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# Financialisation and physical investment: a global race to the bottom in accumulation?

## Abstract

In this article we estimate the effects of financialisation on physical investment in the developed and developing countries using panel data based on balance-sheets of publicly listed non-financial companies (NFCs) supplied by Worldscope for the period 1995-2015. Among the developed economies, we focus on the cases of the USA, Japan, and a group of Western European countries. In the developing world, we present estimations based on the group of the NFCs in all developing countries as well as BRICS as a group- and country specific estimations for South Africa, South Korea, India, and China, for which there are data for a sufficiently large group of companies. We find robust evidence of an adverse effect of both financial payments (interests and dividends) and financial incomes on investment in fixed assets. 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. Our analysis contributes to the literature by providing evidence on the multifaceted relationship between financialization and corporate investment in developing and emerging countries.

**Key words:** financialisation, investment, firm data, Europe, Developing countries



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## Introduction

This article 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 both developed and developing countries.

The last three decades have witnessed the development of a phenomenon now central in the evolution of capitalist economies: the 'financialisation' of the economy. We can summarize financialisation as an ongoing and self-reinforcing economic and social process that manifests itself in the growing prominence and influence of behaviours derived from the financial sector (Epstein, 2005). Following van der Zwan (2014), we can highlight three main features of this process: a) a new regime of accumulation largely shaped around financial motives, b) the consolidation of the 'shareholder value' as the key principle in corporate governance, and c) the dissemination of practices linked to finance within everyday life (pension schemes, mortgages provision, healthcare etc.). This article aims at contributing to the understanding of the impact of the first two points on investment.

The conventional literature asserts that financial markets facilitate the financing and the efficient allocation of investment (Beck et al., 2000; Beck and Levine, 2004; Gilchrist and Himmelberg, 1995; King and Levine, 1993; Levine, 2005; Love, 2003). 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 mainstream contributions as well (Beck et al., 2014; Cecchetti and Kharroubi, 2015; Cournède et al., 2015; Law and Singh, 2014). In particular, Law and Singh (2014) 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. 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 'financialisation' illustrates the negative impacts of expanding financial sector on the economic systems (Epstein, 2005), on income distribution and demand (Hein, 2013; Onaran et al., 2010), and in particular on investment (Cordonnier and Van de Velde, 2015; Dallery, 2009; Orhagnazi, 2008a; Stockhammer, 2004, 2006). '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 slowdown 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). Therefore, companies experienced a significant reduction in available funds for physical investments.<sup>1</sup>

In the recent years, there has been also an increasing interest in studying the different features of financialisation in the context of developing and emerging economies<sup>2</sup>. In particular, Bracking (2012) provides an analysis of the relationship between financial liberalization and the changing patterns of exploitation of natural resources, whilst Aitken (2013) focuses on the perverse effect of financialisation on microcredit practices. Karwowski and Stockhammer (2017) look at several emerging countries and compare various macroeconomic aspects of financialization (e.g. financial deregulation, financial inflows, business and household debt). The authors find a considerable degree of variability in the intensity of financialization in the different countries, in line with what discussed by Lapavistas and Powell (2013) for developed countries. The

<sup>1</sup> In contrast, some authors of the Marxian tradition (e.g. Lapavistas, 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.

<sup>2</sup> See Bonizzi (2013) and Tyson and McKinley (2014) for a survey.

available evidence about developing countries suggests the presence of ‘varieties of financialization’ that could be masked by simplistic assessments based on average effects.

Despite an expanding theoretical literature on the effects of financialisation, the empirical evidence is predominantly relegated to a macroeconomic 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), Demir (2007; 2009), and Tori and Onaran (2017; 2018) analyse empirically the effects of financialisation on accumulation from a microeconomic perspective.

The novelty of this article is, to provide micro-econometric evidence for both developed and emerging economies on the effects of financialisation on investment using firm level data.

First, we focus on developed economies based on the cases of the USA, Japan, and a group of Western European countries (the 15 old Members states of the EU, Norway, and Switzerland). Next, we present the results for the developing world based on the group of all developing countries as well as the group of BRICS, and country specific estimations for South Africa, South Korea, India, and China, for which there are data for a sufficiently large group of companies.

The remainder of the article 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.

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# 1. Accumulation of fixed assets, liquidity constraints, and financialisation

In the earlier 'accelerator investment models' (e.g. Evans, 1967; Kuh and Meyer, 1955) 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 (Bond et al., 1992; Hayashi and Inoue, 1991). 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 (Blundell et al., 1992; Brown et al., 2009; Fazzari et al., 1988). 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 (Chirinko and Schaller, 1995; Fazzari and Petersen, 1993; Kadapakkam et al., 1998). In addition, the empirical evidence shows that cash flow always has a significant positive effect on accumulation, whilst the effects of the stock market evaluation and debt are mixed (Bloom et al., 2007; Bond and Meghir, 1994; Bond et al., 2003; Devereux and Schiantarelli, 1990). The mainstream investment literature argues that companies' financing issues mainly derive from agency problems, and the development of financial markets can relax these constraints (Bond et al., 2003; Devereux and Schiantarelli, 1990; Guariglia and Carpenter, 2008; Love, 2003; Love and Zicchino, 2006; Pawlina and Renneboog, 2005). Companies' financial flows are not directly taken into account in these analyses. As a result of the transformation of the economies towards a financialized stage in the last decades, the mainstream 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)<sup>3</sup>. 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

<sup>3</sup> Milberg and Winkler (2009) argue that the accumulation-financialisation 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.

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 financialisation on investment is based on a macroeconomic framework (Arestis et al., 2012; Orhangazi, 2008a; Stockhammer, 2004; van Treek, 2008). Regarding firm level effect of finance on investment, the seminal contribution 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.<sup>4</sup> 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 few microeconomic analysis that look at 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. 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 availability 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).

Even though the available evidence depict financialisation as a phenomenon common to both advanced and developing economies, the different institutional and social settings at country or/and regional level reveal the presence of 'varieties of financialisation' (Lapavistas and Powell, 2013; Pike and Pollard, 2010;).

Building on this literature, in the next section we describe the specifications of two different models of investment, using a specification that takes explicitly into account the effects of financialisation including both financial incomes and payments.

## 2. Specification of the investment function

Within the Post-Keynesian theory capital accumulation is an intrinsically dynamic process (Lopez and Mott, 1998; Kalecki, 1954). 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 (Arestis et al., 2012; Ford and Poret, 1991; Kopcke and Brauman, 2001; Orhangazi, 2008b). 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 analyse 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 basic specification, where the rate of accumulation,  $I/K$ , is:

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<sup>4</sup> The contribution provides a response to the mainstream critiques of the use of liquidity measures to model investment by Jorgenson (1971).

$$\begin{aligned} \left(\frac{I}{K}\right)_{it} = & \beta_0 + \beta_1 \left(\frac{I}{K}\right)_{it-1} + \beta_2 \left(\frac{S}{K}\right)_{it-1} + \beta_3 \left(\frac{\pi}{K}\right)_{it-1} + \beta_4 \left(\frac{F}{K}\right)_{it-1} \\ & + \beta_5 \left(\frac{\pi_F}{K}\right)_{it-1} + \beta_t + \varepsilon_{it} \end{aligned} \quad (1)$$

where  $I$  is the addition to fixed assets,  $K$  is the net capital stock,  $\pi$  is net operating income,  $S$  is net sales,  $F$  is the sum of cash dividends and interest paid on debt, whilst  $\pi_F$  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  $\varepsilon_{it}$  captures firm-specific fixed effects and idiosyncratic shocks. All variables are introduced in first lag to reflect the time consideration in the investment plans. The net operating income/fixed assets ratio is a measure of the 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 financialisation. 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).

Furthermore, 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 ( $\pi_F$ ) as a ratio to  $K$  as an additional explanatory variable<sup>5</sup>.

The composite measure for outward financialisation,  $F$ , 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  $\pi_F$  reflects the financial inflows. 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 in different economic areas, we estimate an extended version of specification (1) as,

$$\begin{aligned} \left(\frac{I}{K}\right)_{it} = & \beta_0 + \beta_1 \left(\frac{I}{K}\right)_{it-1} + \beta_2 \left(\frac{S}{K}\right)_{it-1} + \beta_3 \left(\frac{\pi}{K}\right)_{it-1} + \beta_4 \left(\frac{F}{K}\right)_{it-1} + \beta_5 \left(\frac{\pi_F}{K}\right)_{it-1} \\ & + \beta_6 \left[\left(\frac{\pi_F}{K}\right)_{t-1} * D_n\right]_{t-1} + \beta_t + \varepsilon_{it} \end{aligned} \quad (2)$$

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. The dummy is interacted with the financial incomes. We interacted financial incomes with different levels of total assets for each country/group. In this specification, while  $\beta_5$  is the effect of financial incomes in large companies,  $\beta_5 + \beta_6$  capture the effect of financial incomes in smaller companies.

With equations (1) and (2) 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

<sup>5</sup> 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 recognised by Orhangazi (2008b) with respect to Compustat database, also in Worldscope data on capital gains are not available.

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 financialisation, as fundamental determinants.<sup>6</sup>

### 3. Data and stylized facts

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; Love, 2003; Love and Zicchino, 2006; Pawlina and Renneboog, 2005). Table 1 summarize the countries included in our dataset.

We extracted data for all active, publicly listed non-financial companies. 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 relatively smaller 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.<sup>7</sup> 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 per cent. Third, we drop all the companies with a permanent negative mean net operating income for the whole period. Finally, we exclude observations in the upper and lower 1 per cent of each variable's distribution. With these adjustments, we finally have a total number of 161039 observations and 13289 companies. Next, we present the stylized facts of our sample for different country groups, and selected countries.

**Table 1**  
Composition of the country groups.

Europe	BRICS	Developing and Emerging		
Austria	Brazil	Argentina	USA	Japan

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