Do Dividends Harm Investment? Aspects of Financialisation in the EU[1]

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Abstract. This paper investigates the impact of non-financial firms' dividend policy on their investment activity in the EU. It focuses on three factors, namely on the conflict of interest between managers and shareholders, on whether dividend payments occur before or after investment decisions are made and on how firms finance their expenditure. It then applies a dynamic panel approach in order to examine the impact of investment determinants on the accumulation rate, accounting also for the heterogeneity between Member States. Results suggest that dividends have a significant negative impact on investment activity. In the light of this finding, the advancement of the capital markets union, pushed through by the European Commission might bear unexpected consequences for investment. Policies that boost effective demand are more appropriate in promoting investment growth.

Key words: Dividends, Private Investment, Shareholder Value Orientation, Financialisation, EU

JEL classification: E22, E44, G35

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1. Introduction

During the past decades, corporate governance in the EU has shifted to a paradigm that favours shareholder value. At least since the introduction of the euro currency, EU corporate regulation and company law has been consistently promoting an adjustment of corporate governance to the demands of shareholders in particular, and capital markets in general (Horn, 2011). Firms are expected to implement generous dividend policies that meet the preference of shareholders for higher returns to their equity holdings. However, higher dividend payments are not free of any trade-offs as they might have an adverse impact on firms' investments.

The relation between dividend payments and investment activity has been a controversial issue, dating several decades back. The debate revolves around the presence, or not, of conflict between the interests of managers and those of the shareholders. As noted by Crotty (1990), both actors are in a relationship that is neither completely independent nor perfectly coordinated. Shareholders are mainly interested in higher returns to their equity holdings, which depend on dividend receipts and the revaluation of the price of firm equities that they hold in their portfolios. Managers are typically dedicated to the growth of the firm, which comes to fruition through higher investment activity, among other factors.

There are two main contested views. According to the first one, higher dividend payments increase the returns to the shareholders, driving up the demand for the firms' equities. As a consequence, firms gain greater access to capital markets and thus, they can easily raise funds (e.g. by issuing equities or corporate bonds), in order to finance their investments. Therefore, the interests of both managers and shareholders are met. According to the second view, higher dividend payments reduce the liquidity of firms as the funds paid to the shareholders could, instead, have been used to finance investment. Thereby, firms would either have to increase their exposure to debt to finance their investments or reduce their investment activity. In this case, the interests of

shareholders prevail over the interests of managers, a condition that in the relevant literature is known as shareholder value orientation and which explains the slowdown of investment activity since the 1980s (Stockhammer, 2004).[1]

Whether dividend payments have a positive or negative impact on investments of the non-financial corporations (NFCs) depends on the economic and institutional context in which firms operate. For instance, in a capital market-based economy, whereby firms are heavily influenced by the performance of their equities in the stock market, dividend payments are expected to have a positive impact on investment. On the contrary, if firms' investment activity is closely tied to traditional bank lending, then dividend payments might result in stagnant growth, lack of productivity-enhancing investments, and induced debt (Duménil and Lévy, 2004).

The impact of dividend payments on investments is of great importance for another reason. In the discussion upon the growth prospects of the EU, the Draghi report emphasizes the need to advance the capital markets union as a mean to boost productive investment (Draghi, 2024). However, such a union also implies that participants in the capital markets would greatly benefit from higher financial profits. In the presence of shareholder value orientation, the pressure imposed by the shareholders to the NFCs for higher dividend payments would likely accelerate. Thereby, the overall outcome of the capital markets union on productive investment is ambiguous.

The purpose of this paper is to assess empirically whether the dividend payments of the NFCs in the EU have a substantial, positive or negative, impact on their investment activity. In doing so, it employs NFCs' profits and dividend payments as determinants of NFC's investment activity. In line with similar research (Barradas, 2017; Orhangazi, 2008; Tori and Onaran, 2020), additional variables such as corporate debt, NFC's equity value and the interest rate are also included as variables that might exhibit an influence on firms' investment activity. Contributing to the relevant literature the present paper treats

carefully differences in dividend policies between Member States and, also, across time. Specifically, the Global Financial Crisis might have brought about changes in terms of firms' investment activity and dividend policies. Additionally, corporate governance might present great similarities across the Member States, but it is also variegated, due to differences in the size of the corporate sector, along with economic and social norms (Brown et al., 2017). For these reasons, additional variables that capture this variegation and evolution across time are also employed.

The paper is structured as follows. Section 2 provides an overview of the debate on the impact of dividends on investment. In principle, the debate revolves around three issues. Section 3 addresses the crucial question of whether NFCs finance their expenditure, including wages, investments and dividend payments, through own funds, bank lending or equity issuance. It also examines how investment and dividend payments evolved across time and attempts to detect differences, if any, between Member States. The penultimate section assesses empirically the main question at hand that is if dividend payments have a positive or negative impact on investment. The last section concludes.

2. The Impact of Dividend Payments on Investment

The impact of a firm's dividend policy on investment depends, in principle, on three factors. Firstly, shareholders are interested in gaining profits in the short-term, while managers have a longer-term perspective. The short-term preferences of shareholders are due to the uncertainty and risk surrounding the fruition of investments (Baud and Durand, 2012). In this respect, they seek to make expeditious profits rather than wait for the culmination of larger firm profits in the longer-term. On the contrary, managers aim to a higher market share and robust sales growth, that come about only after induced investment (Crotty, 2003).

The paradigm shift of corporate governance to a shareholder value oriented environment, mentioned earlier in the text, brought about a significant change to the above. The difference between the short-termism of shareholders and the long-termism of managers became less pronounced. Shareholders decide on the bonus payments of managers, based on the dividend payments as a share of firm profits (Orhangazi 2008). Therefore, managers have a strong incentive to promote "downsize and distribute" policies at the expense of self-financed investments (Lazonick and O'Sullivan, 2000). Nonetheless, this does not necessarily imply a negative impact on investments, without considering the rest two factors.

Secondly, of great relevance is the sequence in firm's decision making on how much to invest and how many profits to distribute to the shareholders. If a firm first decides how much to invest and then distribute profits as dividends, then its investment activity is, in principle, unaffected by the interests of shareholders and vice versa. Lintner (1956) has been of the first to notice that dividends as a share of profits in the US have been uncorrelated to firms' investment activity. In a similar vein, Jensen (1986) developed the so called free cash flow theory, according to which NFCs firstly decide how much to invest, using a share of their profits to finance investment. What remains of the profits is then distributed to the shareholders. According to this view, the decision on how much profit to distribute to the shareholders depends on the level of remaining own funds (e.g. the liquidity of the firm) and less to the level of profits. Firms distribute dividends according to their liquidity.

Nevertheless, Barclay et al. (1995) find that the causality runs in the opposite direction. Dividend payments reduce firms' liquidity. Firms first decide how much to distribute and then how much to invest. In turn, the own funds available to finance investment have been reduced, due to dividend payments. As noted early by Higgins (1972), the growth of firm's sales is ensued by more generous dividend policies, which push the firm to other sources of financing investment, such as bank loans. Two remarks are in place. The discussion

regarding the sequence of decisions between investment and dividend payments refers strictly to one period. It does not exclude the conflict concerning the use of the remaining own funds of firms. For instance, remaining funds could have been used to finance investment in the next period, instead of being distributed to the shareholders in the present. Furthermore, the question of whether to first distribute dividends and then invest or the opposite, bears significant implications for how investments are financed, which leads us to the third factor.

Thirdly and more importantly, the source of financing investment is of great importance. Firms can either use own funds, borrow from banks, or issue equities, or other financial assets, thus raising funds in the capital market. The proposal of advancing the capital markets union aims precisely at facilitating the financing of investment through the stock market. This is done so by increasing the supply of available funds in the capital market. However, what is missing from the discussion on the capital markets union is the demand aspect. Are NFCs in the EU willing to borrow directly from the stock market in order to finance investment? Dividends hold a prominent role in this.

Dividend payments might have a negative impact on investments, if the NFCs rely heavily on internal financing. However, if they rely on external financing things are more nuanced. As already noted above, dividend payments determine the return to the shareholders' equity holdings. Higher dividend payments boost the demand for the equity of the firm, thus the market value of the firm is higher. If the NFCs borrow directly from the banking sector, they can use their own equities as collateral in order to gain greater access to credit. However, this is conditional to the current level of the firm's debt and the interest rate. Higher debt structures or interest rates imply that the firm would be less inclined to borrow further or credit constraints might be binding. If the NFCs raise funds in the capital market in order to finance investments, then higher dividend payments would greatly benefit firms in their investment activity.

Two, largely influential, papers have focused on the external financing conditions of the firms, in which dividend payments do not act as a barrier to investment. The Miller-Modigliani theorem, published in 1961, suggests that the differences between borrowing from the banking sector and the capital market are negligible. Regardless of whether a firm finances its investment through bank lending or equity issuance, its market value depends on its earning capacity and risk (Miller, 1988). In this framework, dividend payments are detached from investment activity. Firms can easily gain access to funds so as to invest. Tobin and Brainard (1976), focus on the value of the firm in the capital market (e.g. the nominal value of its equities) and the replacement cost of the existing physical capital stock. If the market value is higher than the value of the capital stock (e.g. Tobin's Q is higher than unity), then firms have a strong incentive to invest. In this constellation, higher dividend payments boost the demand for the firm's equities, generating a positive price effect on the firm's market value. A higher market value as compared to the value of the existing physical capital stock provides the basis for higher investments. Dividend payments at present create the conditions for higher investment in the future.

Both of these views have been heavily criticised for relying on some very strong assumptions. The Miller-Modigliani theorem neglects debt considerations, whatsoever. According to Minsky's financial instability hypothesis (Minsky, 1977), a higher level of debt induces the financial fragility of the firm, thus making it more vulnerable to unexpected economic downturns. In such a case, the firm would face difficulties in meeting its debt payment commitments or would be reluctant in taking up more debt in order to invest. In advance, the Miller-Modigliani theorem depends on the highly unrealistic assumption of perfectly competitive product and capital markets (Brigham and Gapenski, 1996). The same assumption is also made by Tobin and Brainard (1976), while they overemphasize the role of capital markets in the investment decision making process of firms and neglect the importance of internal funds for investment (Hubbard, 1997). On top of that, Tobin's Q explanatory capacity is rather limited (Hayashi and Inoue, 1991).

Apart from dividends, there is another policy implemented by the firms that bears precisely the same implications for their investment activity, as those of dividend payments, namely the share buyback policy. According to this policy, firms purchase their own shares from third parties in the capital markets with an aim to boost the demand, and simultaneously reduce the supply, of their equities. As a result, the price of their equities increases and so does the market value of the firm. Similar arguments, to those of dividends, apply also in this case. It is a policy that favours the short-termism of shareholders, as it increases the value of their equity holdings. Whether it is decided before investment or afterwards is also important, while it could prove beneficial in terms of investment activity only if firms rely on the capital market so as to finance their investments. In practise, however, the NFCs hold a larger portfolio of equities. They purchase a larger variety of equities, than strictly their own. In other words, the NFCs engage in financial investment. This implies that funds that could have been invested in physical capital stock, they are directed in financial investment. In this respect, financial investment crowds out physical investment (Hein, 2012).

Figure 1 summarises the debate upon the impact of dividend payments on investment, presented above. In case 1, investment decisions are made beforehand, thus dividend payments do not have any effect on investment, at least not in the same period. This case is straightforwardly connected with the second factor discussed above, regarding the sequence of decisions. If Case 1 does not hold then firms are committed in meeting the preferences of shareholders and thus firstly distribute dividends and then undertake investments. This corresponds to the first factor, regarding the prevalence of shareholders' short-termism.

Cases 2, 3 and 4 are variants of the third factor, related to the source of financing investment. Specifically, higher dividend payments induce demand for a firm's equity and its market value, but on the same time reduce firm's own funds. If the firm relies on external financing and there are no debt considerations, then

dividend payments prove beneficial in terms of investment (Case 2). If the firm relies on internal funds, then it is forced to turn to bank credit in order to finance investment. Debt considerations, in this case, are important. The induced financial fragility implies that the investment growth is unsustainable (Case 3). If debt is already excessive, then the firm is not able to borrow funds from an external source (e.g. credit constraints are binding or firm's management is reluctant in increasing firm's debt exposure). Investment activity is stagnant or drops (Case 4).

[INSERT FIGURE 1 AROUND HERE]

3. Financing Investment in the EU: Differences Across Member States and Changes Across Time

As explained in the previous section, the sources of financing investment matter. If firms rely on external financing, and especially on raising funds from the capital markets, then there might be the case that generous dividend policies could have a positive impact on investment. In what follows, we focus on how the NFCs finance their expenditure. The aim is firstly to provide an overview for the EU27 as a whole. Consequently, it is important to observe whether there are any differences between Member States and if the financial shocks of the Global Financial Crisis (GFC) and the ensuing European debt crisis have brought about any significant changes concerning the investment and dividend policies of the NFCs.

3.1 How do NFCs Finance their Expenditure?

The financing gap reveals the difference between the firm's inflows and outflows in each period. Positive values of the financing gap imply that the NFCs rely on other sources of financing than their own funds, in order to cover their expenditure. Negative values indicate that there are idle funds that could

have been used for further expenses. Alternatively, a negative financing gap implies that firms rely mainly on internal financing.

Figure 2 presents the financing gap of the NFCs for the EU27. It also shows upon which financial instruments the NFCs relied to finance their expenditure, if their financing gap had been positive, or in which financial instrument the idle funds were accumulated, if the financing gap had been negative. The main insight drawn from the figure is that the NFCs had been relying mostly on bank loans to finance their expenditure before the outburst of the GFC, while since 2009 the financing gap has been mostly negative. This means that the NFCs have been relying mainly on their own funds.

[INSERT FIGURE 2 AROUND HERE]

In particular, up to 2008 the financing gap of the NFCs was positive. Firms relied on debt, either in the form of debt securities or loans, in order to finance their expenditures. On the contrary, equity issuance and financial derivatives had been consistently negative. This finding suggests that the NFCs engaged in share buybacks or in other financial investments. High uncertainty and risk, which emerged in the aftermath of the GFC and the outburst of the European debt crisis, closed the financing gap. NFCs were reluctant to carry out investment activity with the same intensity, even more, if this implied taking up more debt.

Conditions in 2018 and 2019 signalled a return to those prevailing prior to 2009, but changed abruptly due to the sequence of shocks that occurred between 2020 and 2022. In this latter period, the increase of loans did not correspond to a positive financing gap but to an increase of the other accounts, mainly of the deposits. This development was necessitated by the need for higher liquidity rather than financing higher expenditures. It is noteworthy that net equity issuance became once again significantly negative in 2022 and 2023. NFCs

engaged once again in share buybacks and financial investment. The financing gap and new debt became also negative in 2023, implying that firms relied even more on internal financing.

Several remarks are in place. Post-GFC the NFCs have not extended their loans or equity issuance in order to boost their investments. Otherwise, this would have shown on a positive financing gap and an associated increase of loans or equity issuance. With the exception of 2019, the financing gap has been negative. The accumulation of borrowed funds in the other accounts, mainly deposits, marks an uncertain environment. The NFCs accumulate cash now in order to address uncertain conditions in the future.

There are several candidate reasons in explaining this development, such as lacklustre demand, restricted access to bank lending and increasing competition from third parties that restraint expectations and, consequently, investments. With regards to binding credit constraints, evidence suggests that the QE program of the ECB relaxed the credit constraints, especially for those firms that do not rely in borrowing through the issuance of debt securities (Betz and De Santis, 2019; García-Posada Gómez, 2019). Concerning the lacklustre demand and increasing competition from abroad, it is unclear to which extent they affect investment activity, though it is critical to note that they are not mutually exclusive.

Overall, findings so far suggest that on the aggregate the NFCs did not rely on equity issuance to finance their expenditure. On the contrary, before the GFC they have been consistently engaging in financial investment, a pattern that likely re-emerged in 2022. Furthermore, loans borrowed from banks have not been used to finance expenditure since 2009, as the financing gap has been negative. The GFC brought about a change in the way the NFCs finance their expenditure from external to internal financing.[2] In turn, this points to a potentially negative impact of dividends on investments.

3.2 Dividend Payments and Investment: Differences Between Member States and Changes Across Time

The discussion so far has focused on the aggregate EU level, though significant differences between the Member States are rather expected. This is evident in Figure 3, which presents the average retained earnings in terms of GDP by Member State for the period 2010-2023. Retained earnings are practically the mirror image of the financing gap, showing whether firms have excess capacity to invest (e.g. retained earnings are positive).

As reported in Figure 3, in many Member States, especially the largest ones in terms of GDP, firms had at their disposal additional own funds that could have been used to finance investment. For example, corporate investments in the Netherlands could have been 4.4% of GDP higher on average, financed by own funds. External financing conditions, such as high borrowing costs or the absence of a capital markets union do not suffice in explaining the presence of remaining own funds. On the contrary, in the rest Member States, which are broadly of a smaller size, the NFCs had to rely on external financing.

[INSERT FIGURE 3 AROUND HERE]

Apart from the differences between Member States, there are important differences also across time. Figure 4 presents the change of investments and dividend payments as share of profits for all Member States. In particular, it shows the percentage change between the 1995-2008 average and the 2010-2023 average. The choice of the two periods in comparison follows from Figure 2, as in 2009 there is an apparent change in the course of the financing gap owed to the outburst of the GFC.

The most concerning finding is that investment as a share of profits has fallen in the vast majority of the Member States, while dividends increased. The doings of the GFC, and its management in the euro area, in conjunction with a

corporate governance paradigm that favours shareholder value, had negative consequences for the investment activity of the EU as a whole. Firm investments as a share of profits increased in only six Member States, namely in Cyprus, Ireland, Italy, France, Sweden and Finland. For the rest Member States the investment to profits share either decreased slightly or collapsed. Nonetheless, dividend payments as a share of profits increased in 17 Member States, in three it remained rather constant, while in the rest seven it somewhat decreased. Investment performed better than dividends in only three Member States. These findings suggest that in the vast majority of the Member States since 2009, the NFCs have been reluctant in cutting off dividend payments. Instead, they preferred to offer higher dividend payments at the expense of higher investments.

[INSERT FIGURE 4 AROUND HERE]

All in all, findings so far indicate that the slowdown of investment since the GFC does not have a clear connection with external financing conditions. In several Member States, the NFCs' investment activity could have been more intense, financed by own funds. Additionally, external financing has been mostly related to bank lending rather than borrowing from the capital markets. At the same time, dividend payments and investments move in the opposite direction, at least in most of the Member States, suggesting a stagnating impact of shareholder value orientation on investment growth. These findings follow from the observation of actual data. In order to reach safer conclusions, one ought to rely on empirical assessments based on the statistical relationship between investments, profits, dividend payments, but also other financial variables such as debt, the value of equities, NFCs' financial investment and the interest rate. This is carried out in the next section in two steps. In the first step, the estimations deal with changes across time, while in the second step

they account for both changes across time and the observed heterogeneity between Member States.

4. Assessing the Impact of Dividend Payments on Investment

This section provides an empirical assessment concerning the impact of dividends on investment.[3] Given that the dependent variable is investment, in order to gain meaningful results, it is crucial to consider additional variables that are able to explain investment activity, in line with the relevant literature (Barradas, 2017; Lavoie and Godley, 2001; Ndikumana, 1999; Tori and Onaran, 2020). The variables considered in the assessment are the following:

g: investment rate, Gross fixed capital formation/Capital stock

f: profit rate, Gross operating surplus/Capital stock

lev: leverage rate, Stock of loans/Capital stock

q: Tobin's Q, Stock of equities/Capital stock

fin: financial investment rate, Flow of purchased equities /Capital stock

div: dividend rate, Dividends/Capital stock

r: real long-term interest rate on government bonds

Table 1 below presents the implications that each variable bears for investment, if its impact is positive or negative. The implications are drawn from the overview of the debate on the impact of dividends on investment provided in Section 2. The impact of the profit rate can only be positive. A positive impact of the dividend rate is associated with higher demand for the firm's equity in the capital market or serving as collateral in case of borrowing from the banking sector. A negative sign suggests that funds used to distribute dividends could have instead been used to invest. If debt is relatively low then the sign of the leverage rate is expected to be positive as the borrowed funds facilitate investment, while in the opposite case, in which debt is high, the sign would be negative.

[INSERT TABLE 1 AROUND HERE]

Despite the heavy criticism it has attracted, Tobin's Q is also included as a variable explaining investment for two reasons. First, it is rather a common practice to include Tobin's Q in estimating the determinants of investment and second it bears significant policy implications with regards to the capital markets union proposal. A positive sign indicates a positive impact of firm's valuation in the capital markets on investment, while a negative sign suggests that for instance a stock market rally would provide an incentive to the firm to engage in financial investment. The notion behind the financial investment rate is very similar to Tobin's Q, though it is included as it establishes a direct link between financial and physical investments. Finally, the interest rate is expected to have a negative sign.

4.1 The Evolution of Investment and its Determinants in the EU

Before engaging in the empirical assessment, it is interesting to examine how the variables of interest evolved across time. Out of simplicity, the focus is laid upon the EU27 as a whole, rather than on each Member State separately. Such an examination would allow us to have an overview of any significant changes that occurred in the period under consideration, especially after the outburst of the GFC.

Figure 5 presents the evolution of some of these variables.[4] The left panel shows the development of the investment rate, the dividend rate and the profit rate, though the latter is net of dividends (e.g. it refers to the profits after dividend payments). The purpose of this distinction is to provide a close view of the relation, if any, between investment on the one hand and the available own funds, on the other, excluding dividend policy considerations. If the investment and the profit net of dividends rates are closely connected, then this implies

that firms rely heavily on own funds in order to finance investment. Thereby, the market valuation of the firm in the capital market is likely of less significance.

[INSERT FIGURE 5 AROUND HERE]

In fact, with the exception of the period 2004-2008, there is a very strong correlation between investments and profits net of dividends. This is another indication that firms relied heavily on internal financing to boost investments. The dividend rate, since 2008, has been detached from the course of the investment and the profit (net of dividends) rate and somewhat stabilised before the outburst of the pandemic in 2020.

In the right panel, the investment rate is plotted along with the leverage rate and Tobin's Q. The leverage rate follows a slow declining path, implying that the NFCs have been mostly interested in improving their financial positions. Meanwhile, Tobin's Q skyrocketed, reflecting a strong revaluation of firms' own equities in the capital markets. This is likely the outcome of the quantitative easing policy, implemented by the ECB, which facilitated exuberant financial investor behaviour (Hudepohl et al., 2021). The course of Tobin's Q, however, did not seem to have an analogous impact on physical investment.

A first remark, relates to the tight relation between profit, net of dividends, and investments. The figure implies that lower dividend payments would result in higher available net profits, which would boost investment activity. However, this is only a suggestion and not a safe conclusion. The second factor, discussed in Section 2, regarding the sequence of decisions between investment and the distribution of dividends is crucial in this framework. For instance, it could be the case that firms first decide to invest and then what is left of their profits is distributed to the shareholders.

Secondly, in the period 2004-2008 the investment rate seems to respond to an increase of the dividend rate. This is also reflected in the movements of Tobin's Q in the right panel. It might have been the case that in the first years since the introduction of the euro, financial integration in the EU started to have a positive effect on investment activity, as proposed by those in favour of generous dividend policies. Higher dividend payments induce the value of the firm's own equities, by boosting demand, and firms respond to this higher market valuation with increased investment. Nonetheless, the outburst of the GFC brought this development to a halt. Since then, the dividend rate is relatively stable, implying that the NFCs implemented a rather consistent dividend policy (e.g. they have been dedicated in meeting the demand of shareholders for higher dividend payments).

4.2 Empirical Method and Results

Typically, one of the most consistent determinants of current investment is its lagged value, whether investments move upwards or downwards (Kopcke and Brauman, 2001). Investment projects take much time until they come to fruition, while payments are made according to installment plans and not in lump-sum payments (Bloom et al., 2012). This view is consistent with evidence from firm-level microdata (Eberly et al., 2012). In this context, we apply a dynamic panel model, the Dynamic Common Correlated Effects (DCCE), as extended by Chudik and Pesaran (2015), which is able to account for an expected heterogeneity across the Member States. Additionally, results are supplemented by Panel-Corrected Standard Errors (PCSE) estimations. The latter may not allow for an autoregressive component, but they deal efficiently with panel-specific autocorrelation and permit the use of lagged independent variables.

A second consistent determinant of investments is past values of aggregate demand through the accelerator effect. Typically to the Post-Keynesian tradition, this is captured by the capacity utilisation rate. Noteworthy,

Bernanke (1983) provides a similar argument in a New Keynesian framework. However, the GDP to capital stock ratio has presented excessive correlation with lagged investments and profits, thus it has been dropped from the sample. Finally, the time dimension of the sample could have been enlarged significantly with the use of quarterly data, normalised by GDP. Nevertheless, investment decisions are not taken in such a high frequency, thus quarterly data would have likely yielded biased results (Barradas, 2017).

The benchmark model (DCCE) is expressed in eq. (1), in which g is the investment rate, defined as gross fixed capital formation over capital stock, and X is a vector, which contains the independent variables, as shown in eq. (2). The term a_0 is the constant term, a_1 is the coefficient of the autoregressive component, A is a vector with the coefficients of the independent variables and u is the disturbance. Note that i represents the Member States and t denotes years. In order to capture the impact of past events on current investment decisions, each independent variable is lagged by up to two terms. Consequently, estimations follow a general-to-specific approach. As a rule of thumb, estimations are repeated several times. Each time the least significant variable (e.g. that with the highest p-value) is dropped from the estimations. This repetition comes to a halt, once all remaining variables are statistically significant.

$$g_{i,t} = a_{i,0} + a_{i,1} g_{i,t-1} + \sum_{n=0}^{2} A'_{i,t-n} X_{i,t-n} + u_{i,t} \quad (1)$$

in which,

$$X = \begin{bmatrix} f \\ lev \\ q \\ fin \\ div \\ r \end{bmatrix} \quad (2)$$

The second empirical approach (PCSE) is almost identical to the first, bar the lagged investment rate. Table 2 presents the outcome of both empirical approaches. The profit rate and the lagged investment rate have a strong and positive impact on the investment rate, as expected. In the DCCE model, a 1% increase of the profit rate increases the investment rate by 0.21, while past investment activity has a prolonged effect of 0.19.[5] In the PCSE model, the impact of the profit rate is much stronger, though it includes both a contemporaneous and a lagged effect.

[INSERT TABLE 2 AROUND HERE]

The leverage rate has a small positive effect on the investment rate, which is equal in both estimates. This finding suggests that the availability of funds through bank lending facilitates investment in the next period. As a consequence, firms' debt burden is adequately low and does not constraint their investment plans. The deleveraging process, since 2009, ought to be viewed in the context of uncertainty rather than of insolvency. Results on Tobin's Q are inconclusive as in the DCCE model it has a marginally positive effect on the investment rate, while in the PCSE model a marginally negative one. The financial investment rate is statistically insignificant in the first model, thus it is not presented in the figure, but has a significant negative impact in the second one. A 1% increase of the financial investment rate reduces the investment rate by 0.08. In other words, the financial investment has a small, though not negligible, crowding out effect on real investment. Finally, and more importantly, the dividend rate has a clearly negative impact on the investment rate. However, the intensity of the impact varies greatly between the two empirical approaches. In the DCCE model, a 1% increase of the dividend rate reduces the investment rate by 0.09, while in the PCSE model it drops by 0.27.

The latter finding does not come as a surprise, as it corresponds with the stylised facts presented in the left panel of Figure 5. However, the empirical outcomes suggest that in the sequence of decision making, mentioned earlier, firms follow a consistent dividend policy in terms of shareholders' preferences and then decide how much to invest. This reduces the own funds of the firm which are available to finance investment. Another factor that points to this condition is the difference in the coefficients between the two empirical approaches. The larger the significance of the profit rate, as reflected in the size of the respective coefficient, the stronger the negative impact of the dividend rate on the investment rate and vice versa. As a final remark, note that the interest rate has been found statistically insignificant. This does not necessarily imply that the interest rate does not affect investment, but more likely that the real long-term interest rate on bonds is a poor proxy of the interest rate on firm loans.

Overall, the empirical results, mainly that the dividend rate has a negative impact on the investment rate, loans facilitate investment and that the financial investment likely crowds out physical investment are suggestive. They do not account for the heterogeneity across Member States. Both empirical approaches consider that dividend policies, as well as other decisions such as financial investment, are similar across the Member States. In turn, this might lead to biased estimates. This is dealt by the creation of an additional variable that functions as an instrument in the empirical estimations. In particular, Member States are clustered according to a Principal Component Analysis (PCA) of the independent variables.[6] Consequently, Member States are clustered according to the respective values in each component, following Ward's hierarchical-linkage clustering. This process generates a dummy variable, which is used as a cross-sectional instrument in the DCCE regression and as an instrumental variable in the PCSE regression.

The empirical results of both empirical approaches, which now include the new instrumental variable, are presented in Table 3. Results, in terms of significance, are very similar to the previous ones. Once again, the interest rate is insignificant. The leverage rate has a marginal positive impact on the investment rate, while the impact of Tobin's Q remains unclear. The financial investment rate is significant only in the PCSE model, with its impact remaining more or less the same. In the DCCE model the impact of the lagged investment rate and the profit rate are somewhat lower, but the negative impact of the dividend rate is much stronger. A 1% increase of the dividend rate reduces the investment rate by 0.15. In the PCSE model, the impact of the profit rate is marginally higher and that of the dividend rate marginally lower, though still high. A 1% increase of the dividend rate reduces the investment rate by 0.24.

[INSERT TABLE 3 AROUND HERE]

The heterogeneity across Member States is important, but affects only the impact that the explanatory variables have on the investment rate, not their significance or direction. Despite the differences between the two empirical approaches, they jointly provide some important insights. First, dividend payments do harm investments. The NFCs rely heavily on internal financing in their investment decisions, thus the reduction of profits due to dividend payments bears significant repercussions for investment activity in the EU. Regulation that provides incentives to distribute fewer dividends might prove beneficial in reversing the slowdown of investment activity of the past decade. Secondly, access to new credit could also boost investment activity, though to a lesser extent. Taking into consideration the stylised facts presented in the previous section, an improvement of the conditions in gaining greater access to credit is of less significance, as the NFCs have been reducing debt. In the face of higher uncertainty, they are improving their financial positions. This is

somewhat reflected to the small coefficient of the leverage rate. Policies that boost aggregate demand create a more investment-friendly environment as expectations on future profitability become optimistic. Third, capital market outcomes on investment are unclear. According to the first model, the revaluation of the NFC's value in the capital market would have a very small, though positive, impact on investment. According to the second model, the impact is equally small, but negative, while financial investments are crowding out real investments. This requires further research, as they bear significant implications for investment in the event of a capital markets union.

5. Conclusions

The purpose of this paper is to assess whether dividend payments have a positive or negative impact on investments. The discussion has focused on three issues upon which the debate on the dividend-investment nexus revolves around: i) shareholders' interests are short-termed and prevail over those of managers, the interests of whom are in principle long-termed, ii) if firms first decide how much dividends to distribute and then how much to invest, then dividend payments absorb funds that could have been used to finance investment and iii) the source of financing investment matters.

With regards to the latter, the examination of the financing gap of the NFCs and their investment and dividend policies, showcase that the NFCs in the EU switched from loans to own funds in order to finance their investments, after GFC. In advance, the NFCs in the largest EU Member States, in terms of GDP, have been reluctant to invest since 2010, as they had own funds remaining idle. However, on average the vast majority of the Member States increased their dividend payments, when investment has been slowing down or even decreasing.

Consequently, two empirical approaches were employed so as to estimate the impact of the variables in question on the investment rate. The estimated impacts are somewhat different, following the distinct specification of each

empirical approach. Nonetheless, they jointly bear some significant policy implications. The profit rate is the most important contributing factor to the investment rate. Policies that boost aggregate demand would render expectations optimistic, thus promoting investment growth. The leverage rate has a small positive effect on the investment rate, as the additional funds facilitate investment expenditures. Results on Tobin's Q and financial investments are inconclusive. According to the first empirical approach, financial investments are not significant, while stock market revaluations have a small positive effect. In full contrast, results of the second empirical approach hint to a small negative impact of stock market revaluations and that financial investments are crowding out physical investments. Finally, dividend payments have a clear and significant, negative effect on investments. They reduce the liquidity of firms, which rely heavily on internal financing for their investment expenditures. Policies that incentivise the reduction of dividend payments could prove beneficial in promoting investment growth.

Notes

1. Shareholder value orientation has emerged in recent years in the relevant literature, as an important constituent of financialisation. Other aspects of financialisation with particular relevance to the EU include income and wealth inequality, social exclusion, financial instability and an undermining of the trade unions (Battiston et al., 2018; Gouzoulis et al., 2024; Hein et al., 2017).

2. This implicitly suggests that the NFCs have reduced their expenditures, up to the point that they meet their revenues, so that they do not have to rely on external financing. The export-led growth orientation and the fiscal and wage restraint pushed through by the European authorities during the past decade, likely had negative repercussions on corporate investment. However, at this point more evidence is required to draw safe conclusions.

3. For a technical discussion on the data, the empirical approach, its limitations, and the respective outcomes refer to the Appendix.

4. The interest rate and the financial investment rate are excluded from the figure, as the former does not exist on an EU level, while the latter presents wide fluctuations that obstruct the visibility of the figure.

5. It should be stressed that the impact of the profit rate on the investment rate does not necessitate the implementation of wage restraint policies in order to enhance profitability and investments. The assessment on such policies on investment would require a slightly different modelling strategy, with the inclusion of the capacity utilisation rate. For an elaborate discussion see Lavoie and Stockhammer (2013).

6. Table A2 presents the average eigenvalues of the PCA by component. Additionally, Figure A1 presents how Member States performed before and after the GFC by component.

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Appendix

A long-term assessment of the relationship between dividends and investments is demanding in terms of data requirements. Robust estimations would require the use of firm-level data that are not publicly available. In this paper, the assessment is based on macroeconomic data. Firms' behaviour in Member States is not homogeneous, which poses further problems in carrying out the assessment. For this reason, tools that correct for this heterogeneity are employed, though results should be treated as indicative and not as conclusive.

The reference period is 1995-2023 and refers to all Member States. The dimensions of the panel dataset are T=29 and N=27. Data for the NFCs are in nominal terms, retrieved from Eurostat. The real long-term interest rate, deflated by GDP is retrieved by Ameco and serves as a proxy for the interest rate on firm loans. All variables, bar the interest rate, have been normalised with the net capital stock of the total economy, at constant prices, as provided by Ameco. This is a drawback, given that the aggregate capital stock is also influenced by public and household investment. This might pause a problem in the "between" dimension, though not in the "within" dimension of the sample. Nonetheless, data availability with regards to the capital stock of the NFCs is rather limited. Additionally, this is not a great issue, given that the relations between the ratios are consistent with each other. In order to enhance this consistency, the capital stock has been transposed to gross and nominal

terms, with the use of the Consumption of fixed capital and the Gross fixed capital formation deflator, before calculating the ratios.

The panel is unbalanced. There are omissions in the case of Bulgaria concerning the last four years of the sample and Malta prior to 2001. More importantly, there are large discontinuities in the interest rates of the non-EU12 Member States. This is a major drawback, since the variable appears statistically insignificant in all estimations. Finally, it is important to stress that aggregate data, employed in the estimations, are far from ideal for this task. Investment activity largely depends on the productive structure of the economy, as Member States with large labour intensive sectors are expected to have lower investments. Additionally, the size and the legal type of the NFCs are also significant factors. Not all firms distribute dividends. In this respect, the impact of dividends in Member States with small numbers of public limited companies, might be somewhat exacerbated. However, excluding non-public limited companies from the sample would likely yield higher estimates. Thereby, these two factors cancel out. Taking into account the problematic exposed so far, the estimations should be treated as indicative and not definite.

Table A1 presents the results of the panel unit root tests, along with those for cross dependence, heteroscedasticity and autocorrelation. All variables are stationary, as noted by the Augmented Dickey-Fuller (ADF) test. Additionally, as noted by the Woolridge test for autocorrelation and the Breusch-Pagan test for heteroskedasticity, the hypothesis of uncorrelated and homoscedastic residuals is rejected. Finally, the Pesaran test indicates that the cross-section independence hypothesis is also rejected. The econometric approaches applied in this paper address all of these issues. Table A2 presents the average eigenvalues of the PCA.

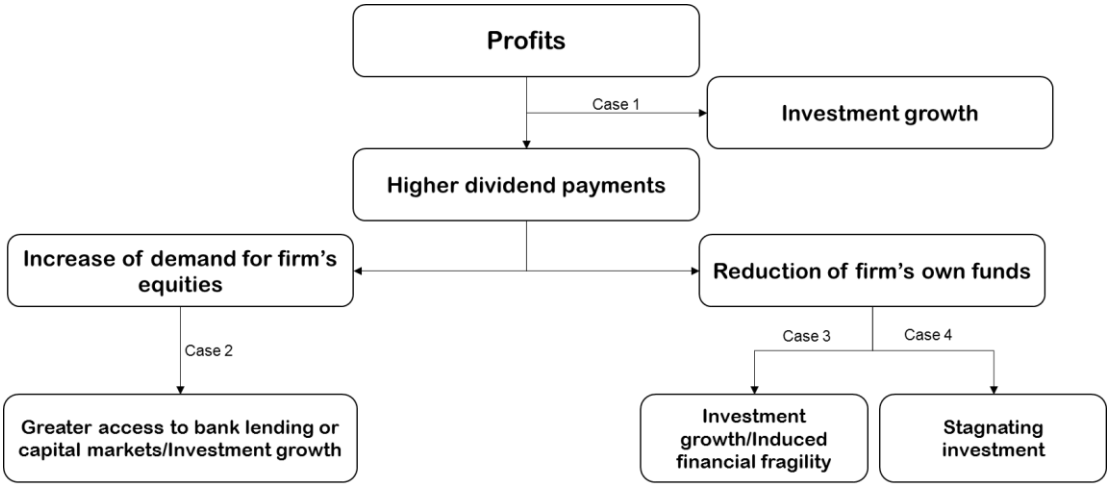
[INSERT TABLE A1 AROUND HERE]

[INSERT TABLE A2 AROUND HERE]

Figure A1 presents the average scores of the Member States for the periods 1995-2009 and 2010-2023, component. Before the GFC, the majority of the Member States belonged in Component 1. An increase of the interest rate would likely have a depressive impact on the profit rate, the dividend rate and the rest financial variables, as they all varied in the opposite direction to the interest rate. However, after the GFC the discrepancies between the Member States are augmented. In many cases, Component 2 seems more relevant for many Member States, including Germany, Austria, Finland and Sweden. For these Member States, the profit and the dividend rates varied to the opposite direction to the rest variables. Financial outcomes were separated from profitability. In other instances, movements between components are more drastic, as is the case for Belgium, Denmark, Ireland and Malta. Overall, it is evident that the GFC, the ensuing European debt crisis and its management, brought about significant changes on the NFCs' financial operations and their correlation with profits.

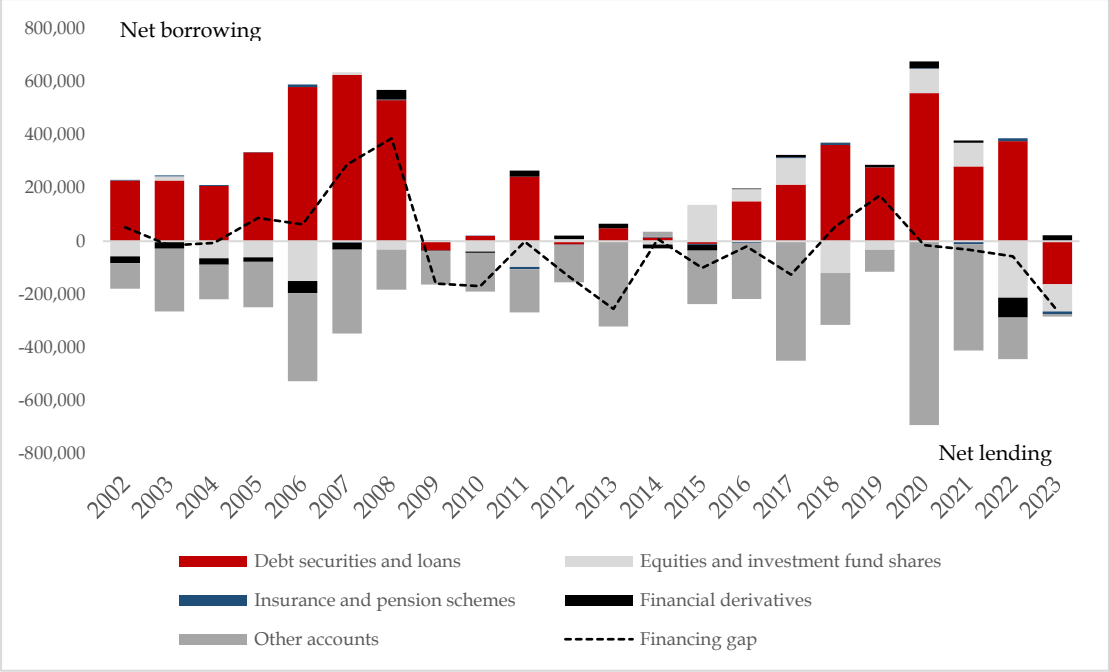
[INSERT FIGURE A1 AROUND HERE]

Figure 1. Potential effects of higher dividend payments on firm's investment



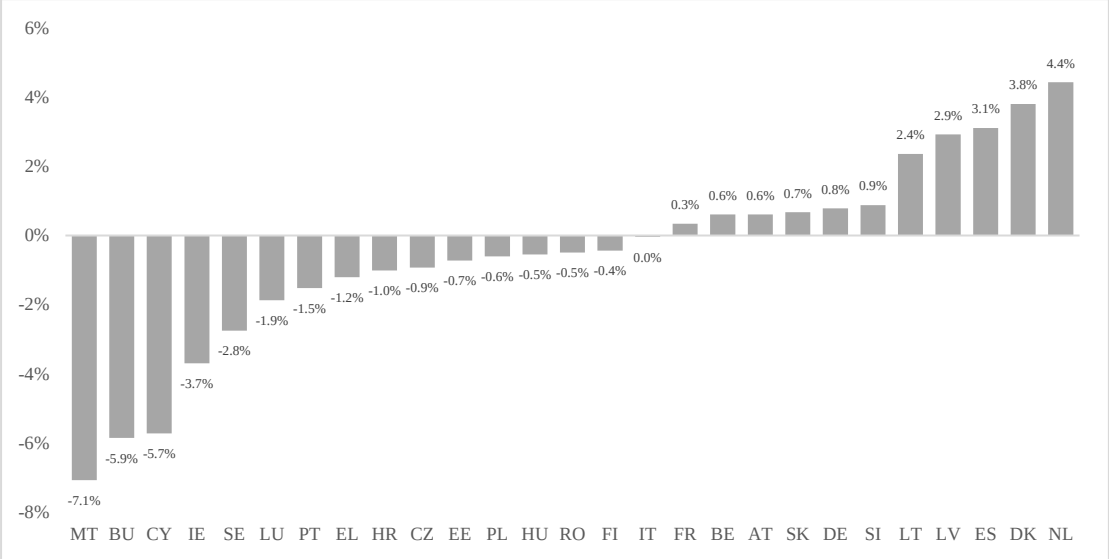
Case 1: Investment decisions are made before dividends are distributed (+)
Case 2: Firms rely on external financing for investments. Debt considerations are of less significance (+)
Case 3: Firms turn to bank credit to finance investments, due to the reduction of own funds. Debt considerations are significant. Unsustainable investment growth (-)
Case 4: Firms rely on internal financing or debt is too high (-)

Figure 2. Financing gap of the non-financial corporations and its constituents in mn. euro (EU, 2002-2023)



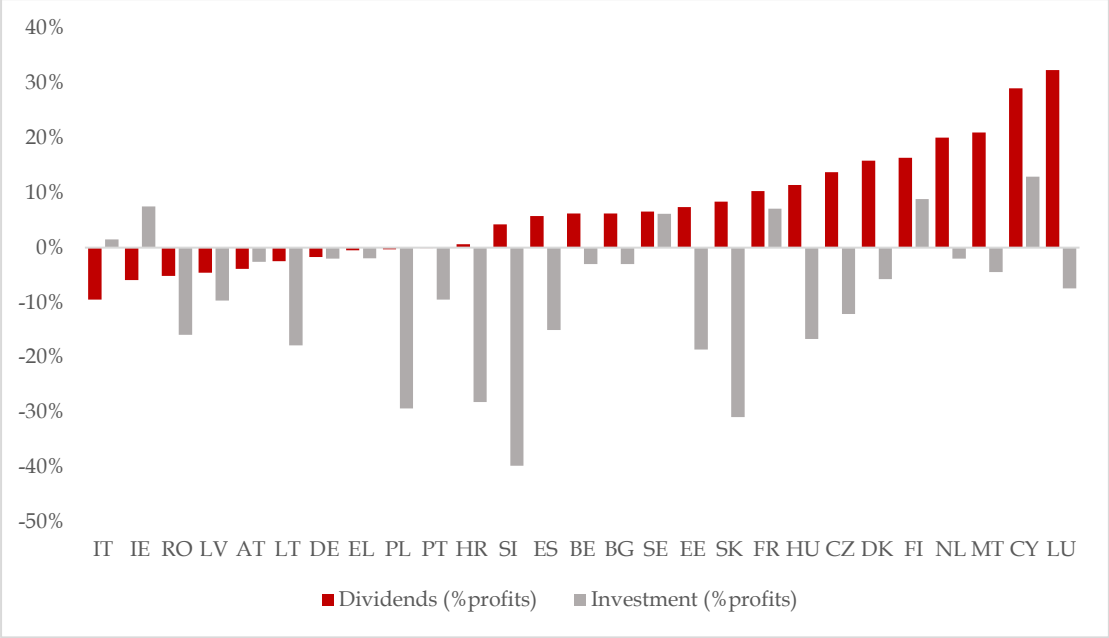
Source: Eurostat (authors' calculations). Note: There are no available data prior to 2002. The item "Other accounts" contains deposits, trade credits and advances, transactions in the secondary market or other transactions that have accrued but have not yet been paid. Financial instruments are net.

Figure 3. Average retained earnings of the non-financial corporations by member state (%GDP, 2010-2023)



Source: Eurostat (authors' calculations)

Figure 4. Investments and dividend payments as a share of profits of the NFCs by Member State (pp. change between 1995-2008 and 2009-2023 average)

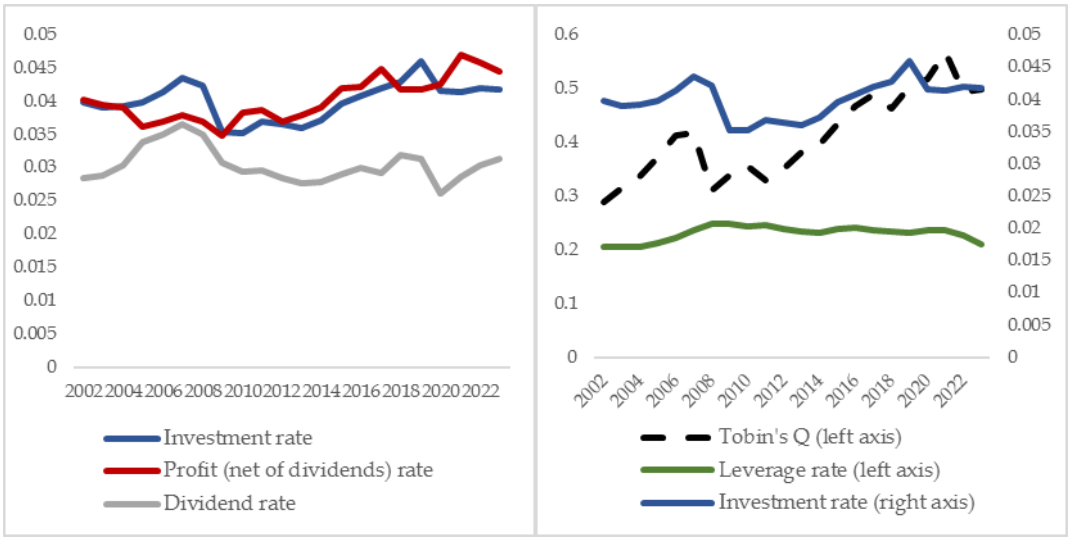


Source: Eurostat (authors' calculations)

Table 1. Interpretation of expected outcomes for each variable

Variable	Positive impact on investment	Negative impact on investment
Profit rate	Profits determine investment decisions in the future and finance investments in the present	-
Dividend rate	Dividends increase the market value of firm or they are used as collateral in order to borrow	Dividends reduce firm's own funds, which are insufficient to finance investment
Leverage rate	Loans facilitate investment activity	Debt is too high and the firm is unwilling to take up more debt to invest
Tobin's Q	The market value of the firm incentivises physical investment	The market value of the firm incentivises financial vs. physical investment
Financial investment rate	Financial profits are used for physical investment	Financial investment comes at the expense of physical investment (crowd-out)
Interest rate	-	Higher lending costs discourage investment

Figure 5. Investment rate, profit (net of dividends) rate, dividend rate, leverage rate and Tobin's Q of the non-financial corporations (EU, 2002-2023)



Source: Eurostat and Ameco (authors' calculations). Note: Data are unavailable prior to 2002.

Table 2. Determinants of investments

	DCCE		PCSE	
	Coefficients	Standard errors	Coefficients	Standard errors
c_0	-	-	0.02***	0.00
$g_{(-1)}$	0.19***	0.04	-	-
f	0.21***	0.04	0.48***	0.11
$f_{(-1)}$	-	-	0.21*	0.12
$lev_{(-1)}$	0.02*	0.01	-	-
$lev_{(-2)}$	-	-	0.02***	0.00
q	0.07***	0.02	-	-
$q_{(-1)}$	-	-	0.09***	0.03
$q_{(-2)}$	-0.06***	0.01	-0.11***	0.03
div	-	-	-0.27***	0.06
$div_{(-2)}$	-0.09*	0.05	-	-
$fin_{(-1)}$	-	-	-0.08***	0.02
R^2	0.31		0.55	
Mean Group R^2	0.88		-	
F-stat	2.37***		-	
Wald (χ^2)	-		582.2***	
CD-stat	0.52		-	

Source: Authors' estimations. Note: *, **, *** correspond to 10%, 5% and 1% levels of statistical significance, respectively.

Table 3. Determinants of investments, accounting for heterogeneity

	DCCE		PCSE	
	Coefficients	Standard errors	Coefficients	Standard errors
c_0	-	-	0.02***	0.00
$g_{(-1)}$	0.15***	0.05	-	-
f	0.17***	0.05	0.54***	0.12
$f_{(-1)}$	-	-	0.22*	0.00
$lev_{(-1)}$	0.02**	0.01	-	-
$lev_{(-2)}$	-	-	0.03***	0.00
q	0.07***	0.02	-	-
$q_{(-1)}$	-	-	0.09***	0.03
$q_{(-2)}$	-0.04***	0.01	-0.11***	0.03
div	-	+	-0.24***	0.07
$div_{(-2)}$	-0.15**	0.07	-	-
$fin_{(-1)}$	-	-	-0.07***	0.02
Dummy	-	-	-0.01***	0.02
R^2	0.31		0.56	
Mean Group R^2	0.86		-	
F-stat	2.37***		-	
Wald (χ^2)	-		700.89***	
CD-stat	1.84*		-	

Source: Authors' estimations. Note: *, **, *** correspond to 10%, 5% and 1% levels of statistical significance, respectively.

Table A1. Unit root, cross-section dependence, heteroskedasticity and autocorrelation tests

	g	*f*	*lev*	*q*	*fin*	*div*	*r*
ADF (inverse χ^2)	143.33***	96.85***	91.48***	78.67**	224.07***	87.92***	98.28***
Pesaran test (CD-test)	27.06***	10.01***	39.17***	49.67***	3.58***	34.91***	44.79***
Breusch-Pagan (χ^2)				0.00***			
Woolridge (F-stat)				42.52***			

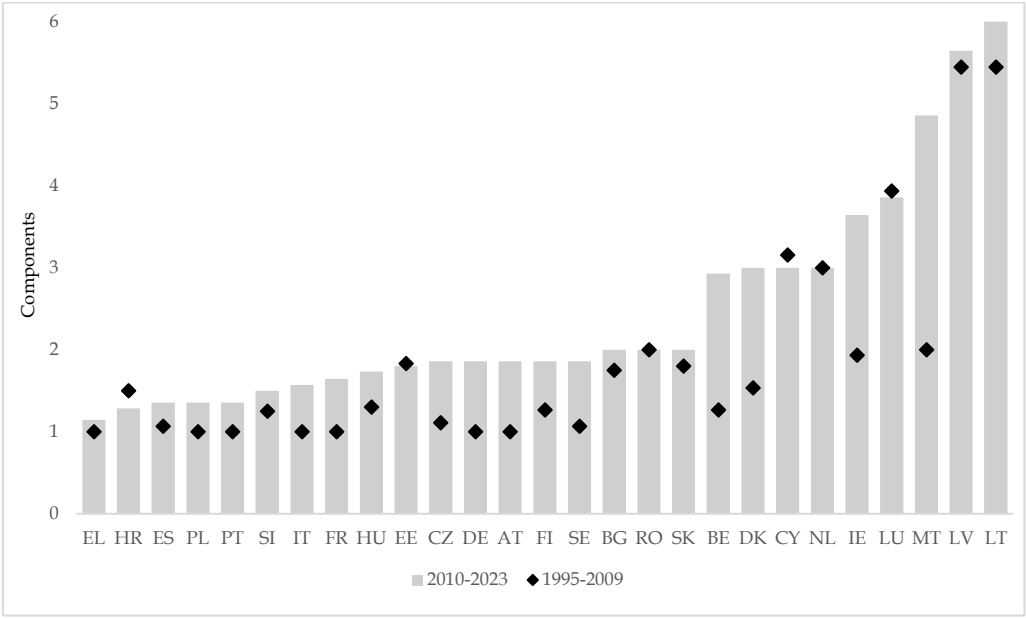
Source: Authors' estimations. Note: *, **, *** correspond to 10%, 5% and 1% levels of statistical significance, respectively.

Table A2. Eigenvalues of Principal Component Analysis

	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6
Profit rate	0.45	-0.45	0.22	0.31	-0.42	0.53
Dividend rate	0.49	-0.39	0.20	0.17	0.49	-0.55
Tobin's Q	0.47	0.30	0.19	-0.50	-0.53	-0.35
Leverage rate	0.50	0.35	-0.14	-0.29	0.52	0.51
Financial investment rate	0.19	0.64	0.03	0.73	-0.08	-0.12
Interest rate	-0.24	0.16	0.92	-0.08	0.18	0.15

Source: Authors' estimations.

Figure A1. Average score of Member States by component



Source: Authors' estimations