.060* (0.031)	0.066** (0.033)	0.370*** (0.083)	
$[(\pi - CD)/K]_{t-1}$	0.050*** (0.013)	0.044*** (0.013)	0.011 (0.011)	0.027*** (0.010)
$[(\pi - CD)/K]_{t-1} * D_{70}$			0.031** (0.015)	
$[(\pi - CD)/K]_{t-1} * D_{20}$				0.057* (0.033)
$(\pi_F/K)_{t-1}$	-0.027* (0.016)	-0.032* (0.017)	-0.156*** (0.046)	-0.038* (0.021)
$(\pi_F/K)_{t-2}$			-0.144*** (0.035)	-0.031** (0.013)
$(\pi_F/K)_{t-1} * D_{70}$			0.176*** (0.046)	
$(\pi_F/K)_{t-2} * D_{70}$			0.169*** (0.041)	
$(\pi_F/K)_{t-1} * D_{20}$				0.094** (0.040)
$(\pi_F/K)_{t-2} * D_{20}$				0.197*** (0.064)
$(F/K)_{t-1}$			-0.031** (0.015)	-0.025* (0.015)
$(F/K)_{t-2}$	-0.024* (0.014)	-0.026* (0.014)		
$(F/K)_{t-2} * D_{70}$			-0.085*** (0.017)	
$(F/K)_{t-2} * D_{20}$				-0.072* (0.039)
$(Q)_{t-1}$		0.251*** (0.057)	0.194*** (0.062)	0.256*** (0.062)
Number of Observation	25726	25329	25329	25329
Number of Firms	2881	2864	2864	2864
Number of Instruments	32	34	38	41
p-value Hanses test	0.606	0.593	0.464	0.193
p-value A-B test (AR 2)	0.389	0.359	0.118	0.722
Time effects	*yes*	*yes*	*yes*	*yes*
p-value Wald test for time effects	0.001	0.000	0.000	0.000
p-value $[(\pi - CD)/K]_{t-1} * D_{70}$			0.000	
p-value $(\pi_F/K)_{t-n} * D_{70}$			0.016	
p-value $(F/K)_{t-2} * D_{70}$			0.000	
p-value $[(\pi - CD)/K]_{t-1} * D_{20}$				0.010
p-value $(\pi_F/K)_{t-n} * D_{20}$				0.001
p-value $(F/K)_{t-2} * D_{20}$				0.017

Weighted regression (w=1/total country obs.). I and II specifications based on Equation (1), III and IV specifications based on Equation (2), two-step difference-GMM estimations. Coefficients for the year dummies are not reported. Robust corrected standard error in parenthesis * significant at 10%, ** significant ant 5%, *** significant at 1%.

Table 2. Estimation results, Europe pool, financial development, 1995-2015, dependent variable $(I/K)_t$

	EU14	EU-Low FD	EU-High FD
	(1)[I]	(2)[II]	(3)[III]
$(I/K)_{t-1}$	0.312***	0.373***	0.357***
	(0.048)	(0.046)	(0.046)
$(I/K)_{t-2}$	-0.043*		
	(0.022)		
$(S/K)_{t-1}$	0.244***	0.167**	0.294***
	(0.053)	(0.074)	(0.077)
$(S/K)_{t-2}$			0.241**
			(0.121)
$[(\pi - CD)/K]_{t-1}$	0.039***	0.029**	0.023**
	(0.014)	(0.013)	(0.011)
$[(\pi - CD)/K]_{t-2} * D_{LFD}$	0.535**		
	(0.254)		
$(\pi_F/K)_{t-1}$	-0.142***	-0.427*	-0.077**
	(0.050)	(0.231)	(0.031)
$(\pi_F/K)_{t-2}$	-0.111***		-0.032**
	(0.039)		(0.014)
$(\pi_F/K)_{t-1} * D_{LFD}$	0.157***		
	(0.051)		
$(\pi_F/K)_{t-2} * D_{LFD}$	0.148***		
	(0.050)		
$(\pi_F/K)_{t-1} * D_{30}$			0.092**
			(0.037)
$(\pi_F/K)_{t-1} * D_{70}$		0.586*	
		(0.301)	
$(F/K)_{t-1}$	-0.038*	-0.010	-0.054*
	(0.022)	(0.022)	(0.030)
$(F/K)_{t-2}$			-0.041*
			(0.023)
$(F/K)_{t-1} * D_{LFD}$	-0.074**		
	(0.036)		
$(Q)_{t-1}$	0.124***	0.337***	0.105*
	(0.030)	(0.086)	(0.059)
Number of Observations	25329	9851	15478
Number of Firms	2864	1140	1724
Number of Instruments	40	33	34
p-value Hanses test	0.482	0.237	0.593
p-value A-B test (AR 2)	0.508	0.165	0.180
Time effects	*yes*	*yes*	*yes*
p-value Wald test for time effects	0.003	0.004	0.006
p-value $[(\pi - CD)/K]_{t-n} * D_{LFD}$	0.027		
p-value $(\pi_F/K)_{t-n} * D_{LFD}$	0.014		
p-value $(F/K)_{t-1} * D_{LFD}$	0.011		
p-value $(\pi_F/K)_{t-1} * D_{70}$		0.029	
p-value $(\pi_F/K)_{t-1} * D_{30}$			0.553

Weighted regression (w=1/total country obs.). I specification based on Equation (3), II and III specification based on Equation (2), two-step difference-GMM estimations. Coefficients for the year dummies are not reported. Robust corrected standard error in parenthesis * significant at 10%, ** significant ant 5%, *** significant at 1%.

Table 3. Estimation results, selected countries, 1995-2015, dependent variable $(I/K)_t$

	High FD				***Low FD***	
	UK	***SWE***	***GER***	***SPA***	***ITA***	***FRA***
$(I/K)_{t-1}$	0.409***	0.283***	0.393***	0.457***	0.275***	0.280***
	(0.029)	(0.065)	(0.101)	(0.066)	(0.041)	(0.046)
$(S/K)_{t-1}$	0.310***	0.224**	0.731*	0.461***	0.256**	0.513***
	(0.061)	(0.108)	(0.374)	(0.177)	(0.124)	(0.086)
$[(\pi - CD)/K]_{t-1}$	0.023*		0.025	0.011	0.055*	
	(0.013)		(0.020)	(0.034)	(0.029)	
$[(\pi - CD)/K]_{t-2}$		0.121*				0.016
		(0.065)				(0.029)
$(\pi_F/K)_{t-1}$	-0.036**	-0.107**	-0.062*		-0.033*	-0.094***
	(0.016)	(0.049)	(0.033)		(0.020)	(0.023)
$(\pi_F/K)_{t-2}$		-0.059**		-0.053**		-0.040***
		(0.025)		(0.025)		(0.015)
$(F/K)_{t-1}$	-0.091***	-0.026		-0.383***	0.003	-0.130**
	(0.017)	(0.030)		(0.100)	(0.049)	(0.062)
$(F/K)_{t-2}$			-0.063***			
			(0.021)			
$(Q)_{t-1}$	0.172***					0.226***
	(0.028)					(0.074)
$(Q)_{t-2}$	-0.059***					
	(0.020)					
Number of Observations	9481	1998	3438	1039	1456	3557
Number of Firms	915	231	400	116	176	417
Number of Instruments	30	32	38	30	33	35
p-value Hanses test	0.184	0.451	0.262	0.411	0.427	0.523
p-value A-B test (AR 2)	0.170	0.613	0.193	0.320	0.874	0.165
Time effects	*yes*	*yes*	*yes*	*yes*	*yes*	*yes*
p-value Wald test for time effects	0.000	0.004	0.000	0.000	0.000	0.001

Weighted regression (w=1/total country obs.). All specification based on Equation (1), two-step difference-GMM estimations. Coefficients for the year dummies are not reported. Robust corrected standard error in parenthesis * significant at 10%, ** significant ant 5%, *** significant at 1%.

Appendices

Table 1A. Variables definition and codes.

Symbol	*Variable*	*Definition*	*Worldscope Code*
I	Investment	Addition to fixed assets	WC04601
K	Capital stock	Net fixed capital stock	WC02501
S	Sales	Net sales	WC01001
π	Net profit rate	Operating income-depreciation	WC01250-WC04051
F	Financial Payments	Interest + cash dividends paid	WC01251+ WC04551
π_F	Non-operating profit	Non-operating profit from interest and dividends	WC01266+ WC01268
FA	Financial assets	Cash, other investment, short-term investment, other current assets	WC02003+ WC02250+ WC02008+WC02140
Q	Average Tobin's Q	(Market share price*common share outstanding + total liabilities)/total assets	$\frac{\text{WC08001} + \text{WC03551}}{\text{WC02999}}$

A more detailed guide about variables is available a t the link:
http://lipas.uwasa.fi/~jaty/thomson/worldscope_def.pdf (last accessed 01/06/2016)

Table 2A. Summary statistic for the EU14 pool

Variable	Mean		Std. Dev.	Observations	
I/K	overall	0.25	0.20	N =	25726
	between	0.16	1.10	n =	2881
	within	0.14	-0.442	T-bar =	15.9
S/K	overall	13.49	28.98	N =	25726
	between	33.92	0.062	n =	2881
	within	15.60	-281.82	T-bar =	15.6
$(\pi - CD)/K$	overall	0.66	2.50	N =	25726
	between	2.10	-17.98	n =	2881
	within	1.93	-74.66	T-bar =	15.1
π_F/K	overall	0.032	0.12	N =	25726
	between	0.056	0.89	n =	2881
	within	0.10	-.86	T-bar =	15.8
F/K	overall	0.46	3.41	N =	25726
	between	2.79	85.69	n =	2881
	within	2.59	-85.19	T-bar =	15.1
I/π	overall	0.38	0.26	N =	25726
	between	0.22	0.97	n =	2881
	within	0.18	-0.25	T-bar =	15.2
FA/K	overall	2.44	13.77	N =	25726
	between	9.86	0.10	n =	2881
	within	10.48	-317.04	T-bar =	15.6
Q	overall	1.54	0.99	N =	25329
	between	0.71	0.34	n =	2864
	within	0.73	-3.43	T-bar =	15.7

Source: authors' calculation based on Worldscope data
N = number of total observations, *n*= number of groups, *T-bar* = average time period

Table 3A. Sample coverage across countries, and by size

	(a) Number of observations	(b) Percent of total observations	(c) Number of firms	(d) Percent of total firms	(e) Firms with avg. Ta < 20pTa (%)	(f) Firms with avg. Ta >70pTa (%)	Difference (f-e)
Country							
Austria	470	0,02	76	0,03	12 (15,79)	18 (23,68)	7,89
Belgium	684	0,03	82	0,03	21 (25,61)	28 (34,15)	8,54
Denmark	708	0,03	89	0,03	18 (20,22)	32 (35,96)	15,73
Finland	561	0,02	84	0,03	24 (28,57)	36 (42,86)	14,29
France	3557	0,14	417	0,14	109(26,14)	132(31,65)	5,52
Germany	3438	0,13	400	0,14	85 (21,25)	119(29,75)	8,50
Greece	580	0,02	92	0,03	38 (41,30)	49 (53,26)	11,96
Ireland	536	0,02	55	0,02	6 (10,91)	11 (20,00)	9,09
Italy	1456	0,06	176	0,06	36 (20,45)	56 (31,82)	11,36
Netherlands	904	0,04	94	0,03	19 (20,21)	34 (36,21)	15,96
Portugal	314	0,01	54	0,02	7 (12,96)	11 (20,37)	7,41
Spain	1039	0,04	116	0,04	35 (30,17)	60 (51,72)	21,55
Sweden	1998	0,08	231	0,08	55 (23,81)	68 (29,44)	5,63
United Kingdom	9481	0,37	915	0,32	180(19,67)	276(30,16)	10,49
EU14	25726	1,00	2881	1,00	645(22,39)	930(32,28)	9,89

Table 4A. Summary statistics for selected countries

	Variable													
	I/K		S/K		$(\pi - CD)/K$		π_F/K		F/K		I/π		FA/K	
Country	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***	***mean***	***s.d.***
France	0.31	0.24	5.29	2.80	0.74	1.55	0.03	0.06	0.32	0.54	0.38	0.26	2.03	4.01
Germany	0.28	0.21	4.50	1.26	0.55	1.76	0.04	0.10	0.30	0.68	0.40	0.27	2.34	6.71
Italy	0.21	0.15	7.35	0.86	0.38	0.86	0.02	0.05	0.27	0.56	0.42	0.26	1.49	3.41
Spain	0.18	0.15	4.97	7.39	0.27	0.50	0.02	0.05	0.30	0.64	0.43	0.26	1.09	2.48
Sweden	0.29	0.21	7.24	3.26	1.00	1.25	0.06	0.17	0.75	1.76	0.33	0.25	2.95	6.84
United Kingdom	0.25	0.19	5.07	7.65	0.83	1.34	0.03	0.09	0.43	0.92	0.35	0.26	2.67	6.53

Endnotes

[1] In contrast, some authors of the Marxian tradition (e.g. Lapavitsas, 2009; Kliman and Williams, 2014) argue for a reversed causality, i.e. financialisation of the economy should be understood as a consequence, and not as a cause of the slowdown in the capital accumulation.

[2] Milberg and Winkler (2009) argue that the accumulation-financialization link is blurred by the increase in off-shoring. This is not a problem in our case, since all our data are provided on a consolidated basis (parent company plus subsidiaries). Moreover, the non-operating dividend incomes come from financial activities.

[3] The paper provides a response to the mainstream critiques of the use of liquidity measures to model investment by Jorgenson (1971).

[4] Interest and dividends do not exhaust the spectrum of non-operating financial incomes of NFCs. In fact, Krippner (2005) shows how capital gains account for a considerable part of NFCs financial profits. However, as also recognised by Orhangazi (2008b) with respect to Compustat database, also in Worldscope data on NFCs' capital gains are not available.

[5] These indexes are computed by using a simple standardization formula. The means-removed value of variable X for country j is equal to $X_j^m = \frac{X_j - mean(X)}{|mean(X)|}$, where the term in the denominator represent the absolute average value across countries in the sample for the period considered. Data about the other steps of FD index computation are available upon request.

[6] We also extended the model with total debt/fixed capital, and change in or the square of this ratio, but we did not find any statistically significant effects. Results are available upon request. An extended model with share buybacks was not feasible due to lack of data.

[7] Given restricted data availability for NFCs in Luxembourg, we excluded this country from the analysis.

[8] Guariglia and Carpenter (2008), Love and Zichino (2006), Chirinko et al. (1999) and Orhangazi (2008b) follow similar strategies to define and exclude the outliers. Our estimations are robust to the inclusion of the outliers.

[9] The full period is 20 years, but the average period for which all the variables are available is 6-9 years.

[10] Hansen test takes the orthogonality between instruments and regressions' residuals as the indicator of consistency between estimated and sample moments. We tested and confirmed the presence of heteroskedasticity in our sample by using the White/Koenker and the Breusch-Pagan/Godfrey/Cook-Weisberg tests. Hansen's-J test is preferred to the Sargan test in the presence of heteroskedasticity (Roodman, 2009). However, the Hansen test (as the Sargan test) is sensitive to the total number of instruments. Therefore, we use only the first and second lags of our variables as instruments. Furthermore, all instruments are 'collapsed', thus having an instrument for each variable and lag distance.

[11] We use the approximate average measure for Tobin's Q suggested by Chung and Pruitt (1994), who define it as a compromise between "analytical precision and computational effort" (Chung and Pruitt, 1994:71) based on the well-established procedure by Lindenberg and Ross (1981).

[12] One argument against these findings could be that the positive (negative) effect of financial incomes in the Low (high) FD sample is actually due to the fact that the Low (high) FD sample include a higher (lower) fraction of smaller companies. However, from our sample we computed that the percentage of small companies is almost the same in the Low FD and in the High FD samples (19.06% and 18.30% of total number of firms respectively). See Table 3A in the appendix for additional information about the distribution in terms of total assets.

[13] The choice of the selected countries has been informed by data availability. In fact, the dynamic GMM estimator suffer from small sample bias, and estimation based on relatively low number of observations (or groups) should not be trusted. In Table 3a we provide information about the percentage of total companies in the low 20% and top 30% of the total assets distribution by country (see columns *e* and *f*). Even though smaller companies are underrepresented, the share of companies in these two groups is similar across countries (with the partial exception of Spain where the difference in the share of NFCs in the low 20% and in the top 30% is around 22%).