Hochschule für
Wirtschaft und Recht Berlin
Berlin School of Economics and Law

Institute for International Political Economy Berlin

The effectiveness and risks of loose monetary policy under financialisation

Author: Sara Feiner Solís

Working Paper, No. 159/2021

Editors:
Sigrid Betzelt, Eckhard Hein (lead editor), Martina Metzger, Martina Sproll, Christina Teipen, Markus Wissen, Jennifer Pédussel Wu, Reingard Zimmer

The effectiveness and risks of loose monetary policy under financialisation

Sara Feiner Solís

Abstract

This paper incorporates low interest rates into a framework of Post-Keynesian theory of the firm under financialisation and uses Compustat data to provide an empirical analysis of firm behaviour in the Eurozone for the period 2000-2018. It reasons that loose monetary policy targeting low interest rates will only be effective in promoting investment in a scenario where shareholder value orientation (SVO) tightens the finance constraint on growth-maximising managers. In contrast, when shareholder value maximisation becomes the goal of the firm, loose monetary policy may not only be ineffective in promoting growth, but might actually be dangerous because it fosters financial fragility and promotes SVO. Data suggest that financialisation in the Eurozone represents a shift in the objectives of the firm towards maximising free cash flows. There is no evidence that loose monetary policy fostered leverage and an equity reduction in the Eurozone, which might be a consequence of its institutional context and ownership structures. Still, the analysis shows that low interest rates were largely ineffective in fostering investment during the period 2008-2018. Therefore, monetary policy seems insufficient to promote investment and growth. Both expansionary fiscal policy and legal reforms that control shareholder power are needed.

Key words: Financialisation, shareholder value orientation, investment theory
JEL-Codes: D21, D22, G30

Contact: sarafeinersolis@gmail.com

Acknowledgements: I am very grateful to Prof. Dr. Eckhard Hein for his advice all along this process and his dedication to support my research. I also thank Dr. Petra Dünhaupt for her help in setting the direction of the empirical analysis. I am very thankful to Lukas Handley for the advice he shared with me from his experience working with Compustat. Any remaining errors are mine only.

1. Introduction

The last decades have seen an increase in shareholder value orientation (SVO), an aspect of financialisation that refers to the increased focus of corporations on shareholders' goals, specifically, distributing more profits or increasing shareholder wealth via higher share prices (Lazonick and O'Sullivan, 2000). More recently, central banks in most developed economies have sustained exceptionally low interest rates, often resorting extensively to unconventional monetary policy, such as quantitative easing. Loose monetary policy continued after the immediate risks of the 2008-2009 financial crisis had passed, as an effort to promote investment, consumption, and growth. Nevertheless, growth and employment have stagnated. Authors and institutions from different economic schools have analysed the macroeconomic dynamics and risks of a low interest rate environment (Palley, 2011; Palley, 2018; Nassr, Wehinger and Yokoi-Arai, 2016; European Systemic Risk Board, 2016). Equally, extensive literature studied financialisation and its impact on capital investment[1] and growth (e.g. Stockhammer, 2004; Dallery, 2009; in addition to the literature mentioned in Davis's, 2017, review).

However, most papers focus on only one of the two aspects: financialisation *or* the low interest rate environment; perhaps touching occasionally on the other. Importantly, it would seem that under SVO, low interest rate policy is largely ineffective in influencing investment and economic growth, and might even be counterproductive. This impression arises because under financialisation, any possible sensitivity of investment to interest rates might decrease, as managers prioritise payouts over investment. Additionally, low interest rates facilitate borrowing for share buybacks or directing cash flows to business owners, which may not only render expansive monetary policy ineffective, but also dangerous, as it increases the financial fragility of the corporate sector. Therefore, this paper addresses the following research questions: *i) What is the effect of loose monetary policy on investment in different scenarios of SVO?, and ii) Do the recent investment behaviour and balance sheet structuration of non-financial corporations in the Eurozone (EZ) reflect any risks arising from low interest rates in combination with SVO?*

[1] Unless otherwise specified, the term „investment" can be interpreted as a synonym of „capital investment" throughout this text.

The contribution of this paper to the literature is intended to be twofold: on the one hand, it expands Post-Keynesian microeconomic theory by integrating the risks of loose monetary policy into a framework of SVO at the firm level. On the other hand, it empirically reviews several indicators of SVO to assess the extent to which the risks of low interest rates in combination with SVO might have materialised in the Eurozone in the period 2000-2018. The motivation behind the choice of the Eurozone is twofold: on the one hand, the Eurozone is less often the focus of analyses of financialisation, which typically focus on the USA (a trend clear in Davis's 2017 literature review). On another hand, any conclusions about the effectiveness or risks of loose monetary policy might be particularly relevant for an area that is very reliant on monetary policy, given the unique legal construction of the Eurozone, where monetary policy is centralised but fiscal policy is still national (and constrained by deficit rules and the inability of the public sector to perform monetary financing). It is important to note that this paper is not a critique of loose monetary policy (or low interest rates) *per se*, it rather aims to discuss their effectiveness in promoting investment under different scenarios of SVO.

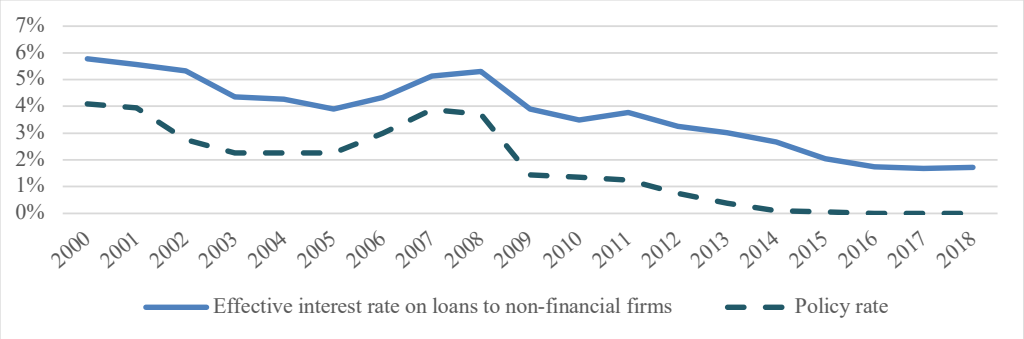
This paper is structured as follows: Section 2 reviews literature on the benefits and risks of low interest rates, their relationship with investment, and investment theories under financialisation. Section 3 expands the Post-Keynesian microeconomic theory of Dallery (2009) by incorporating the effects of low interest rates on firm investment behaviour. Section 4 analyses data of Eurozone non-financial corporations to identify trends on financialisation and Section 5 concludes.

2. Theoretical framework

This work departs from the point where policymakers have been successful at lowering medium- (and longer-) term market rates and assesses the impact on firms' behaviour, regardless of the policy instrument used. For this paper's purpose, it suffices to demonstrate that, at least in the long term, policy rates influence the long-term bond rate; in Figure 1, there is a correlation coefficient of 0.96 between the short-term policy rate and the long-term bond rate.[2]

[2] Note that this high correlation is given in spite of the comparison of the short-term policy rate and long-term effective rate. The display of the short-term policy rate was chosen because of the difficulty in attributing one single figure to the interest rate achieved through measures that specifically target longer term rates, such as quantitative easing.

Figure 1: Policy rate and long-term effective interest rate, EZ, 2000-2018



Source: European Central Bank (ECB). Effective borrowing rate for loans over 1M Euro with maturity above 5 years to non-financial corporations in the Eurozone (ECB, 2020a) and main refinancing operations average lending rate (ECB, 2020b). More detail in Annex A.

Loose monetary policy, especially quantitative easing, has been supported by New Keynesians (Krugman, 2010; Farmer, 2009). Meanwhile, some monetarists (Meltzer, 2011) and new classical economists (Taylor, 2011) have criticised it. The perceptions of Keynesians and Post-Keynesians are generally positive (as reported by Palley, 2011, and Lavoie, 2014, pp. 227-229). Whilst New Keynesians celebrate low interest rates as an incentive to finance investment and consumption, Post-Keynesians advocate low interest rates for equity reasons, as they see the interest rate primarily as a distributional variable (Hein, 2012; Lavoie, 2014, pp. 235-238). However, there are some risks associated with low interest rates, notably, higher financial fragility in corporations' balance sheets, increased fragility in financial markets (European Systemic Risk Board, 2016), and asset price bubbles (Palley, 2011).

The focal point of this paper is firm behaviour and investment, so consumption is left aside. Keynes (1936) and Kalecki (1937) introduced expectations about the return on capital as the main determinant of investment. As Targetti and Kinda-Hass (1982, p.251) put it, "the fundamental concept of the Keynesian theory of investment is the marginal efficiency of a given object of investment". If profit expectations (which depend on aggregate demand) are low, cheap credit will not incentivise investment. The expression "pushing on a string" illustrates the power asymmetry of monetary policy. Post-Keynesian theory of the firm is developed under this fundamental basis (Lavoie, 2014, Ch. 3).

Lazonick and O'Sullivan (2000, p. 17) were pioneers in describing SVO as a shift in the goals and *modus operandi* of firms from a "retain and invest" to a "downsize and distribute" strategy. Other Post-Keynesian authors such as Crotty (1990), Stockhammer (2004) and Dallery (2009) also theorised about implications of SVO on investment. Agency theory, of which Jensen and Meckling (1976) were predominant defenders, introduced an academic justification for maximising shareholder value: without control mechanisms for firm owners, managers would misallocate resources and overspend. Measures such as stock options and bonuses tied to share prices helped align managers' goals with shareholders', prioritising high share prices (with measures such as stock repurchases) over long-term positive returns on investment (Lazonick and O'Sullivan, 2000; Mazzucato, 2018, Ch. 6). The rise of institutional investors also implied higher concentration of power and more control over the firm (Lazonick and O'Sullivan, 2000; Aglietta and Rebérioux, 2012). A powerful market for corporate control arose from a series of (often hostile) mergers and acquisitions (Aglietta and Rebérioux, 2012).

Finally, and importantly, many authors link financialisation to the neoliberal reforms that started during the Reaganite and Thatcherite regimes (Duménil and Levy, 2005; Krippner, 2011; Hein, 2015; Davis and Walsh, 2017; Durand and Gueuder, 2018). In this perspective, maximising shareholders' value implies pressuring labour costs downwards to increase firms' markup over prices (Hein and van Treeck, 2010; Aglietta and Réberioux, 2012; Hein, 2015).Overall, this shift in corporate ideology towards shareholder value entices lower capital investment[3] and lower labour income. Its macroeconomic consequence is a depressive effect on economic output, employment, aggregate demand, and growth (van Treeck, 2008).

[3] Empirically found by Stockhammer (2004), Orhangazi (2008), van Treeck (2008) and Davis (2018), to name just a few.

3. Low interest rates in the Post-Keynesian theory of the firm under financialisation

This section integrates low interest rates into the different scenarios proposed by Dallery (2009) to determine in which scenario(s) low interest rates could counteract the depressing effect of SVO on investment, and in which scenarios low interest rates might foster SVO.

Dallery (2009) builds on Stockhammer's (2004) microeconomic theory under financialisation and offers two theoretical configurations: the first sees financialisation as a constraint for the managerial firm, while the second discusses a full shift in firm goals in a shareholder-dominated firm. Dallery sets aside macroeconomic consequences of financialisation such as finance-driven consumption,[4] the reduction of public spending or changing patterns in international trade, and focuses on investment behaviour of non-financial large corporations.[5] His assessment is based on two limits to investment: the expansion and the finance frontiers (Figure 2 below). The former gives the maximum profitability[6] that can be achieved by the firm at a given rate of capital accumulation.[7] The latter reflects the minimum profit rate required to finance a given rate of accumulation. Available finance for investment is positively affected by profits because retained earnings are a source of finance and because profitability is an indicator of creditworthiness (Lavoie, 2014, pp. 137-141). Also, managers are (in theory) aware of the principle of increasing risk (Kalecki, 1937) and are reluctant to increase leverage

[4] Boyer (2000) and Maki and Palumbo (1990) suggest financialisation may increase consumption via the wealth effect. Cordonnier (2006) discusses the consumption out of profits as a partial positive impact of financialisation on growth, which would, however, be offset if financialisation implies a decrease in labour's income (as suggested by Dallery, 2009, or Aglietta and Réberioux, 2012), since the savings rate is smaller for workers than for rentiers. Hein (2014, Chapter 10) provides an analysis of the stability conditions for debt-led consumption/private demand boom regimes, as well as for export-led regimes. Overall, the literature seems to indicate that the negative effects of financialisation on demand override the positive effects.

[5] For a discussion on the characteristics of the Post-Keynesian representative corporation, see Lavoie, 2014, p. 124-128

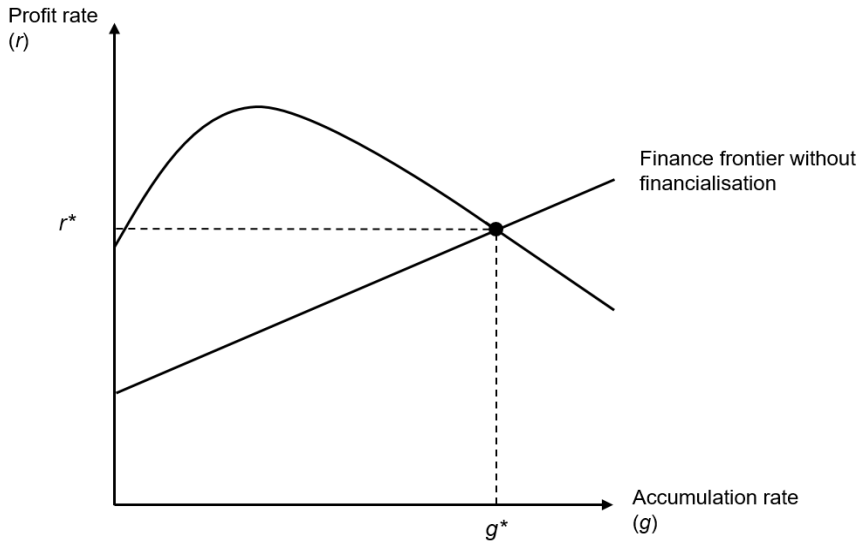
[6] The profit rate is defined as profits before interest and dividends over capital utilised. Taxes are ignored for simplicity.

[7] The relationship between profits and investment in the expansion frontier is concave. Higher accumulation rates yield higher profit rates up to a certain level. Afterwards, if the firm desires to grow at a higher rate, it will need to reduce its profit margin, because of market share competition and increased selling costs such as for advertising (Wood, 1975). To be clear, higher growth requires a lower profit *rate* (but profit *levels* might be higher).

unless they achieve sound profits. Hence, the finance frontier is a positive function of the profit rate.

In managerial capitalism (Galbraith, 1975), it is assumed that managers are in control of the firm and aim to maximise growth to ensure the firm's long-term survival (Lavoie, 2014, pp. 128-130). Therefore, firms invest as much as the finance constraint and the realisation of profit expectations allow. This choice is represented in Figure 2 below, where the firm accumulates at rate g*, with a profit rate r*.

Figure 2: Managerial firm (before financialisation)



Source: Dallery (2009), p. 496 (own representation)

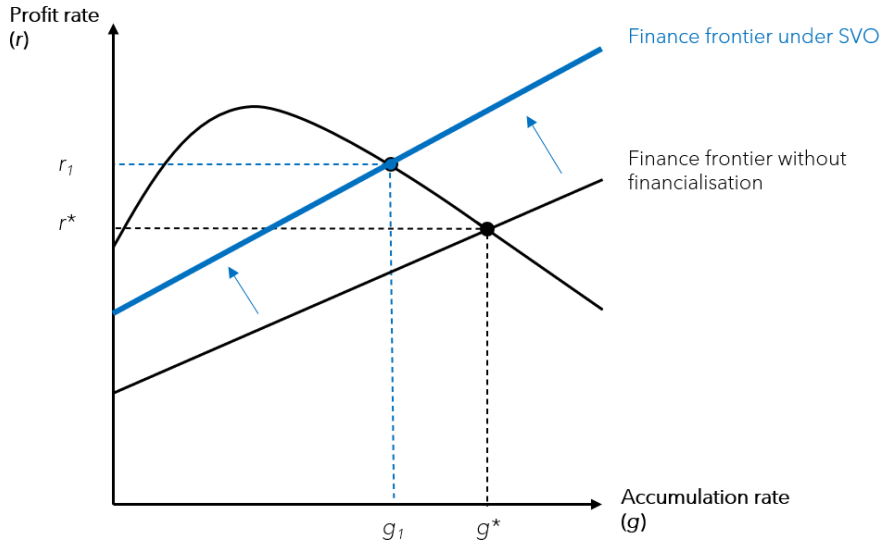
3.1. Scenario 1: Financialisation as a finance constraint for the managerial firm

In the institutional context of financialisation, shareholders demand higher payouts.[8] Consequently, the firm's available finance for investment decreases (there is less internal finance available, and if creditors look at retained earnings to assess creditworthiness, also less external finance). Further constraints to finance may occur if shareholders

[8] Higher dividend payouts (or a lower profit retention ratio) is an undisputed fact of financialisation in the US, UK and most European countries analysed (reported, for instance, in empirical studies of Stockhammer, 2005-6; Cordonnier, 2006; van Treeck, 2008; Durand and Guender, 2018; and Mazzucato, 2018).

pressure to reduce new equity issues or even to carry out buybacks (to foster stock prices), or if shareholders promote financial investment (seeking higher or faster returns). The finance frontier shifts upwards because, if managers are obliged to distribute more dividends than before, they must reach a higher profit rate to finance investment. Growth-maximising managers will still choose the highest investment rate possible under the finance constraint imposed by shareholders. This is point g_1 in Figure 3, which yields a profit rate of r_1.

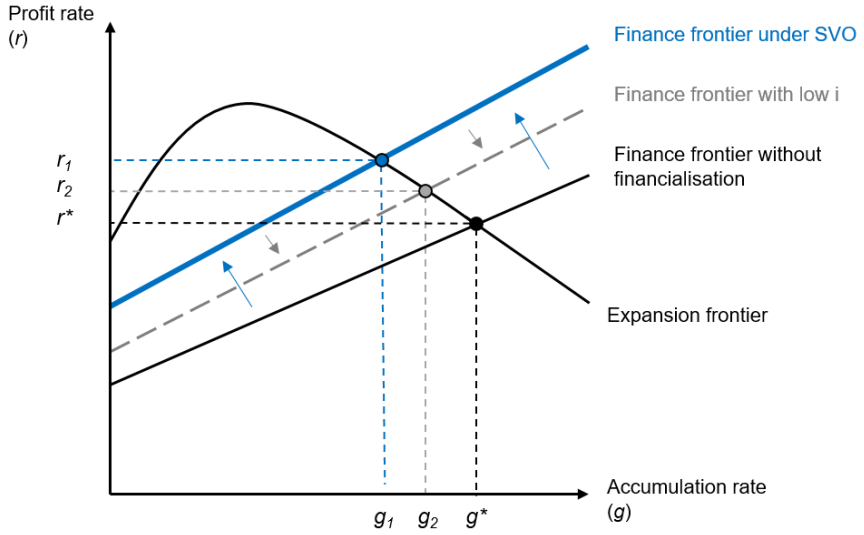
Figure 3: The managerial firm with a tightened finance constraint



Source: Dallery, 2009, p. 503 (own representation)

In this case, low interest rates would alleviate the finance constraint, and (partly or fully) offset the shift of the finance frontier induced by SVO (Figure 4). The finance frontier shifts downwards: At any profit rate, the reduced cost of debt allows for higher dividend payouts without excessively harming the retained earnings needed for accumulation. Both profit and accumulation rates will increase as compared to the situation with financialisation, but with higher interest rates (from g_1 and r_1 to g_2 and r_2).

Figure 4: The effect of low interest rates in a managerial firm with a tightened finance constraint



Source: Adapted from Dallery, 2009, p. 503

3.2. Scenario 2: Financialisation as a shift in the objective of the firm

Dallery (2009) presents an alternative constellation where the firm's goal is shareholder value maximisation. Dallery questions Stockhammer's (2004) simplification that shareholders pursue only profit maximisation, i.e., that they care only about the expansion frontier. They also have, for instance, claims on the financial structure of the firm, requiring a shift from equity to debt. This happens because a decrease in equity boosts financial indicators such as the ROE (return on equity). Maintaining the volume of assets, a decrease in equity can only be compensated with higher debt. Under Stockhammer's assumption of profit maximisation, a shareholder-ruled firm would adopt the accumulation rate that generates the maximum rate of profit (in the long run). Because shareholders only own a share in the firm, what they care about is the portion of profits they have access to. To make Dallery's point clear: shareholders do not care about economic profitability (measured, for instance, as the return (r) of profits (π) on capital employed (K), ROCE), but care about financial profitability (ROE).

$$ROCE = r = \frac{\pi}{K} \qquad (1)$$

$$ROE = \frac{\pi - iD}{K - D} = r + \frac{(r-i)D}{K-D} \qquad (2)^{9}$$

Equation 2 shows that, if shareholders only care about the ROE, then as long as there is a positive gap between the economic profit rate (r) and the interest rate (i), there is an incentive to increase debt (D). In practice, this means that shareholders will want to boost the financial indicator ROE by increasing the debt to capital ratio, and by reducing equity via (debt-financed) buybacks. In accounting terms: maintaining asset volume, shareholders prefer a shift towards higher debt.

3.2.1. Maximisation of payouts to shareholders as the firm's goal

Dallery first proposes a scenario where the firm's goal is the maximisation of free cash flows.[10] In this work, this is referred to as Scenario 2.A. Whilst maximising the economic profit rate would mean aiming to achieve the maximum point on the expansion curve (r_{max} in Figure 5 below), maximising ROE means choosing an accumulation rate that maximises free cash flows,[11] which implies a joint maximisation of the profit rate and of the payout ratio. This is achieved by maximising the gap between the finance frontier and the expansion frontier for a given accumulation rate (double-ended arrow in Figure 5 below, at the point where the slope of the expansion frontier is equal to the slope of the finance frontier). Dallery (2009, pp. 507-508) explains that, here, the profit retention ratio is the residual, so the finance frontier can only be known *ex post*, after a given rate of profit has been achieved and the desired amount has been distributed to shareholders. The *ex-ante* frontier in Figure 5 is simply a hypothetical representation of the finance frontier assuming, in a first step, a retention ratio equal to 1 (this is why the *ex-ante* frontier is flatter than the finance frontier without financialisation). But because, as explained above, shareholders have claims over the financial structure of the firm and encourage indebtedness, the *ex-ante* frontier shifts up to reflect a higher debt load. After redistribution, the actual finance frontier can be identified. The *ex-post* finance frontier in

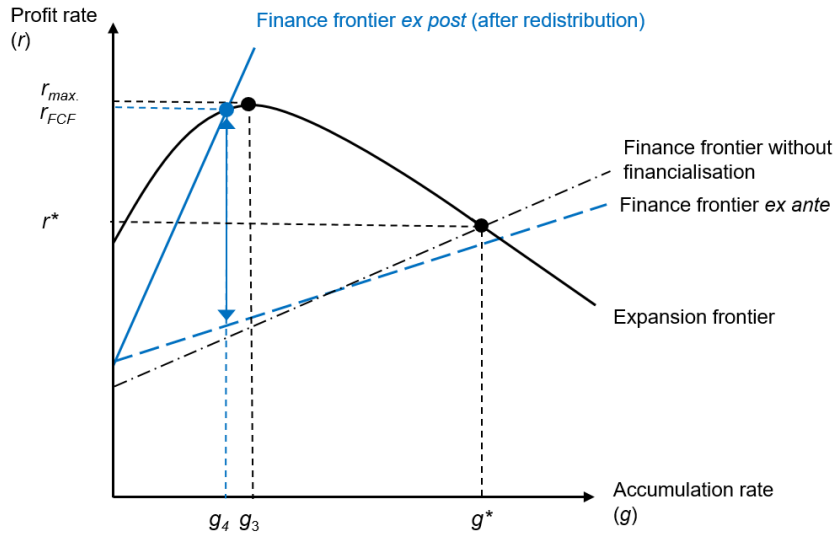
[9] Dallery (2009, p. 507) defines equity as capital minus debt (K-D). From a business accounting perspective, it is slightly confusing to make productive capital a synonym of assets (as assets include, inter alia, accounts receivable or prepayments of services such as insurance, which are hard to classify as productive capital). Similarly, in the empirical part of this work debt is not used as a synonym of liabilities (see more information in Annex A). Still, this does not affect Dallery's argument.

[10] Free cash flow is the amount of profit shareholders could demand back, i.e., profits minus interest payments minus investment.

[11] Dallery (2009) assumes for simplicity that payouts are made entirely in the form of dividends, but here, the use of profits for stock repurchases is also considered and does not affect the results of the analysis.

Scenario 2 is not one representing an external barrier to the access of finance (which could be alleviated by low interest rates, as in Scenario 1). Instead, it is the result of a behaviour of disproportionate payouts to shareholders.

Figure 5: Firm with free cash flow maximisation



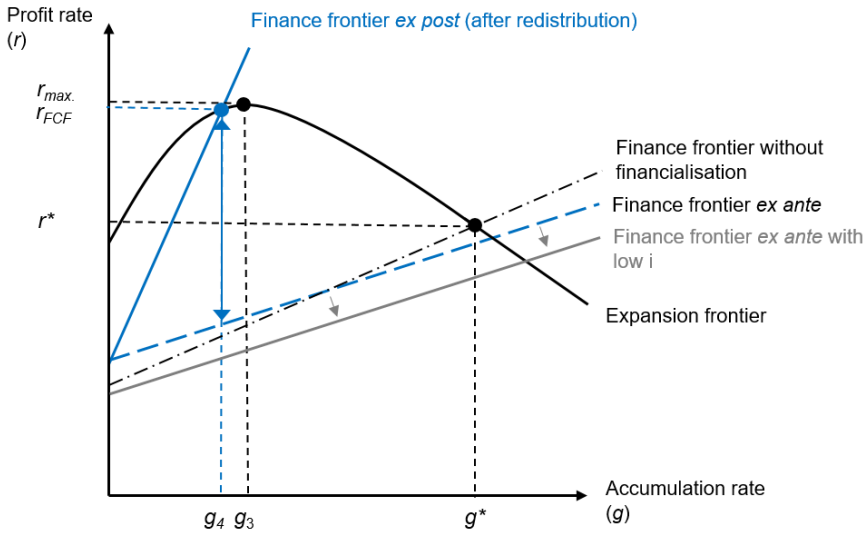
Source: Dallery, 2009, p. 508 (own representation)

The decrease in the accumulation rate of Figure 5 is much larger than in Scenario 1. Indeed, the accumulation rate is even lower than the one that maximises the rate of profit (g_4 is smaller than g_3). The profit rate achieved under free cash flow maximisation (r_{FCF}) is much higher than in a manager-controlled firm (Scenario 1 and Figure 3 further up), but still lower than the maximum profit rate (r_{max}). This is because the initial slope of the expansion curve is steeper than that of the *ex-ante* finance frontier, so that both slopes will be equal (this gives point r_{FCF}) before the incline of the expansion frontier achieves a value of zero on the curve's maximum (at r_{max}). In conclusion, the profit rate increases tremendously at the expense of the accumulation rate, creating a much larger decrease in investment compared to a situation without financialisation (g^*) and also compared to Scenario 1 (g_1 in Figure 3).

The effect of low interest rates here is very different to Scenario 1. The *ex-ante* finance frontier will shift downwards due to lower interest costs, but will retain the same slope. Since the slope remains constant, the accumulation rate maximising the gap between the

finance and the expansion frontiers is still the same. There is no shift in the *ex-post* finance frontier, which is the residual. Gains from lower interest costs are distributed (in the form of dividends or buybacks), and additional debt is not used to invest, but for dividend payouts and buybacks, as cheap credit augments the earlier mentioned incentive to shift from equity to debt (ceteris paribus). Profit and accumulation rates will be at the same levels as with higher interest rates, that is, r_{FCF} and g_4 (Figure 6).

Figure 6: The effect of low interest rates in a firm with free cash flow maximisation



Source: Adapted from Dallery, 2009, p. 508

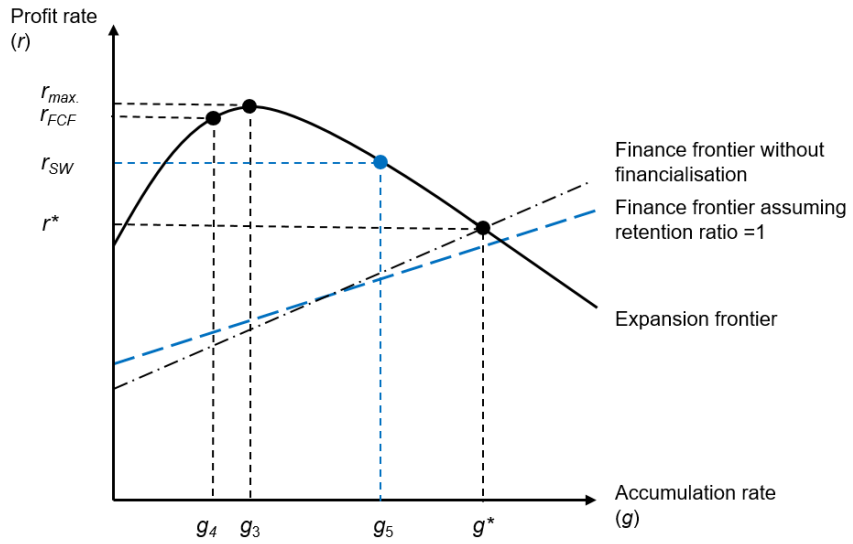
In conclusion, whereas low interest rates could foster investment in the scenario of a Galbraithian firm, when SVO takes over the firm and the goal is the maximisation of free cash flows, loose monetary policy will not encourage investment. Instead, loose monetary policy will further incentivise and facilitate the shift from equity to debt that is inherent in a scenario of pure SVO.

3.2.2. Maximisation of shareholder wealth as the firm's goal

Dallery (2009) presents an alternative Scenario 2.B, where the objective of the firm is the maximisation of the firm's market value. Dallery measures the value of the firm as the sum of its present-discounted future free cash flows over an infinite period. He explains an obvious fact for the long term: that the firm's growth rate has a positive effect on its share value. Hence, "shareholders who try to maximize the firm's value should not focus

on the profit rate at the expense of accumulation" (Dallery 2009., p. 510). Since it is impossible for managers or shareholders to find the accumulation rate that maximises the firm's market value, because it is dependent on numerous variables beyond the firm's control, they take on a satisfying (instead of a maximising) behaviour and fix their profit rate near a threshold level considered as standard. In Figure 7 below, r_{sw} is the profit rate that leads to a ROE considered standard or a "financial norm" (Boyer, 2000). Profit and accumulation rates are between those of Scenarios 1 and 2.A., implying that even under SVO shareholders should take growth into account.

Figure 7: Firm with shareholder wealth maximisation

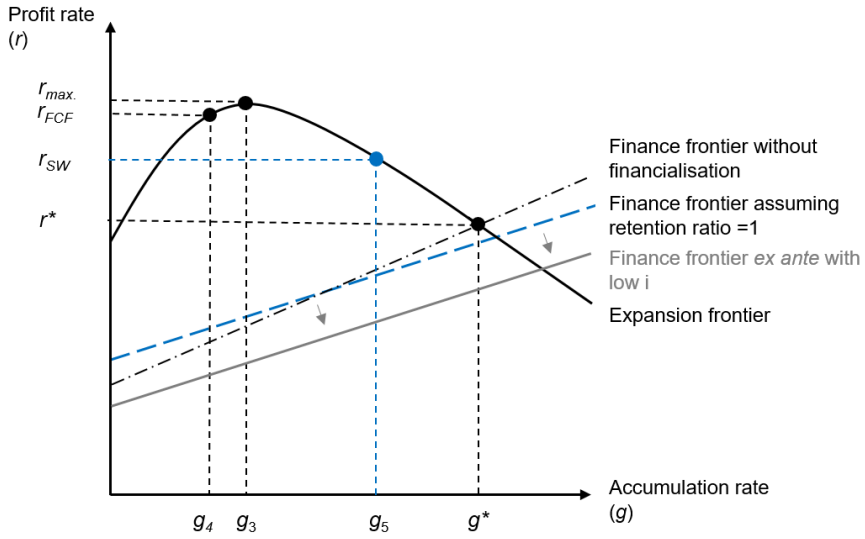


Source: Dallery, 2009, p. 511 (own representation)

Dallery (2009, p. 511) does not show in his graph for market value maximisation where the actual (*ex-post*) finance frontier is in this scenario. In any case, it would be somewhere between the frontier where a retention ratio of 1 is assumed and the *ex-post* frontier in Figure 6 (further up). The finance frontier could intersect the expansion frontier at a lower profit rate than r_{SW}. If so, this would mean that there is managerial slack (Lavoie, 2014, pp. 146-147): the profit rate obtained at g_5 is r_{SW}, but the rate required to meet financial obligations is lower. Managers could use this excess of funds for buybacks or to pay themselves higher salaries, for example. However, if shareholders can ensure the retention ratio is solely dependent on the amounts they choose to pay out as dividends or buybacks, then the intersection will happen at point (g_5, r_{SW}), with no managerial slack.

In this case, the finance frontier can again be considered a residual, and lower interest rates will not shift the *ex-post* finance frontier if the gains from lower interest payments are simply used for more dividend payments or share repurchases. Only the *ex-ante* finance frontier shifts downwards (Figure 8 below). Therefore, in Scenario 2.B, loose monetary policy would be ineffective in promoting investment.

Figure 8: The effect of low interest rates in a firm with shareholder wealth maximisation



Source: Adapted from Dallery, 2009, p. 511

Dallery's assumptions about the long-termist behaviour of investors seem unlikely in the era of financialisation. It is more likely that investors prioritise short-term share price performance (as many seek gains predominantly from trading, rather than holding, stock) and short-term payouts. Furthermore, Dallery does not consider that higher market capitalisation can be achieved via mergers and acquisitions (M&As), which can be financed with debt. In a scenario of short-term maximisation of share value, low interest rates would provide an incentive to use cheap credit to boost share prices via buybacks or M&As. Again, the finance frontier would be an *ex-post* residual determined after achieving a profit rate that approaches the (impossible to know) rate that maximises share price and after the finance needed for buybacks and M&As is deducted. The *ex-post* finance frontier with short term value maximisation would be close to that of Scenario

2.A. Hence, if short-term value maximisation is the goal of the firm, then there is no reason to expect low interest rates to increase investment either.

3.3 Summary of scenarios and empirical predictions

The current section has explained the effect of loose monetary policy on investment in different scenarios of SVO, thereby answering the first research question. It showed that low interest rates would only foster investment in Scenario 1 (Galbraithian firm where financialisation represents a financial constraint). In the cases where there is a shift in the goals of the firm towards payout maximisation (Scenario 2.A.) or towards firm market value maximisation (Scenario 2.B.), the financial relief created by low interest rates is appropriated by shareholders. This is because under shareholder value maximisation there is an inherent incentive (ceteris paribus) to move from equity to debt in order to boost financial indicators such as the ROE, to increase share prices, and to direct cash flows to shareholders. Low interest rates might increase this incentive, which could then pose dangers for financial and macroeconomic stability (Lazonick, Sakinç and Hopkins, 2020). The expected empirical indicators for each scenario are summarised in Table 1:

Table 1: Expected empirical results in each scenario

Scenario 1: Financialisation as a finance constraint in the managerial firm
- Moderate increase in the dividend payout ratio - No additional increase in dividend payouts when interest rates decrease - Lower interest rates increase investment (finance constraint is alleviated) - Retained earnings increase when interest rates decrease - No increase in buybacks, no shift in equity/assets ratios
Scenario 2.A: Maximisation of payouts to shareholders
- Higher gross profit rates - Strong increase in the dividend payout ratio - Dividend payouts increase when interest rates decrease - Strong decrease in investment, insensitivity of investment to lower interest rates - High indebtedness, accelerated when interest rates decrease - Decrease in retained earnings, insensitivity of retained earnings to lower interest rates
Scenario 2.B: Maximisation of shareholder value
- Same than Scenario 2.A plus: - Strong increase in buybacks and decrease in equity/assets, specially when interest rates are low

The scenarios presented in this section are simplified cases. Different firms in an economy may each be associated to a higher or lower extent with one of the above-mentioned scenarios. Also, the goals presented may overlap within one firm.

4. Empirical analysis of Eurozone non-financial corporations

This section uses the above presented theory to investigate empirical trends in current Eurozone countries. It analyses Standard & Poor's (2020) Compustat financial statement data of non-financial large, publicly listed corporations from 2000 to 2018[12] to understand firm behaviour in an environment of low interest rates and financialisation. After data filtering the sample has 1,005 firms,[13] compared to a potential total of 4,180, which would include all Eurozone non-financial publicly listed corporations (Compustat claims to be comprehensive, i.e. to include all publicly traded companies). The sample has a bias, because some countries had fewer firms with full data for the period 2000-2018.[14] Aggregated data is used.[15] In addition to Eurozone trends, disaggregated data for the four largest countries, Germany, France, Italy and Spain, may show macroeconomic or institutional differences, and a distinction between the behaviour of the 10% largest and the 50% smallest corporations[16] might provide further insights. Throughout this analysis it is important to keep in mind that the "smallest 50%" are still very large publicly listed corporations. Table 2 shows the distribution of firms by country of incorporation in the sample used (after filtering). The fourth column shows the distribution of the largest 10% Eurozone firms amongst countries. Annex B provides information about industry composition of the sample.

[12] The period is determined by data availability, as data for 1999 (creation of the Euro) was insufficient.
[13] Annex A provides details on the data filtering process and data availability for each variable assessed.
[14] Around 75% of firms had to be filtered out because there was not an observation for each year. For Cyprus, Greece, Latvia, Lithuania, Luxemburg, Malta and Slovakia, between 80% and 90% of firms had to be removed.
[15] E.g. instead of looking at the average indebtedness ratio among firms, here the sum of debt of all firms is divided by the sum of assets of all firms, which achieves correct weighting, since the sample of firms observed is fixed.
[16] See how data was disaggregated in Annex A.

Table 2: Sample characteristics by country

Country	Number of firms	% in sample	Number of EZ top 10% firms	Average asset size*	Median asset size*
France	257	25.6%	37	6485	373
Germany	255	25.4%	23	5941	208
Italy	94	9.4%	7	5476	450
Finland	69	6.9%	4	1927	227
Spain	64	6.4%	12	6785	966
Netherlands	58	5.8%	10	7518	1027
Belgium	48	4.8%	2	3149	367
Greece	43	4.3%	1	852	202
Austria	32	3.2%	2	2644	752
Portugal	22	2.2%	1	3204	700
Irland	23	2.3%	1	2133	902
Luxemburg	7	0.7%	1	10912	1132
Slovenia	8	0.8%	0	883	749
Estonia	8	0.8%	0	311	180
Cyprus	6	0.6%	0	372	229
Lithuania	3	0.3%	0	480	614
Malta	3	0.3%	0	96	128
Latvia	3	0.3%	0	214	97
Slovakia	2	0.2%	0	1046	1046
All firms	**1005**	**100%**	**101**	**5159**	**339**

* in millions of Euros, based on the mean asset value for each firm over the period 2000-2018

Source: Standard & Poor's (2020) Compustat (own calculations)

The method used is similar to Davis's (2016) analysis of USA non-financial corporations' balance sheets between 1950 and 2014, but also includes income and cash flow statement data. Davis's (2016) study summarises three main findings attributed to financialisation based on corporate balance sheet evolution: first, an increased share of financial assets in firms' portfolios; second, increased leverage by the largest non-financial corporations (when looking at debt/capital stock ratios),[17] whereas most non-financial corporations deleveraged; and third, a dramatic surge in stock buybacks, also concentrated among large firms. In other words, SVO triggers changes in the sources and uses of funds. The equality of sources and uses of funds is shown in the following equation:

[17] Davis (2016) chose to assess indebtedness looking at the ratio of debt to capital stock and debt to assets ratios. She justified the former to account for the fragility arising from a higher proportion of financial assets in the firm's portfolio, which may turn out to be less liquid than accounted for, as happened during the financial crisis. Whilst she found that debt to capital stock ratio rose significantly (on aggregate levels, driven by largest firms), debt to assets ratios remained relatively constant.

net profits + new debt + new equity = dividends + stock repurchases + capital investment + financial investment + intangible investment + principal repayments + change in retained earnings (3)

which can be rewritten as:

net profits + net change in debt + net change in equity = dividends + capital investment + financial investment + intangible investment + change in retained earnings (4)

Equation (4) serves to structure the empirical assessment. First, an overview of the evolution in sources and uses of funds is presented. Then, individual indicators are analysed in detail to assess whether SVO, in combination with low interest rates, might have diverted funds from capital investment to alternative uses. Finally, changes in the balance sheet composition are examined.

4.1. Changes in the sources and uses of funds

This subsection assesses aggregate changes in sources and uses of funds. Table 3 shows that profits were the main source of finance and their share of funds was higher in the post-crisis period.

Table 3: Composition of sources of funds (average shares in pre- and post-crisis periods)

	Net profits	Δ Debt	Δ equity
Pre-crisis (2001-2008)	60%	15%	25%
Post-crisis (2010-2018)	66%	11%	23%
2001-2018	**61%**	**16%**	**23%**

Note: year 2009 is excluded from the sub-samples to isolate the immediate effect of the crisis. Therefore, the average for the whole period can be higher (lower) than both sub-sample averages.
Source: Standard & Poor's (2020) Compustat (own calculations)

Table 4 below shows changing behaviour in the uses of funds. Despite capital investment claiming most funds in any year, its share of total funds used decreased from an average of 60% in the pre-crisis period to an average of 49% in the post-crisis period. After capital investment, dividends claimed the largest share of funds. Dividends increased their share

of available funds from an average of 15% to 19%. Financial and intangible investment claimed larger shares of funds in the post-crisis period.

Table 4: Composition of uses of funds (average shares in pre-and post-crisis periods)

	Dividends	Capital investment	Financial investment	Intangible investment	Δ retained earnings
Pre-crisis (2001-2008)	15%	60%	3%	11%	11%
Post-crisis (2010-2018)	19%	49%	9%	12%	12%
2001-2018	**18%**	**54%**	**6%**	**13%**	**10%**

Note: year 2009 is excluded from the sub-samples to isolate the immediate effect of the crisis. Therefore, the average for the whole period can be higher (lower) than both sub-sample averages.
Source: Standard & Poor's (2020) Compustat (own calculations).

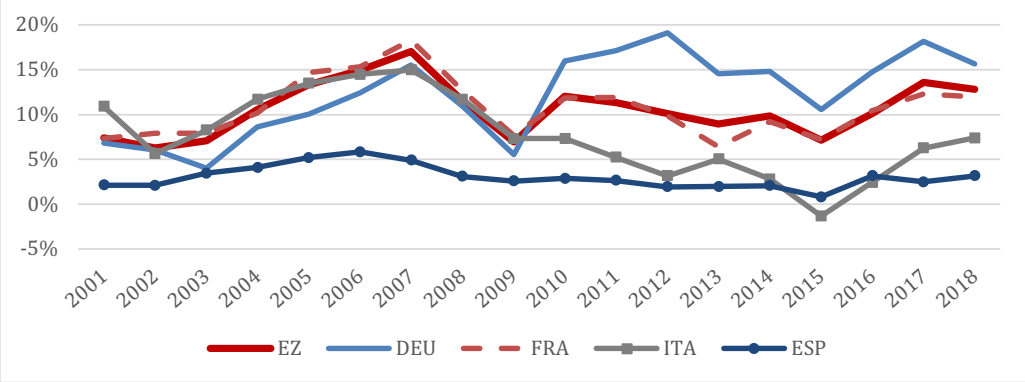
The following sections explore more deeply individual indicators of financialisation to link empirics with the theory of Section 3.

4.2. Profits and their relationship with investment

Section 3 explained the role of profitability in the finance and expansion frontiers. The economic profit rate[18] shows a slightly increasing trend for Eurozone countries (Figure 9 below), despite cyclical fluctuations. These results resemble those found by Orhangazi (2018), who assessed the same indicator for the USA. Profitability grew mostly in Germany and slightly in France, whereas it decreased strongly in Italy and stagnated in Spain. France followed the aggregate evolution in the EZ quite closely, a pattern visible in practically all figures, because French firms account for a significant portion (25.6%) of the sample, and particularly, most large corporations in the sample are French.

[18] Defined as net profits over capital stock at the beginning of the same year, the concept Dallery uses in his 2009 paper.

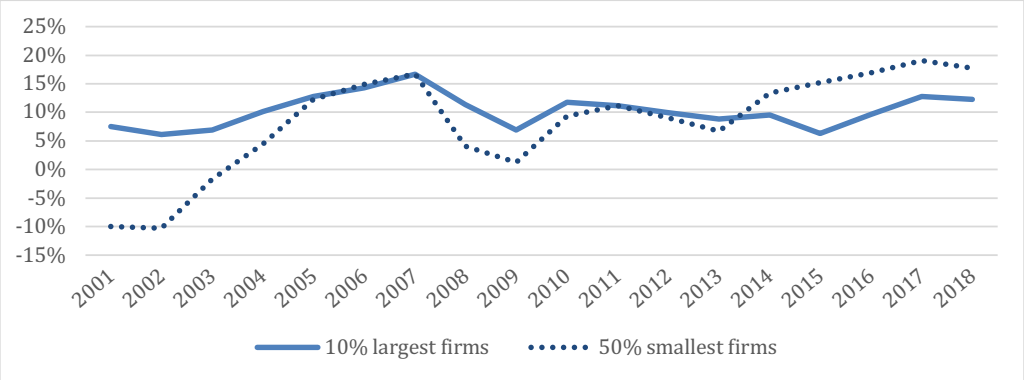
Figure 9: Net profits/capital stock ratio at start of the year, 2001-2018



Note: Eurozone aggregate (EZ), Germany (DEU), France (FRA), Italy (ITA) and Spain (ESP)
Source: Standard & Poor's (2020) Compustat (own calculations)

Looking at firm size, economic profitability of the smallest corporations started at negative levels in 2001-2002 (possibly still a consequence of the burst of the dot-com bubble). The shock caused by the 2009 crisis was stronger amongst smaller corporations. Since 2013 the economic profit rate was higher for the bottom 50% of firms.

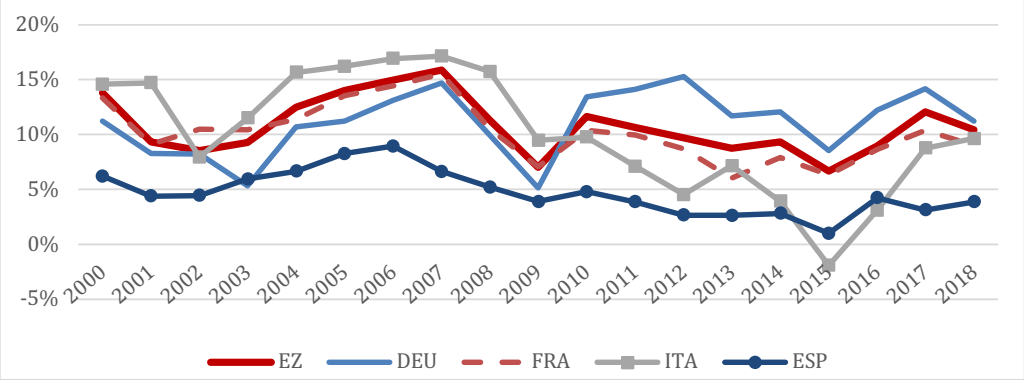
Figure 10: Net profits/capital stock ratio at start of the year, largest 10% and smallest 50% firms, 2001-2018



Source: Standard & Poor's (2020) Compustat (own calculations)

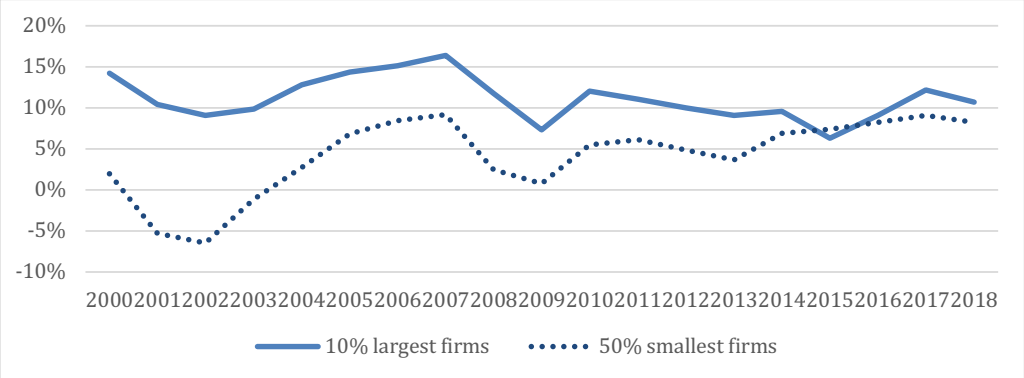
In contrast, profitability measured as the ROE, which, as explained earlier, is the indicator that shareholders are likely to be more interested in, showed a declining trend over the period in the Eurozone (Figure 11 below). Later it will be seen that this was due to an increase in equity relative to assets (Figure 27 further down). The country-disaggregated data trends are similar using both profitability indicators, except that France shows a decreasing ROE, highlighting greater increases in equity than in capital stock.

Figure 11: ROE, 2000-2018



Note: Eurozone aggregate (EZ), Germany (DEU), France (FRA), Italy (ITA) and Spain (ESP)
Source: Standard & Poor's (2020) Compustat (own calculations)

Figure 12: ROE, largest 10% and smallest 50% firms, 2000-2018



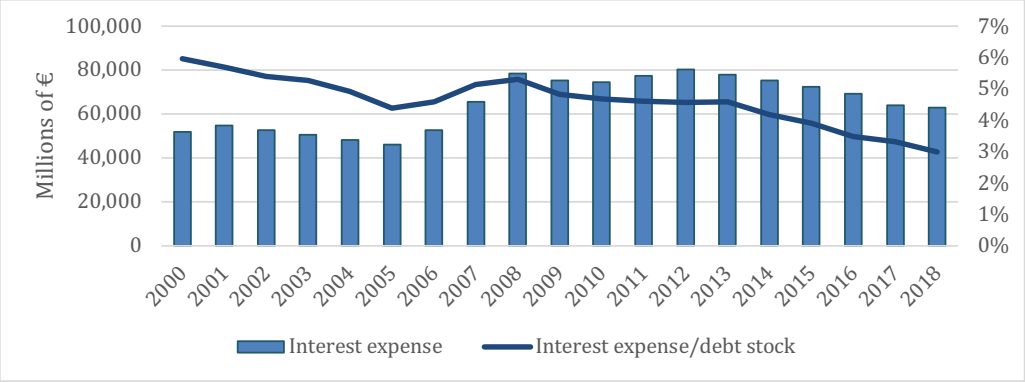
Source: Standard & Poor's (2020) Compustat (own calculations)

An interesting phenomenon can be seen when comparing Figure 10 and Figure 12: whilst the largest and the smallest corporations showed relatively similar profit rates in Figure 10, and indeed, the economic profitability of smaller corporations increased comparatively faster in the last years of the period, the financial profitability (measured as the ROE in Figure 12) of larger corporations was significantly higher than that of smaller corporations. This might indicate that larger companies are more influenced by SVO and therefore likelier to foster financial indicators.

Interest expenses negatively influence net profits (and available funds). Interest rates decreased over the period. However, due to higher debt levels, interest costs were significantly higher in the post-crisis period, and decreased only slowly after 2012 (Figure

13 below). Nevertheless, the effective cost of debt (calculated as interest expense over total debt stock) halved from almost 6% in 2000 to about 3% in 2018. This means that lower interest rates shifted the finance frontier downwards. However, an increase in debt levels (probably induced at least in part by low interest rates themselves) caused an upward shift in the finance frontier. Therefore, lower interest rates have not necessarily eased the financial constraint.

Figure 13: Interest expense and interest expense/debt stock ratio, 2000-2018



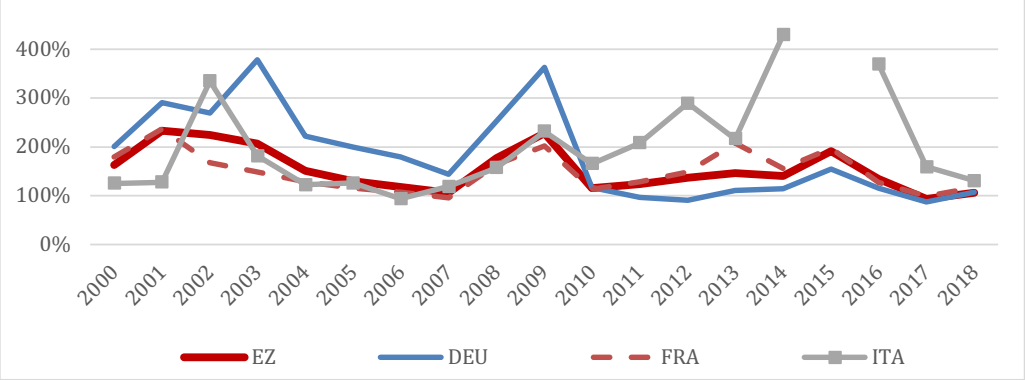
Source: Standard & Poor's (2020) Compustat (own calculations)

The literature on financialisation identified the decoupling of profits and investment (Stockhammer, 2005-6; Cordonnier, 2006; van Treeck, 2008; Durand and Guender, 2018). Figure 14 below shows that the ratio of capital investment over net profits fell between 2000 and 2018 (except for some spikes in 2009 and 2015 reflecting drops in profits).[19] These results suggest a prolongation of the trends identified by Stockhammer (2005-6), who found decreasing investment over profits ratios for the USA, the UK, Germany, Italy and France for 1970-2002.[20]

[19] It is surprising that the ratio exceeded 100% for continued periods of time, since this implies that firms invested more than they earned. Spain was not included in Figure 14 because its excessively high ratios of around 500%, which are in part attributed to a slightly larger data availability for investment than for cash profits, make it is dangerous to interpret this ratio for Spain.

[20] Stockhammer's ratios are lower (below 100%) because he used operating surplus (before taxes). He used macroeconomic data for all firms (whilst here only the largest ones, those which are publicly listed, are considered). Additionally, he does not specify whether he excluded firms from FIRE sectors, where capital investment is bound to be proportionally lower than in non-financial corporations, which are the ones analysed here.

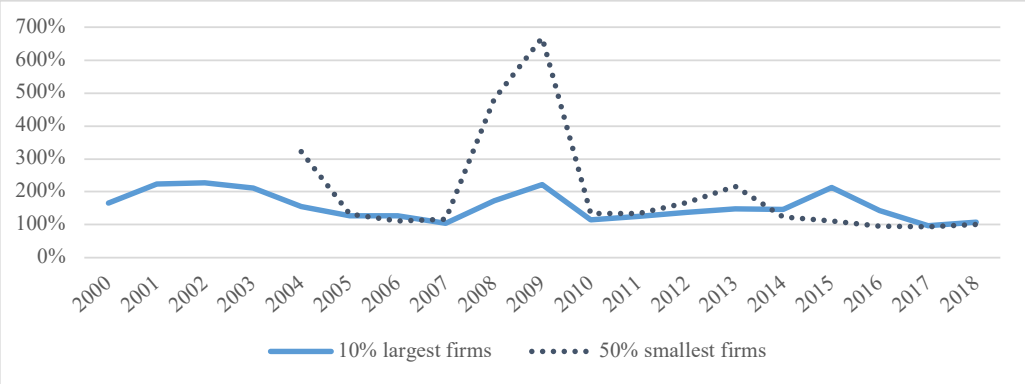
Figure 14: Capital investment/net profits ratio, 2000-2018



Note: Eurozone aggregate (EZ), Germany (DEU), France (FRA) and Italy (ITA). Outlier for ITA in 2015 excluded.
Source: Standard & Poor's (2020) Compustat (own calculations).

The ratio of capital investment to net profits by firm size (Figure 15 below) does not show stark divergences other than the spike in 2008-2009 for the bottom 50% of firms, which was caused by the above-mentioned stronger shock on profits.

Figure 15: Capital investment/net profits ratio, largest 10% and smallest 50% firms, 2000-2018

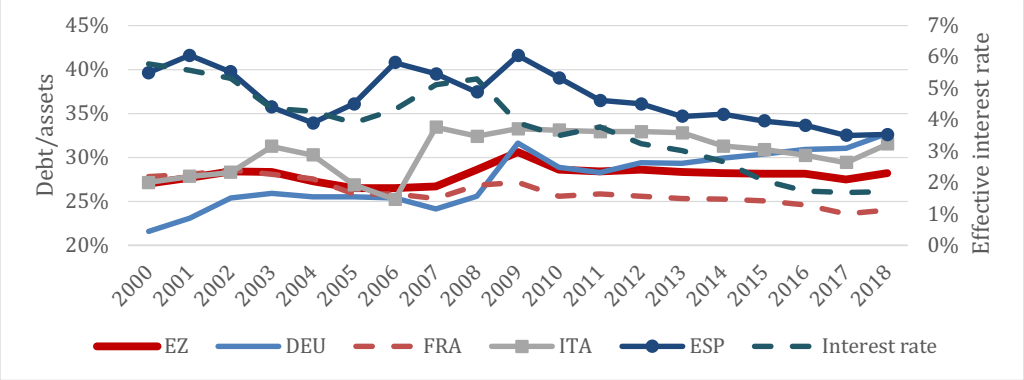


Note: the ratio is not shown for 2000-2003 for the bottom 50% firms because the extreme positive and extreme negative values in 2000-2003 do not allow any reasonable economic interpretation, and including them would distract from the general evolution.
Source: Standard & Poor's (2020) Compustat (own calculations).

4.3. Debt

Increases in corporate debt have been identified as a trait of the financialisation of non-financial firms (Palley, 2007). However, the indebtedness or debt to assets ratio[21] of the Eurozone sample increased only minimally over the period (from 27% in 2000 to 28% in 2018), except for a crisis-related spike in 2008-2009, showing a converging trend in the selected countries (Figure 16 below).

Figure 16: Indebtedness ratio and the interest rate, 2000-2018

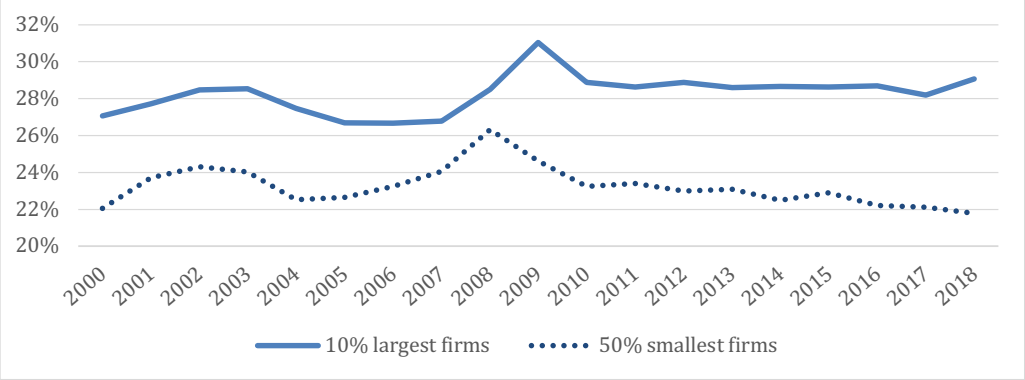


Note: Eurozone aggregate (EZ), Germany (DEU), France (FRA), Italy (ITA) and Spain (ESP)
Source: Standard & Poor's (2020) Compustat (own calculations) and ECB (2020a)

Despite the slight generalised increase in indebtedness over the period, Figure 17 below shows that smaller corporations *decreased* their indebtedness in the post-crisis period (this was also found by Davis, 2016, for US firms) despite falling interest rates. The indebtedness ratio of the 10% largest corporations was throughout the period higher than that of the bottom 50%. This is perhaps a consequence of the better borrowing conditions that larger firms enjoy, or it could also indicate stronger SVO (promoting debt instead of equity to keep good financial indicators, as Figure 12 showed).

[21] See definition of variables in Annex A.

Figure 17: Indebtedness ratio, largest 10% and smallest 50% firms, 2000-2018



Source: Standard & Poor's (2020) Compustat (own calculations)

As mentioned above, authors such as Davis (2016) and Palley (2007) find high indebtedness to be a sign of financialisation. However, indebtedness on its own cannot tell enough about the presence (absence) of financialisation in the firm. What matters is the *use* of the debt: it is relevant, for instance, whether funds serve to finance profitable capital investment, or share buybacks (Davis, 2018). The following sections examine the uses of funds.

4.4. Capital investment

Mason (2015) argued that the decrease in capital investment during the Great Recession in the USA was not quite due to difficulties accessing credit, but that the decoupling of borrowing and investment is yet another sign of SVO. Table 5 below presents the compound aggregate rate of growth (CARG) of debt and capital stocks[22]. The capital stock in the Eurozone grew at a compound annual growth rate of 1.9% between 2010 and 2018 (compared to a rate of 3.7% in the pre-crisis period of 2001 to 2008). Only Germany shows a higher (but still quite low) growth rate in the post-crisis period. Capital stock growth in Italy and Spain was zero or negative in the post-crisis period, another sign of the length of the recession in Southern European countries. The table also shows that debt grew beyond capital stock growth on an aggregate level and in all selected countries over

[22] Here, a similar approach to Mason (2015) is used. Mason found a decreasing correlation between new debt issuance and physical investment after 1980 for non-financial USA firms. Due to the lack of Compustat (Standard & Poor's, 2020) flow data for net change in debt (Equation 4), the growth rate is calculated based on debt stocks. To be consistent, changes in capital stocks are used here, instead of capital investment (flow data).

2000-2018. The divergence between debt and capital stock growth diminished in the post-crisis period.

Table 5: Compound annual rate of growth of debt and capital stocks, 2000-2018

	EZ	DEU	FRA	ITA	ESP
Capital stock					
Pre-crisis (2000-2008)	**3.7%**	1.0%	4.6%	5.6%	5.0%
Post-crisis (2010-2018)	**1.9%**	3.7%	2.4%	0.0%	-1.1%
2000-2018	**3.2%**	**2.7%**	**3.7%**	**3.4%**	**2.7%**
Debt stock					
Pre-crisis (2000-2008)	**6.1%**	6.5%	5.7%	5.7%	8.9%
Post-crisis (2010-2018)	**3.2%**	6.5%	2.8%	1.4%	-2.5%
2000-2018	**4.8%**	**6.4%**	**4.3%**	**4.9%**	**3.9%**

Notes: Eurozone aggregate (EZ), Germany (DEU), France (FRA), Italy (ITA) and Spain (ESP). Year 2009 is excluded from the sub-samples to isolate the immediate effect of the crisis.
Source: Standard & Poor's (2020) Compustat (own calculations)

Table 6 below shows that the growth rate of capital stock was higher for the 50% smallest corporations both pre- and post-crisis. Meanwhile, debt of the largest firms grew faster. The weaker link between debt and capital stock growth among larger corporations means larger firms borrowed increasingly for purposes other than investing (perhaps, for financial or intangible investment, or to distribute to shareholders). This, again, suggests a stronger presence of SVO among larger corporations.

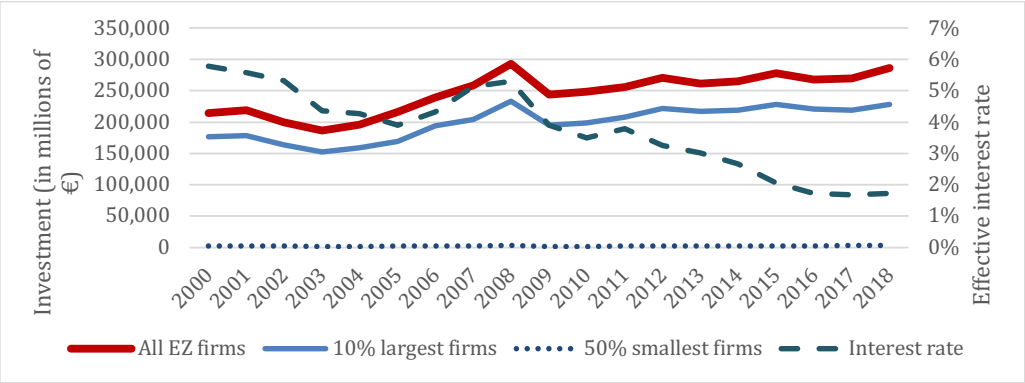
Table 6: Compound annual rate of growth of debt and capital stocks, largest 10% and smallest 50% firms, 2000-2018

	10% largest firms	50% smallest firms
Capital stock		
Pre-crisis (2000-2008)	3.3%	4.6%
Post-crisis (2010-2018)	1.9%	2.7%
2000-2018	**3.0%**	**3.2%**
Debt stock		
Pre-crisis (2000-2008)	5.9%	5.3%
Post-crisis (2010-2018)	3.3%	3.2%
2000-2018	**4.8%**	**3.4%**

Note: year 2009 is excluded from the sub-samples to isolate the immediate effect of the crisis.
Source: Standard & Poor's (2020) Compustat (own calculations)

Figure 18 below shows that aggregate capital investment was driven mainly by the top 10% of firms. The graph shows until 2008 a positive correlation between the interest rate and investment levels in the Eurozone (a sign that capital investment is not primarily determined by interest rates, as orthodox theory believes), and a weak negative correlation in the post-crisis period. This implies that monetary policy targeting lower rates was not particularly successful in spurring capital investment.

Figure 18: Capital investment and the interest rate, all EZ, largest 10% and bottom 50% firms, 2001-2018



Source: Standard & Poor's (2020) Compustat (own calculations), ECB (2020a)

4.5. Flows to the financial sector

This section analyses financial and intangible investment as well as payouts to shareholders, which many authors hold responsible for the decrease or stagnation of capital investment.[23]

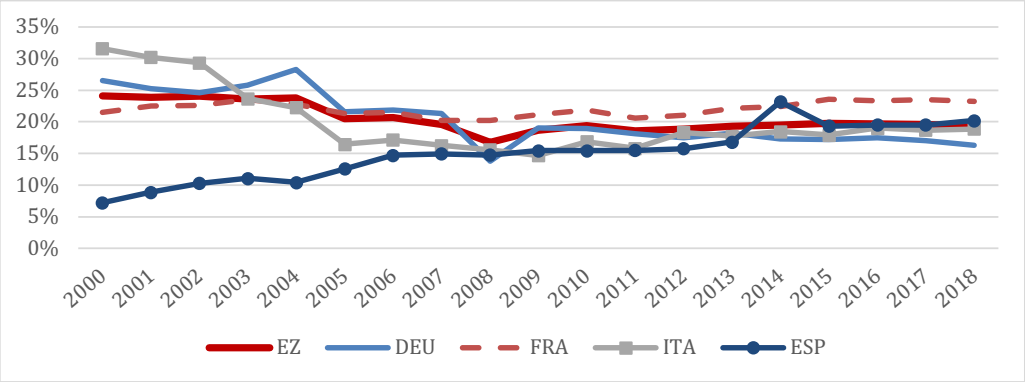
4.5.1. Investment in financial and intangible assets

Due to low data availability in Compustat for investment flows by type, investment preferences are assessed via an analysis of the evolution of the share of stocks in financial[24] and intangible assets on firms' balance sheets. Against the theoretical predictions and empirical evidence of most works on financialisation[25] in the USA, no

[23] See, for instance, the works of van Treeck (2008) and Davis (2018), on US non-financial firms; and Constantinos and Nellis (2016) on UK firms. Additionally, Davis (2017) provides a great review of empirical studies on investment under financialisation which also highlight this trend.
[24] The same variables than those analysed by Orhangazi (2018) in his review of non-financial Compustat US firms are taken. See data definition in Annex A.
[25] E.g. Davis (2018), Kliman and Williams (2014), or Orhangazi (2018).

increase in the share of financial assets can be observed on an aggregate level in the Eurozone. Financial assets represented a relatively high share of total assets (20-25%) in any given year. However, there is no evidence on aggregate levels of an *increasing* preference for financial investment during the period that could lead (given limited funds) to a reduction of capital investment. In other words, with the exception of Spain, there are no signs of an upward shift in the finance frontier caused by a stronger preference for financial investment.

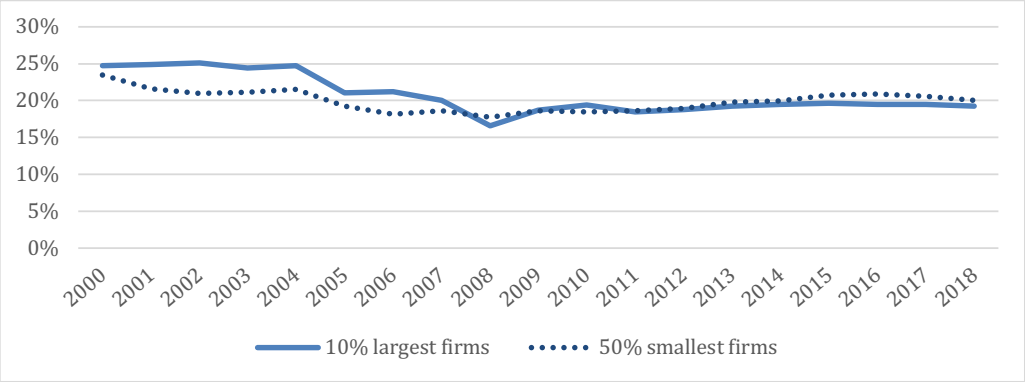
Figure 19: Financial assets/total assets ratio, 2000-2018



Note: Eurozone aggregate (EZ), Germany (DEU), France (FRA), Italy (ITA) and Spain (ESP)
Source: Standard & Poor's (2020) Compustat (own calculations)

The share of financial assets in total assets was extremely similar in both the largest 10% and the smallest 50% firms, suggesting that firm size plays no significant role in determining preferences for financial investment (Figure 20 below).

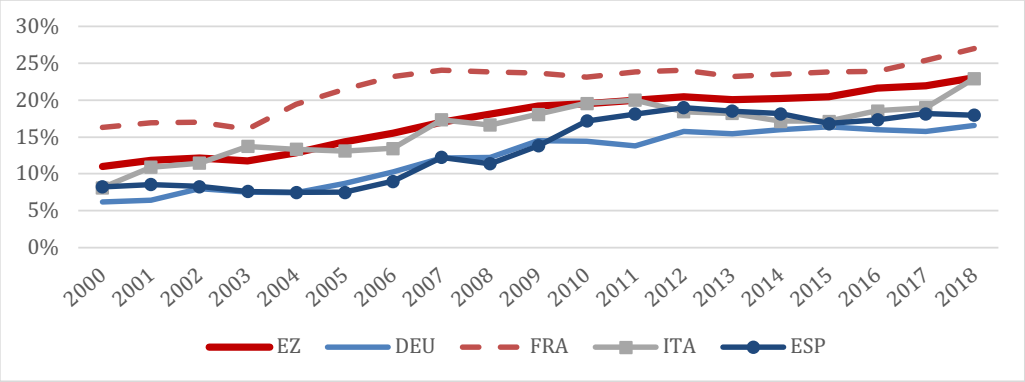
Figure 20: Financial assets/total assets ratio, largest 10% and bottom 50% firms, 2001-2018



Source: Standard & Poor's (2020) Compustat (own calculations)

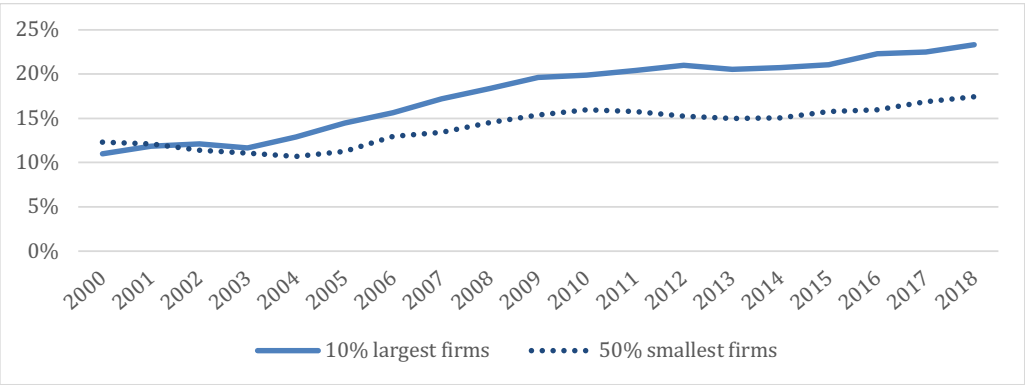
Nevertheless, the share of intangible assets in total assets increased more than 10 percentage points in the Eurozone (Figure 21 below). The largest 10% of corporations show a stronger increase (Figure 22). The increase in intangible investment is used by Orhangazi (2018) to explain the investment-profit puzzle. Despite acknowledging the links between intangible asset accumulation and financialisation, this paper concedes that (at least to some extent) the increase might also be a consequence of technological change.

Figure 21: Intangible assets/total assets ratio, 2000-2018



Note: Eurozone aggregate (EZ), Germany (DEU), France (FRA), Italy (ITA) and Spain (ESP)
Source: Standard & Poor's (2020) Compustat (own calculations)

Figure 22: Intangible assets/total assets ratio, largest 10% and bottom 50% firms, 2001-2018



Source: Standard & Poor's (2020) Compustat (own calculations)

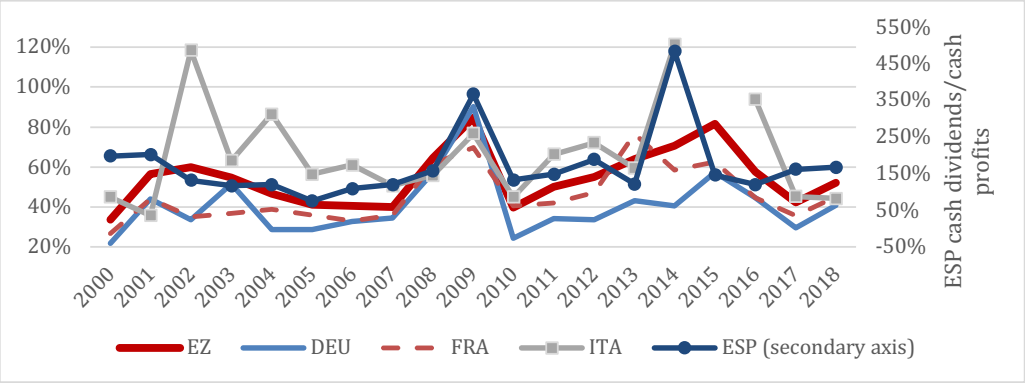
In conclusion, the high share of financial assets in total assets might have restricted capital investment during the last two decades, but there are no signs of an increased preference for financial investment jeopardising capital investment. There are, however, signs that

managers could be increasingly favouring investment in intangible assets over capital investment, particularly in the largest corporations. High financial and intangible investment are a means of maximising shareholder value via higher profitability, which in turn allows firms to maximise payouts and buybacks. The following section assesses indicators pointing at the ultimate motive of the financialised firm: shareholder value.

4.5.2. Payouts to shareholders and balance sheet structuration

Increasing dividend payout ratios in the context of financialisation have been widely recorded in the USA (e.g. Orhangazi, 2008; Onaran, Stockhammer and Grafl, 2011; Kliman and Williams, 2014), and in several European countries (e.g. Stockhammer, 2005-6; Cordonnier, 2006; van Treeck, 2008). Figure 23 below presents dividends paid out over after-tax profits.[26] Overall, the share of profits paid out as dividends increased from an average of 48.59% in 2000-2008 to an average of 56.97% in 2010-2018. The financial crisis temporarily slowed down payouts to shareholders in 2009-2010, but SVO, if measured as the dividend payout ratio, seems to have re-taken its path, with even higher payout ratios in the post-crisis period. The ratio is highest in Spain and, to a lesser extent, Italy, showing that dividends were paid out even in times of low or negative (Italy in 2015) aggregated profits. In these two countries, the dividend payout ratio surpassed 100% in several years, meaning that firms borrowed to pay dividends.

Figure 23: Dividend payouts/net profits ratio, 2000-2018

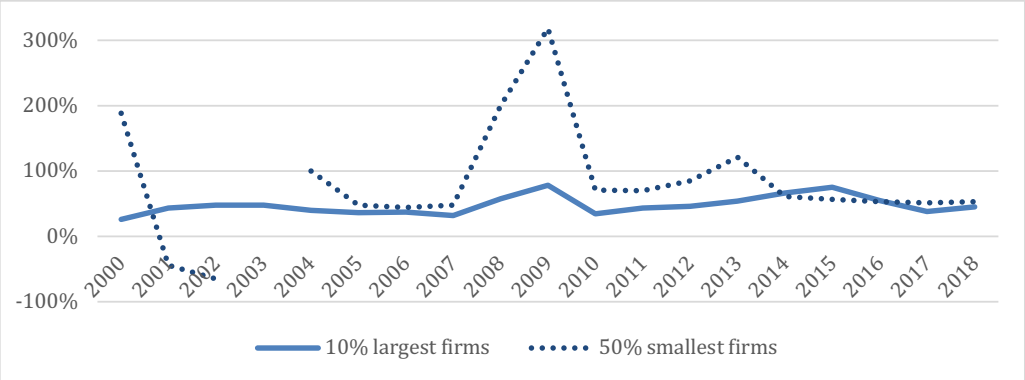


Note: Eurozone aggregate (EZ), Germany (DEU), France (FRA), Italy (ITA) and Spain (ESP). Spain's ratios are represented on a secondary axis to allow for a clear data representation. Data availability for dividends and profits is lower for Spanish firms compared to other countries (see Table A1 in Annex A), so Spain's results must be interpreted with caution.
Source: Standard & Poor's (2020) Compustat (own calculations)

[26] As reported in the cash flow statement.

The ratio of dividends over profits was similar in bigger and smaller corporations, except that the latter show a strong spike in 2008-2009 due to the previously mentioned shock to profits.[27]

Figure 24: Dividend payouts/net profits ratio, largest 10% and bottom 50% firms, 2001-2018



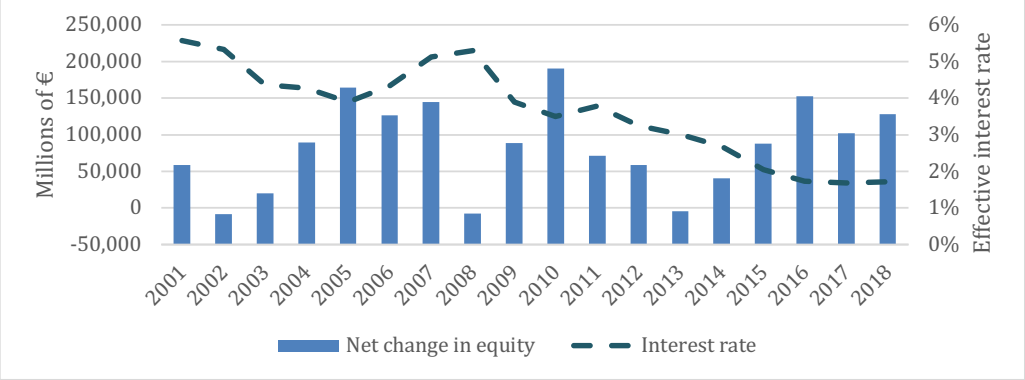
Source: Standard & Poor's (2020) Compustat (own calculations)

Mason (2015) highlights that total shareholder payouts need to incorporate stock repurchases. Unfortunately, Compustat has extremely low data availability for stock repurchases in this sample. To overcome this barrier, this work assesses net changes in equity (which, if negative, mean that buybacks surpassed new equity issued) and the evolution of equity's share in the balance sheet. A limitation of this proxy measure is that exceptional equity revaluations are included. Data on equity are not only useful to assess cash flows directed to shareholders, but also shed light on any possible balance sheet restructuring from equity to debt arising from SVO.

Figure 25 shows that net changes in equity at carrying value (i.e. book value) were very volatile, but never reached negative values on an aggregate level. This is not surprising, as new share issues most likely counteract buybacks on a macroeconomic level. Therefore, in aggregate terms there is no clear sign of falling interest rates fostering a reduction of equity via share buybacks, contrary to what SVO theory predicts (as explained in Section 3.2.).

[27] The extreme negative ratio for the smaller corporations in 2003, consequence of marked negative profits, was not depicted in Figure 24 to avoid distraction.

Figure 25: Net change in equity and the interest rate, 2001-2018

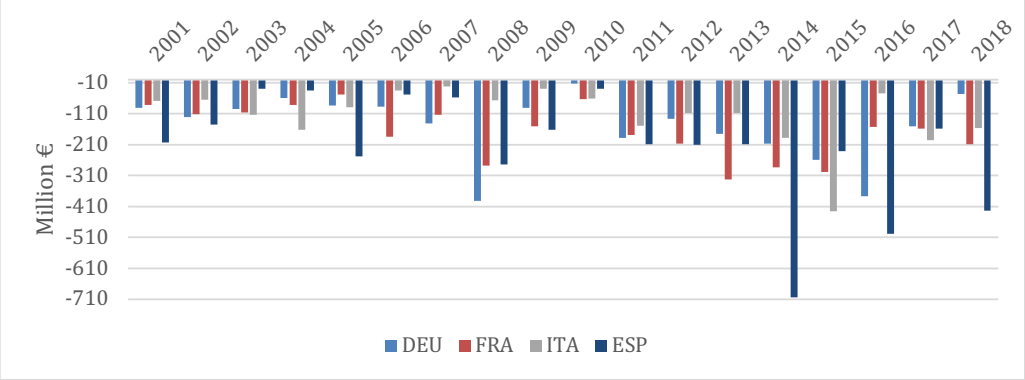


Source: Standard & Poor's (2020) Compustat (own calculations)

On a firm level, year-on-year equity changes were sometimes negative, which could mean buybacks surpassed new equity issued (assuming the changes were not entirely due to equity revaluations). Of 18,090 observations[28], 6,034 (one third) showed a negative net change in equity. The share of firms that had negative net equity changes over all firms in the sample was roughly constant (about 33%) in the pre- and post-crisis periods. The same ratios are observed in the subsamples of the top largest and smallest corporations. Hence, the "popularity" of buybacks did not increase over 2000-2018 and was similar among larger and smaller corporations (remember, Compustat firms are publicly listed, so even the "smaller" firms are very large corporations). Despite lacking evidence for a higher incidence of buybacks across a larger number of firms, Figure 26 below might suggest that *some* firms engaged more intensively in buybacks after 2011. This is suggested by a larger average size of negative net equity changes in the post-crisis period. The more intense usage of buybacks by some firms seems to be a characteristic of larger firms, since the average size of negative net equity changes was 20% lower for smaller corporations in 2010-2018 compared to 2000-2008.

[28] One "observation" refers to the observation of one firm in one year. There are 1,005 firms in the sample, observed during 19 years, so in total there are 19,095 observations. When calculating yearly changes in equity, no data can be calculated for the first year, so there are 18,090 observations.

Figure 26: Average size of negative net changes in equity, 2001-2018



Note: Germany (DEU), France (FRA), Italy (ITA) and Spain (ESP)
Source: Standard & Poor's (2020) Compustat (own calculations)

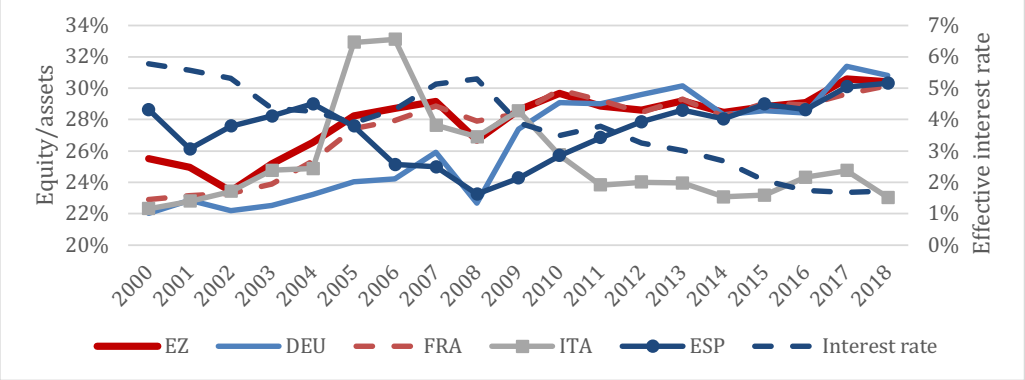
Given the limitations of working with changes in equity instead of data on buybacks, a few studies for the largest Eurozone countries may help to better understand the economic reality. In Germany, post-crisis share repurchases were far below pre-crisis levels (Immenkötter, 2018), showing greater prudency by firms. Mañueco and Pino (2018) state that in Spain, dividends are the main payout method, accounting for 96% of payouts in 2010-2018. In France, the picture looks different. Buybacks of the 40 largest listed companies grew fast pre-crisis, slowed down during the crisis, but since 2014 returned to pre-crisis levels (Quiry and Le Four, 2019). Overall, though, the Eurozone does not show signs of the debt-financed buyback frenzy characteristic of the USA in recent years (Mazzucato, 2018, Ch. 6). Manconi, Peyer and Vermaelen (2019) analysed buyback behaviour worldwide. They show that (at least in the period 1998-2010), buybacks were infrequent in the Eurozone (ibid., Table 2, p. 1925): in said period, buyback announcements in their selected Eurozone countries[29] encompassed on average 1.7% of total traded stock, as compared to 9.5% in the USA.

So far, this section analysed buybacks (and their proxy net equity changes) mainly under the perspective of directing cash flows to shareholders. Additionally, SVO provides an incentive to reduce equity via debt to boost financial indicators such as share value and ROE, as explained earlier. Contrary to what shareholder value theory in combination with low interest rates predicted, equity over assets for Eurozone firms increased from about 25% to 30% (Figure 27 below). It only decreased in Italy. The share of equity in the

[29] Austria, Belgium, Finland, France, Germany, Greece, Italy, Netherlands and Spain.

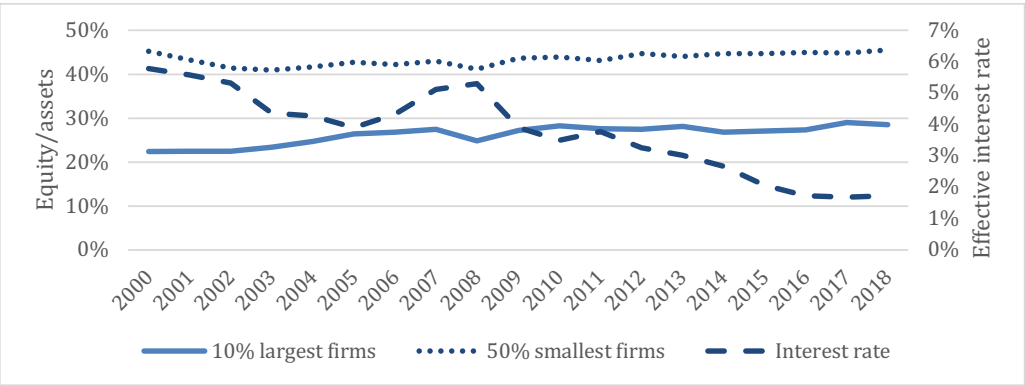
balance sheet of the 10% largest corporations was significantly lower than for the bottom 50% throughout the period, which could signify that SVO is more predominant in larger corporations.[30] Still, there are no signs of an increase in shareholder pressures to reduce equity during the period.

Figure 27: Equity/assets ratio and the interest rate, 2000-2018



Note: Eurozone aggregate (EZ), Germany (DEU), France (FRA), Italy (ITA) and Spain (ESP)
Source: Standard & Poor's (2020) Compustat (own calculations) and ECB (2020a)

Figure 28: Equity/assets ratio and the interest rate, largest 10% and smallest 50% firms, 2000-2018

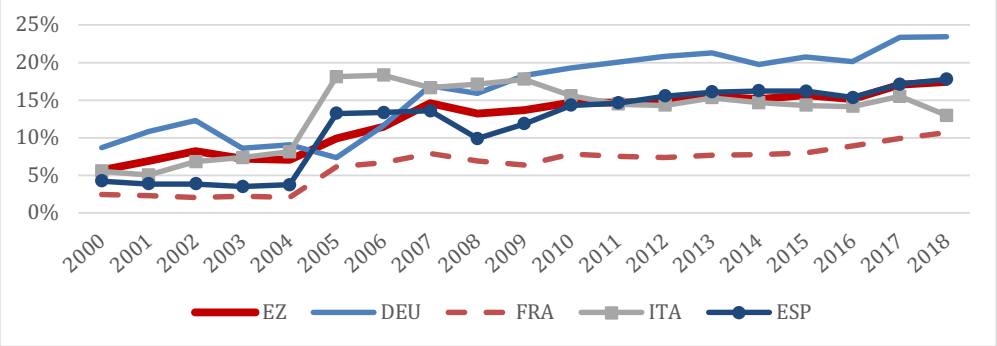


Source: Standard & Poor's (2020) Compustat (own calculations) and ECB (2020a)

So far, all elements in equation 4 have been analysed except for retained earnings. Figure 29 below shows that retained earnings increased their share in the balance sheet. The strongest increase in all countries happened during 2004-2007. The data do not suggest a tightening of the financial constraint over the period caused by SVO or the financial crisis.

[30] It might also reflect better borrowing conditions for the largest firms.

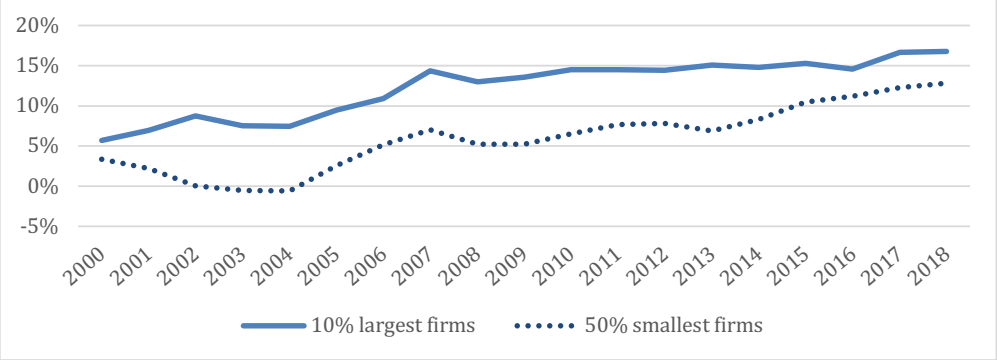
Figure 29: Retained earnings/assets ratio, 2000-2018



Note: Eurozone aggregate (EZ), Germany (DEU), France (FRA), Italy (ITA) and Spain (ESP)
Source: Standard & Poor's (2020) Compustat (own calculations)

The share of retained earnings increased in both the largest and the smallest corporations. The latter displayed very low (even negative[31]) ratios in the early 2000s. However, over the period there seems to be a relaxation of the finance constraint for both smaller and larger corporations.

Figure 30: Retained earnings/assets ratio, largest 10% and smallest 50% firms, 2000-2018



Source: Standard & Poor's (2020) Compustat (own calculations)

4.6 Assessment

Table 7 summarises the most important indicators of SVO typically found in the literature, and states whether their presence is observed in this work's sample(s).

[31] Negative retained earnings are also called "accumulated deficit". It is possible to have negative retained earnings in the balance sheet if the losses of one year are larger than the accumulated retained earnings of past years of activity and, if sporadic, are not necessarily a sign of bankruptcy.

Table 7: Summary of SVO indicators in sample of non-financial firms, 2000-2018

Indicator of SVO	EZ	Germany	France	Italy	Spain	10% largest	50% smallest
Sources of funds							
Higher interest payments (ratio to revenues)[32]	No*	No*	No*	No*	No*	No*	No*
Faster net profit growth than investment growth	Yes	Yes	Yes	No	Yes	Yes	Yes
Increase in debt/assets ratio[33]	Slightly	Yes	No	Slightly	No	Slightly	No
Faster debt growth than capital growth	Yes	Yes	Yes	Yes	Yes	Yes	Slightly
Decrease in equity/assets ratio	No**	No**	No**	Yes	No**	No**	No**
Uses of funds							
Lower investment growth	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Higher financial assets/assets ratio	No***	No***	No***	No***	Yes	No***	No***
Higher intangible assets/assets ratio	Yes	Yes	Yes	Yes	Yes	Yes, strongly	Yes
Higher dividends /profits ratio	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Higher buybacks (proxied by equity decreases)	Some firms**	Some firms**	Some firms**	Some firms**	Some firms**	Some firms**	No
Lower retained earnings/assets ratio	No	No	No	No	No	No	No

* Higher interest payments in levels, but the effective cost of debt (interest expense/debt stock) halved in the Eurozone during the period, mainly due to lower interest rates.

** On aggregate levels there are no negative net changes in equity. However, on a firm level, a few large firms might be repurchasing stock more intensively in 2011-2018, as suggested by the growing average size of net equity changes amongst firms that had negative net equity changes.

*** The share of financial assets of total assets is high (20-25%), but fell during 2000-2018.

[32] The level of interest payments are included in the section of sources of funds because in equation 4 profits (on the left hand side) are after interest payments. Thus, interest payments affect available funds.

[33] Debt is not used as a synonym of liabilities. See Annex A for more information.

Over 2000-2018, dividend payouts over profits increased. Capital investment in relation to profits decreased. The analysis of elements affecting lower capital investment suggest that these can be found in a shift in the firm's goals (Scenarios 2.A. and 2.B). There is no evidence of a tighter finance constraint on growth-maximising managers (Scenario 1) because, firstly, profits increased their share in sources of funds (as Table 3 showed earlier) and secondly, accumulated retained earnings increased their share in the balance sheet (as shown in Figures 29 and 30). Another indication against a tightening financial constraint is the fact that lower interest rates have not promoted investment (as indicated by Figure 18), which would have been the predicted result when integrating low interest rates into Scenario 1 (*ceteris paribus*[34]). These trends are visible in the Eurozone as a whole and in each selected country.

Debt grew faster than the capital stock (Tables 5 and 6), particularly for the largest 10% of corporations. Funds were used to pay higher dividends. Additionally, funds were increasingly directed to intangible investment, particularly by the largest 10% of corporations (Figure 22). Against what SVO in combination with low interest rates predicts, there was no shift from equity to debt (Figure 27), except in Italy. However, when looking on a firm level at only those firms with negative net changes in equity, average negative net changes are larger after 2010 (Figure 25), so possibly some firms recently used buybacks more intensively. The Eurozone shows more features of Scenario 2.A. (full shift in firm goals towards maximising free cash flows) than Scenario 2.B. (shift in firm goals towards maximising firm market value). The signs of financialisation are stronger for the largest firms, which present higher financial profitability than the smallest 50% corporations (despite similar economic profitability), higher indebtedness (and a faster growth in debt than investment), and growing negative net changes in equity in recent years. Because France is the nation with most of the largest 10% of firms (37 out of 101), this country presents more signs of a scenario of market value maximisation than the other selected countries, but otherwise the selected countries show similar trends.

Hence, there are some signs of financialisation in the Eurozone sample, but they are different to what most empirical studies have found in the USA (e.g., Davis, 2016; 2018):

[34] Of course, the shock of the Great Recession does not allow a "*ceteris paribus* comparison", but even in the more stable periods 2000-2007 or 2015-2018 the interest rate decreased without visibly affecting investment in the Eurozone.

shareholders demanded more payouts in the form of dividends, but there are no evident signs of firms using cheaper credit to boost market capitalisation or financial indicators. This might be because Eurozone firms are less dependent on financial markets (Grjebine, Szczerbowicz and Tripier, 2018). It might also be explained by the lower predominance of institutional investors and the higher concentration of control (Aglietta and Rebérioux, 2012). Given this institutional background, low interest rates do not seem to be fostering financial fragility[35]. Still, even if the risks of loose monetary policy have not materialised in the Eurozone, the doubts about its effectiveness persist because cheaper credit was ineffective in promoting investment. This finding challenges ECB policymakers' embrace of extremely loose monetary policy for such a prolonged period. The empirical findings indicate that in order to promote investment and aggregate demand monetary policy can only be a complement to, not a substitute for, fiscal policy and other regulation.

Some caveats must be made. This sample has the bias of including only firms that were publicly listed by 2000, meaning that younger firms, as well as those that exited the market before 2018 (which might have behaved differently) or those with no data for some years, are not represented. The most important limitation of this paper was low data availability on Compustat for this sample. On the one hand, some observations were missing. This forced a sample size reduction from 4180 to 1005 firms. On the other hand, low data availability for specific flow variables prevented their usage, forcing the use of less suitable proxies such as changes in stocks (which incorporate revaluations). Additionally, Spain had lower data availability for the variables of profits, capital investment, and dividends, so Spain's results must be interpreted carefully. Still, this work attempts to find work-arounds with the best available proxies, and aspires to be judged based on its robustness both in the theoretical contribution as well as in the methods applied to the empirical analysis. Further research could repeat the analysis disaggregating the data by industry, or perform regression analyses on capital investment and shareholder payouts using the interest rate as a regressor.

[35] Or at least, they only had a partial effect that was counteracted by other factors.

5. Conclusion

This paper aimed to explore the following research questions: *i) What is the effect of loose monetary policy on investment in different scenarios of SVO?, and ii) Do the recent investment behaviour and balance sheet structuration of non-financial corporations in the Eurozone reflect any risks arising from low interest rates?*

To answer these questions, this work first reviewed relevant literature about the risks and benefits of loose monetary policy, as well as the relationship between the interest rate and investment and Post-Keynesian theory of the firm under financialisation. It then expanded Post-Keynesian microeconomic theory by incorporating low interest rates into different scenarios of SVO (as presented by Dallery, 2009). It deduced that loose monetary policy targeting low interest rates will only be effective in promoting investment in a scenario where SVO tightens the finance constraint on growth-maximising managers (for instance, by requiring higher dividend payouts). In contrast, in cases where the firm is run mainly to maximise shareholder value, low interest rates will not promote investment. Instead, cheap credit will promote balance sheet restructuring from equity to debt, in order to increase share value and financial indicators such as the ROE, as well as to finance payouts to shareholders. This case highlights that loose monetary policy may not only be ineffective in promoting growth, but might be dangerous in some scenarios because it fosters financial fragility and promotes SVO. Notice that this argument is not a critique of low interest rates per se. Instead, their adequacy as a policy tool for promoting investment in a context of financialisation is questioned.

The contribution of this work to the literature is not only to incorporate low interest rates into a framework of Post-Keynesian theory of the firm under financialisation, but also to provide an empirical analysis of firm behaviour in the Eurozone for the period 2000-2018. It finds several indicators of financialisation, particularly, an increase in the share of dividend payouts over profits. However, there is insufficient evidence that loose monetary policy may have fostered leverage and a reduction of own capital in the Eurozone, against what theory predicted, which might be a consequence of the institutional context (bank-based economy) and the ownership structures (concentration of corporate ownership) of the Eurozone. Still, low interest rates seem largely ineffective in fostering investment in

the decade 2008-2018. Data suggest that in the Eurozone financialisation represents a shift in the objectives of the firm towards maximising free cash flows.

This work presents arguments that, when shareholder value maximisation becomes the leitmotiv of the firm, loose monetary policy is ineffective in fostering capital investment. At any rate, to promote investment and aggregate demand, both expansionary fiscal policy and legal reforms that control shareholder power are needed.

References

Aglietta, M. and Rebérioux, A. (2012). Financialization and the firm. In: Dietrich, M. and Krafft, J. (eds.) *Handbook on the Economics and Theory of the Firm*. Cheltenham, UK: Edward Elgar Publishing, pp. 308-323.

Boyer, R. (2000). Is a finance-led growth regime a viable alternative to Fordism? A preliminary analysis. *Economy and Society*, Vol. 29 (1), pp. 111-145.

Constantinos, A. and Nellis, J. (2016). Investment Decisions within the Context of Financialization: Cointegration Evidence from the UK Economy. *Panoeconomicus*, Vol. 63 (1), pp. 113-133.

Cordonnier, L. (2006). Le profit sans l'accumulation: La recette du capitalisme gouverné par la finance (profits without accumulation: the recipe of finance-dominated capitalism). *Innovations, Cahiers d'Économie de l'Innovation* Vol. 23 (1), pp. 79-108.

Crotty, J. (1990). Owner-manager conflict and financial theories of investment instability: A critical assessment of Keynes, Tobin, and Minsky. *Journal of Post Keynesian Economics*, Vol. 12 (4), pp. 519-542.

Dallery, T. (2009). Post-Keynesian theories of the firm under financialization. *Review of Radical Political Economics*, Vol. 41 (4), pp. 492-515.

Davis, A. and Walsh, C. (2017). Distinguishing Financialization from Neoliberalism. *Theory, Culture & Society*, Vol. 34 (5-6), pp. 27-51.

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*, Vol. 39 (1), pp. 115-141.

Davis, L. (2017). Financialization and investment: a survey of the empirical literature. *Journal of economic surveys*, Vol. 31 (5), pp. 1332-1358.

Davis, L. (2018). Financialization and the nonfinancial corporation: an investigation of firm level investment behavior in the United States. *Metroeconomica*, Vol. 69 (1), pp. 270-301.

Deutsche Telekom (2003). *Geschäftsbericht 2002* (Annual report 2002) [online]. Available at: https://www.telekom.com/de/investor-relations/finanzpublikationen/finanzergebnisse/finanzergebnisse-2002 [Accessed 26. March 2021]

Detzer, D. and Hein, E. (2014) Finance-dominated capitalism in Germany - deep recession and quick recovery. Working Paper, No. 39/2014, Institute for International Political Economy (IPE), Berlin School of Economics and Law, and FESSUD Working Paper, No. 54, University of Leeds.

Duménil, G. and Levy, D. (2005). Costs and Benefits of Neoliberalism. In: Epstein, G. (ed.), *Financialization and the World Economy*. Cheltenham and Northampton: Edward Elgar, pp. 17-45.

Durand, C. and Gueder, M. (2018). The Profit–Investment Nexus in an Era of Financialisation, Globalisation and Monopolisation: A Profit-Centred Perspective. *Review of Political Economy*, Vol. 30 (2), pp. 126-153.

European Systemic Risk Board (2016). Macroprudential policy issues arising from low interest rates and structural changes in the EU financial system [online]. Available at: https://www.esrb.europa.eu/pub/pdf/reports/161128_low_interest_rate_report.en.pdf [Accessed 26. March 2021]

Farmer, R. (2009). A new monetary policy for the 21st century. *Financial Times* [online], 12 January 2009. Available at: http://blogs.ft.com/economistsforum/2009/01/a-new-monetary-policy-for-the-21st-century/ [Accessed 26. March 2021]

Galbraith, J.K. (1975). *Economics and the Public Purpose.* Harmondsworth: Penguin Random House.

Grjebine, T., Szczerbowicz, U. and Tripier, F. (2018). Corporate debt structure and economic recoveries. *European Economic Review*, Vol. 101, pp. 77-100.

Hein, E. and van Treeck, T. (2010). Financialisation and rising shareholder power in Kaleckian/Post-Kaleckian models of distribution and growth. *Review of Political Economy,* Vol. 22 (2), pp. 205-233.

Hein, E. (2012). *The Macroeconomics of Finance-dominated Capitalism and its Crisis*. Cheltenham, UK and Northampton, MA, USA: Edward Elgar.

Hein, E. (2014). *Distribution and Growth after Keynes: A Post-Keynesian Guide*, Cheltenham: Edward Elgar

Hein, E. (2015). Finance-dominated capitalism and re-distribution of income: a Kaleckian perspective. *Cambridge Journal of Economics*, Vol. 39, pp. 907–934.

Immenkötter (2018). Aktienrückkäufe im Trend (The trend of stock buybacks) [Online]. *Flossbach von Storch Research Institute,* 2 August 2018. Available at: https://www.flossbachvonstorchresearchinstitute.com/fileadmin/user_upload/RI/Studien/files/studie-180802-aktienrueckkaeufe-im-trend.pdf [Accessed 26. March 2021]

Jensen, M.C., Meckling, W.H. (1976). Theory of the firm: managerial behavior, agency costs and ownership structure. *Journal of Financial Economics* Vol. 3 (4), pp. 305-360.

Kalecki, M. (1937). The Principle of Increasing Risk. *Economica*, Vol. 4 (16), pp. 440-447.

Keynes, J.M. (1936). The general theory of employment, interest, and money. London: Macmillan.

Kliman, A. and Williams, S. (2014). Why 'financialisation' hasn't depressed US productive investment. *Cambridge Journal of Economics*, Vol. 39 (1), pp. 67-92.

Krippner, G. (2011). *Capitalizing on Crisis: The Political Origins of the Rise of Finance.* Cambridge, MA, Harvard University Press.

Krugman, P. (2010). Bernanke and the Shibboleths. *The New York Times* [online], 6 November 2010. Available at: http://krugman.blogs.nytimes.com/2010/11/06/bernanke-and-the-shibboleths/ [Accessed 26. March 2021]

Lavoie, M. (2014). *Post-Keynesian Economics: New Foundations*. Northampton, MA: Edward Elgar.

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

Lazonick, W., Sakinç, M.E. and Hopkins, M. (2020). Why Stock Buybacks Are Dangerous for the Economy. *Harvard Business Review* [online], 7 January 2020. Available at: https://hbr.org/2020/01/why-stock-buybacks-are-dangerous-for-the-economy [Accessed 26. March 2021]

Maki, D. and Palumbo, M. (2001). Disentangling the wealth effect: A cohort analysis of household saving in the 1990s. Federal Reserve System, Finance and Economics Discussion Series n° 2001-21.

Manconi, A., Peyer, U. and Vermaelen, T. (2019). Are Buybacks Good for Long-term Shareholder Value? Evidence from Buybacks around the World. *Journal of Financial & Quantitative Analysis*, Vol. 54 (5), pp. 1899-1935.

Mañueco, P. and Pino, J. (2018). Recompras de acciones: las empresas están dando prioridad al beneficio del accionista y descuidando la inversión a largo plazo (Stock repurchases: firms are prioritising shareholder value and neglecting long term investment). *El País* [online], 15 April 2018. Available at: https://elpais.com/economia/2018/04/12/actualidad/1523532614_764194.html [Accessed 26. March 2021]

Mason, J.W. (2015). Disgorge the cash: the disconnect between corporate borrowing and investment. Roosevelt Institute [online], 25 February 2015. Available at http://rooseveltinstitute.org/disgorge-cash-disconnect-between-corporate-borrowing-and-investment-1/ [Accessed 26. March 2021]

Mazzucato, M. (2018). *The Value of Everything*. United Kingdom, Penguin Random House.

Meltzer, A.H. (2011). Ben Bernanke's '70s show. *Wall Street Journal* [online], 5 February 2011. Available at: https://www.wsj.com/articles/SB10001424052748704709304576124033729197172 [Accessed 26. March 2021]

Nassr, I.K., Wehinger, G. and Yokoi-Arai, M. (2016). Financial risks in the low-growth, low-interest rate environment. *OECD Journal: Financial Market Trends*, Vol. 2015 (2), pp. 63-87.

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

Orhangazi, Ö. (2008). Financialisation and capital accumulation in the non-financial corporate sector: a theoretical and empirical investigation on the US economy: 1973 -2003. *Cambridge Journal of Economics*, Vol. 32, pp. 863-886

Orhangazi, Ö. (2018). The role of intangible assets in explaining the investment–profit puzzle. *Cambridge Journal of Economics*, Vol. 43 (5), pp. 1251-1286.

Palley, T. (2007). Financialization: What It Is and Why It Matters. Political Economy Research Institute Working Paper Nr. 153, 2007.

Palley, T. (2011). Quantitative Easing: A Keynesian Critique. *Investigacion Económica*, Vol. 70 (277), pp. 69-86.

Palley, T. (2018). The natural interest rate fallacy: why negative interest rate policy may worsen keynesian unemployment. *Investigación Económica*, Vol. 77 (304), pp. 7-39.

Quiry, P. and Le Four, Y. (2019). Dividendes et rachats d'actions en 2018 au sein du CAC 40 (Dividends and buybacks in 2018 among CAC 40 firms) [online]. Association Nationale des Directeurs Financiers et de Contrôle de Gestion. Available at: https://www.finance-gestion.com/vox-fi/dividendes-et-rachats-dactions-en-2018-au-sein-du-cac-40/ [Accessed 26. March 2021]

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

Stockhammer, E. (2005-6). SVO and the investment–profit puzzle. *Journal of Post Keynesian Economics*, Vol. 28 (2), pp. 193-215.

Targetti, F. and Kinda-Hass, B. (1982). Kalecki's review of Keynes' general theory. *Australian Economic papers*, Vol. 21 (39), pp. 244-260.

Taylor, J.B. (2011). A two-track plan to restore growth. Wall Street Journal [online], 28 January 2011. Available at: https://www.wsj.com/articles/SB10001424052748704268104576107951413818460 [Accessed 26. March 2021]

van Treeck T. (2008). Reconsidering the investment-profit nexus in finance-led economies: an ARDL-based approach. *Metroeconomica* Vol. 59 (3), pp. 371-404.

Wood, A. (1975). *A theory of profits*. Cambridge: Cambridge University Press.

Data sources

ECB (2020a). Bank interest rates - loans to corporations of over EUR 1M with an IRF period of over five years (new business) - euro area. Available at: https://sdw.ecb.europa.eu/quickview.do;jsessionid=14AA08467CD0BC00985ABD0E8444EAA6?SERIES_KEY=124.MIR.M.U2.B.A2A.J.R.1.2240.EUR.N

ECB (2020b). Key ECB interest rates. Available at: https://www.ecb.europa.eu/stats/policy_and_exchange_rates/key_ecb_interest_rates/html/index.en.html

Eurostat (2020a). Former euro area national currencies vs. euro/ECU - monthly data (Eurozone countries). Available at: https://ec.europa.eu/eurostat/web/exchange-and-interest-rates/data/database

Eurostat (2020b). Euro/ECU exchange rates - monthly data (Non-Eurozone countries). Available at: https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=ert_bil_eur_m&lang=en

Standard & Poor's Global (2020). Compustat Global. Available at: https://www.spglobal.com/marketintelligence/en/solutions/fundamental-data

Annex A: Data description

1. **Effective interest rate:**

As explained in Section 2, the bank interest rate can be a good indicator for the evolution of the borrowing cost because the Eurozone is bank-based and because the evolution of loan and bond rates is similar.

Source: ECB (2020a), series key: MIR.M.U2.B.A2A.J.R.1.2240.EUR.N

Annualised effective interest rate on loans other than revolving loans and overdrafts, convenience and extended credit card debt, denominated in euros, to non-financial corporations in the Euro area (changing composition), with a maturity of more than 5 years (because this paper is interested in investment, which is typically financed with long term debt, and because throughout the period the majority -about 70%- of debt in the sample is long term debt), over EUR 1 million (because this paper is looking at large corporations). Data reported by financial institutions to ECB.

2. **Policy interest rate:**

ECB (2020b) main refinancing operations rate (equivalent to the federal funds rate in the USA). From June 8th 2000 to October 8th 2008, the ECB conducted main refinancing operations with a variable rate. Before and after that time frame, fixed tender-rates were used. ECB series keys: FM.B.U2.EUR.4F.KR.MRR_FR.LEV and FM.B.U2.EUR.4F.KR.MRR_MBR.LEV

3. **Compustat (Standard & Poor, 2020) data cleaning and filtering**

Firms with negative or zero assets (at) and capital stock (ppent) were removed. Only firms where the country of incorporation (fic) was a Eurozone member were selected. Firms for which there was not an observation for every year between 2000 and 2018 were excluded in order to have a complete sample. Data had to be converted to Euros in cases where it used a different currency. The exchange rate was taken from Eurostat (2020a, 2020b). Financial corporations were filtered out by selecting only industry format (indfmt) and eliminating those firms with standard industry codes (sic) between 6000 and 6999 (codes for Finance, Insurance, and Real Estate)[36]. The communications branch (SIC 4800-4899) was also excluded to avoid distractions by strong outliers in income in 2002 due to

[36] The standard industry classification (SIC) can be seen in the United States department of labour website: https://www.osha.gov/pls/imis/sic_manual.html.

extraordinary depreciations as a consequence of the "Telecoms crash"[37]. These are 36 firms with assets worth 548.722 Million Euro in 2018 (or 6.85% of the entire sample that year). Their removal does not noticeably affect trends in variables other than profits.

4. Disaggregating by size

To disaggate by firm size, the average size of assets for each firm in the period 2000-2018 was calculated. The 10% largest firms is a fixed sample of those firms which had the highest average asset size for the period 2000-2018. The smallest 50% of firms is also a fixed sample of those firms whose average asset size was less than the mean of the entire sample.

5. Compustat (Standard & Poor, 2020) variables and data availability:

Table A1 shows the different variables that were assessed. Variables highlighted in red colour were not used due to low data availability. Availability of data was uniform across the selected countries, with the exception of Spain for *ibc*, *capx* and *dv*.

Table A1: Compustat variables and data availability for the period 2000-2018

Compustat mnemonic	Description	Available data	Available data in %
Number of observations (1005 firms * 19 years):		**19095**	**--**
Balance sheet data			
at	Assets	19095	100%
ppent	Property, plant and equipment	19095	100%
intan	Unamortized value of intangibles. Includes *i.a.* goodwill (the excess of cost over equity of an acquired company).	19033	100%
che	Cash and cash equivalents	19095	100%
recco	Claims against others collectible in cash and usually due within one year of the Balance Sheet date.	19091	100%

[37] The revaluation of assets of Deutsche Telekom alone caused a loss of 24.6 Billion Euro (Deutsche Telekom AG, 2003).

ivaeq	Investments and Advances – Equity Method. Long-term investments in and advances to consolidated/associated subsidiaries and related companies in which the parent company has significant control.	17644	92%
ivao	Investments and Advances – Other. Long-term receivables and other investments and advances including investments in unconsolidated companies with no control.	19091	100%
ivst	Short term investments	18819	99%
dlc	Current debt	19092	100%
dltt	Long term debt. Includes *inter alia* loans, notes and bonds.	19092	100%
lt	Liabilities (includes accounts payable to suppliers, accrued expenses, etc.)	19095	100%
seq	Shareholders' equity: common and preferred stock (carrying value)	19086	100%
re	Retained earnings	19095	100%
Income statement data			
revt	Revenues	19095	100%
xint	Interest expense	18664	98%
ib	Profits after taxes	19095	100%
dvt	Dividends	8760	46%
Cash flow statement data			
ibc	Income Before Extraordinary Items (after interest and taxes)	18016	94% (86% for Spain)
capx	Capital investment net of current year's sales, retirements, and/or disposals	18209	95% (87% for Spain)
dv	Cash dividends paid	13961	73% (64% for Spain)
prstkc	Purchase of common and preferred stock (buybacks)	4500	24%

6. **Data calculation:**

Profitability[38]: ib / ppent at start of the year (as done by Orhangazi, 2018)

ROE: ib / seq

Capital investment over profits: capx / ibc

Debt stock: dlc + dltt.

In order to isolate borrowing behaviour, this measure is different to liabilities (which are debt plus accounts payable, deferred expenses, etc.). Items included here are the equivalent of loans, notes and corporate bonds.

Indebtedness ratio: (dlc + dltt) / at

Financial assets (stock): che + recco + ivaeq + ivao + ivst

Financial assets share in portfolio: (che + recco + ivaeq + ivao + ivst) / at

Intangible assets share in portfolio: intan / at

Dividend payout ratio: dv / ibc

Equity to assets ratio (percentage of a company's assets owned by investors): seq / at

[38] Generally any data on profits used in the empirical part refers to cash profits (ibc), which are the ones used in the equation of sources and uses of funds. However, profitability is more aptly calculated using income statement data for profits (ib).

Annex B: Sample characteristics by industry

Compustat data is classified following the Standard Industry Classification. Table B1 gives an overview of the distribution of firms in the sample by division.

Table B1: Firms by industry in the sample used

Division	Standard industry codes (sic)	Number of firms	% in sample	Mean asset size (in million €)
Agriculture, Forestry, fishing and mining	0001-1499	24	2%	3,191
Construction	1500-1799	42	4%	6,389
Manufacturing	2000-3999	521	52%	5,247
Transportation, electric, gas and sanitary services (excl. communication)	4000-4799 and 4900-4999	91	9%	19,654
Wholesale and retail trade	5000-5999	85	8%	4,081
Services	7000-8999	231	23%	924
Public administration and other*	9100-9999	11	1%	30,874
Total		**1005**	**100%**	

* Includes E.ON and Siemens

Source: Standard & Poor's (2020) Compustat (own calculations)

Imprint

Editors:
Sigrid Betzelt, Eckhard Hein (lead editor), Martina Metzger, Martina Sproll, Christina Teipen, Markus Wissen, Jennifer Pédussel Wu, Reingard Zimmer

ISSN 1869-6406

Printed by
HWR Berlin

Berlin April 2021