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Ownership, Dividends, R&D and Retained earnings; Are Institutional Owners Short-Term Oriented?

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Abstract

This paper investigates the link between institutional ownership and dividend policy. Utilizing a dividend payout model, which accounts for earnings trends and partial adjustments of dividends, a positive but marginally diminishing relation is found between institutional ownership and dividends. This result holds when ownership is retained through the use of control enhancing mechanisms such as vote-differentiation, instruments that induce investors to demand higher payout ratios. A positive effect with respect to earnings is also recognized. By studying a panel of 189 Swedish firms, the paper presents the first evidence for the relationship between dividend payout policy and ownership in a corporate governance system which is characterized by an extensive separation of ownership from control. Most studies on the relationship between ownership and dividends have been made on US or UK data, which do not account for this Continental-European governance attribute. The paper supplements the literature by examining a unique database of ultimate ownership which makes it possible to account for ownership continuously.

Keywords: Payout policy, institutions, ownership, corporate governance, panel data.
JEL Codes: G23 G30 G32 G35 O16

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1. Introduction

A large body of research exists on how corporate ownership structure influences financing, investments and dividend decisions. Especially the relationship between management ownership and dividend policy has been well documented (see e.g. Rozeff, 1982; Jensen et al., 1992; Eckbo and Verma, 1994; Moh'd et al., 1995). The link between institutional investors' ownership and dividend policy is however somewhat neglected (for dividends decisions see Short et al., 2002 and Gugler and Yurtoglu, 2003). This lack of research is remarkable since there has been such an increase in the importance and presence of these types of investors in recent decades. But these studies are predominantly done on US or UK data (i.e. Short et al., 2002) which although central, fail to provide comprehensive insights when the institutional framework is different from what is usually referred to as the Anglo-Saxon corporate governance system. In Continental Europe and Scandinavia the general corporate governance structure is characterized by a much more concentrated ownership, often in combination with control instruments such as dual-class shares and pyramidal ownership structures.

Dividend policies are dependent on the alignment of ownership and control incentives. Agency problems that arise from diversion of these incentives will therefore fundamentally affect dividends. The role played by the institutional framework and related ownership structures is thus important when dividend policies are to be investigated. The Swedish corporate governance system is particularly interesting from this point of view, since it allows for both the use of vote differentiated shares and corporate pyramid structures, which have jointly produced a remarkably persistent and concentrated ownership structure.

The purpose of this paper is to investigate the impact of ownership on dividends. Particularly institutional ownership, and its relation to dividends, is considered in the context of the earnings trend model of Fama and Babiak (1968). This model allows both partial adjustments of dividends to changes in earnings as well as trends in the firms' dividend behaviour. By examining Swedish listed firms the paper also adds to the empirical evidence of the effects of control instruments, such as dual-class shares on dividend policies.

Using a panel data methodology which accounts for firm-specific effects and time effects, unobservable heterogeneity is controlled for. Furthermore, the paper contributes to the literature by looking particularly on the Swedish case. In fact, Sweden is a very interesting case because it is a civil law country which, according to La Porta et al. (1999), has weaker protection of minority owners than common law countries such as the UK and US. Opportunistic behaviour of the controlling owners is therefore more likely vis-à-vis minority owners (Miguel et al., 2004; Pindado and de la Torre, 2006). By European standards Sweden also has a vital capital market with a substantial part of the stock market equity controlled by both foreign and domestic institutional investors.

The paper is organized as follows. Section 2 continues with a discussion about the possible relations between institutional ownership and dividend policy. Especially the importance of agency conflicts and signalling is discussed. The statistical models for dividend payout behaviour are provided in section 3, together with definitions of the variables used in the regressions. Summary statistics and ownership concentration by different type of owners in the sample firms are examined in section 4. The empirical method, estimation results and analysis are provided in section 5. Conclusions end the paper in section 6.

2. Ownership and Corporate Governance

Given the divergence of ownership and control in listed firms, shareholders cannot perfectly control that manager's act in the strict interest of the shareholders. Hence principal-agent problems arise. Managers may divert funds in their own interest at the expense of the shareholders (Williamson, 1963, 1964). This diversion of funds, usually referred to as managerial discretion, may include expropriation[1] or diversion of cash flows to unprofitable projects. It might be that these alternative investments provide a positive return. In relation to the shareholders cost of capital however, the return is too low and therefore in terms of shareholder value maximization, unprofitable (Mueller, 2003).

With a separation of votes from capital, as in many firms in Sweden, agency cost might be substantial for the minority shareholders. A key feature in any corporate governance system is therefore also the legal protection of minority shareholders. The effectiveness of the corporate governance system however, may also require the presence of large investors other than the controlling owner(s) or management[2] (La Port et al., 2000; Burkart et al., 1997). They can influence the managers to distribute profits to the shareholders, thus limiting the recourses available for managerial discretion. The downside to large investors of this kind is of course that they might just as well override the interest of minority shareholders (La Porta et al., 1999). Indeed, Morck et al., (1988) find that profitability is higher for firms with shareholders that have up to five per cent ownership, beyond that profitability drops. This pattern indicates that larger block-holding investors might seek to generate private benefits of control that are not shared by minority shareholders.

A constraint for institutional investors is that this type of investors is often limited, either by regulation or by a desire to maintain liquidity, to holding a maximum of five percent of a firm's equity (Davis and Steil, 2001). Indeed, in Sweden mutual funds which constitute the largest part of the institutional owners are regulated by the mutual funds act of 2004[3]. In this act it is stipulated that no single mutual fund can invest more than five percent of its capital in one single equity issuer. Nevertheless, the presence of institutional investors in the ownership structure of firms might influence managers to be more focused on shareholder value maximization. It is also likely that this relationship between institutional ownership and dividend payout is non-linear (De Miguel et al., 2004; Bjuggren et al., 2007a, 2007b). That is, although the effect in general might be positive the effect is most likely marginally diminishing.

2.1 Institutional Ownership and Dividends

The increasing number of institutional investors and their growing dominance as owners has had a substantial influence on corporate governance (for extended discussion of agency costs and institutional owners see Davis and Steil, 2001). Compared to Anglo-Saxon countries such as the US and the UK, Continental European and Scandinavian firms pay out relatively little

[1] Beyond the obvious cases of theft, transfer pricing, and asset sales, expropriation may take the form of perquisites, high salaries, diversion of funds to pet projects, and general entrenchment even in cases in which the managers are no longer competent or qualified to run the firm.

[2] In this paper managerial ownership is not considered. Ownership by the largest shareholder in terms of votes is thus considered in alignment with managerial ownership.

[3] Law concerning Investment funds; Swedish reference, SFS 2004:46; (following European Union directive EGT L 375, 31.12.1985, s. 3, Celex 31985L0611)

in dividends or via repurchase of shares (La Porta et al., 2000), despite high profitability and a very mature corporate structure. This issue of relatively low payout ratios is also highly pertinent for the Swedish listed firms. One principal reason for the low levels of dividends is the Swedish tax system which has persistently disfavoured dividends in favour of investments made with retained earnings (Högfeldt, 2004; Magnusson and Jakobsson, 2006). A stated purpose of this tax policy is to foster so-called long-term investment. The effect however, is that substantial funds have been made available for the management to invest with little or no scrutiny from the external capital market.

Overall, all owners would at some time prefer dividends to reinvestment of cash flows but this preference will be particularly important for some owners during certain circumstances. So, even if high desired levels of dividends can be seen as a sign of "short-termism" in the institutional owners attitudes (se for example Hutton 1995; Haskins 1995), it might just as well be an effect of these owners attempt to reduce the free cash-flow available to management.

Institutional owners might prefer dividends for other reasons as well. First of all, many institutional owners are tax-exempt with regards to dividends, and might thus prefer dividends to capital gains. In Sweden the majority of institutional owners are in fact tax-exempt mutual fund companies and insurance companies that manage pensions and other type of mutual fund savings on behalf of the general public. Foreign ownership on the Swedish Stock Exchange is also predominantly made up of these types of institutions (Sundqvist, 2006).

2.2 Taxation theory

The Swedish corporate taxation system is a classical company tax system in which the companies are taxed separately from their shareholders. While firms pay a flat[4] rate of corporation tax on their profits, individuals pay a slightly higher dividend-gains tax on dividend incomes. The dividend gains tax is higher than the corporate tax rate, and individual owners might thus prefer to postpone taxes rather than paying a dividend tax immediately. Mutual fund companies and similar institutional investors are however tax-exempt in the sense that they do not pay any taxes for incomes received as dividends. The effect of this system is of course that individuals and company owners might prefer retained earnings and capital gains, whilst tax-exempt institutional owners are either neutral or positive to dividends.

A related issue is the need of many institutional owners for funds on an ongoing basis. That is, institutions invest in order to provide returns to fund their liabilities. Regardless of the tax bias in favour of dividends, institutions can therefore not rely entirely on capital gains to fund their activities, and hence they require dividends. For institutional owners as a group, and particularly in the case of Sweden, a positive relation to dividend payout must consequently be expected.

2.3 Agency theory

A second reason for why institutional owners in particular might favour dividends to reinvestments within the firm is because it might serve to curb the agency problems between controlling owners/managers and the minority shareholders, as suggested by Jensen (1986).

[4] In fact a myriad of different tax rates are applied dependent on the type of firm; i.e. limited liability, private, partnership, etc. For the sake of brevity this discussion is not extended beyond this note, as it is far beyond the scope of this paper to analyze the impact of various tax rates on dividends.

Again, by high dividend payout ratios less funds are available for managerial discretion, and more funds will be allocated through the external capital market subject to market scrutiny.

Empirically the predictions of agency theories on dividend payout (Rozeff, 1982; Easterbrook, 1984; Jensen, 1986; Eckbo and Verma, 1994) support a positive association between dividends and institutional ownership. The prediction is basically that dividends substitute for poor monitoring by the firms' shareholders. Institutional owners might then act as influential principals who are able to impose their preferred payout policy upon firms. The result is less cash available within the firm for managerial discretion and a somewhat mitigated agency problem.

Based on the arguments above Zeckhauser and Pound (1990) suggest that institutional owners might act as a substituting monitoring device, which would also reduce the need for external monitoring by the capital markets. However, the well known incentives for institutional shareholders to free ride on monitoring activities suggests that institutional shareholders are in fact unlikely to provide direct monitoring themselves.

2.4 Signalling theory

A third reason for why institutional owners might favour dividends is due to the potential information asymmetries that exist between owners and managements. Given these asymmetries and the equity markets preference for liquidity, dividends can act as a signal about the future prospects of the firm. The same might hold for institutional owners per se, as they might act mitigating to managerial discretion and/or might have informational advantages compared to small investors.

A way for managements' to signal their private information regarding the future earnings of the firm would be through dividends (Bhattacharya,1979, 1980 and Miller and Rock,1985). A somewhat alternative hypothesis is put forward by Zeckhauser and Pound (1990). They argue that the presence of large outside shareholders, such as institutions, can act as a signal of the firms' good performance. The presence of such shareholders might therefore lessen the use of dividends as a signalling device. This would then to some extent change Zeckhauser and Pound's (1990) agency theory prediction. It is however unclear, in what way institutional shareholders would act as a signal of future prospects. Is it a signal of reduced agency costs due to monitoring of the institutional shareholders? Based on the free rider arguments mentioned before, probably not. The alternative is then that the institutional shareholders have some superior information regarding the future prospects of the firm. Although this explanation has some appealing inklings, little evidence would support this scenario. Insider laws may for instance make institutional shareholders very careful in handling this type of information (if they get hold on it to start with). Also, the rapid increase of indexation, especially with respect to institutional shareholdings implies that the presence of an institutional shareholder might not necessary mean that the particular institution believes that the firm has better than average prospects (Short et al., 2002). While possible, the notion that dividends and institutional shareholders may act as substituting devices is not very convincing. The expected results with respect to the relationship between institutional ownership and dividends in terms of signalling would subsequently be mixed as well.

These three main considerations, taxation, agency costs, and signalling are now to be examined in more detail in order to construct empirically testable hypotheses regarding the association between ownership and dividends.

2.5 Summary and hypothesis

The association between ownership and dividends seems to depend crucially on three factors related to the corporate governance system. The first is the consideration of taxes. In a country like Sweden, with a classical company tax system, dividend payments are essentially taxed twice, both as profits within the firm and then as capital gains for the individual. Tax-exempt shareholders might for various other reasons, liabilities etc., prefer dividends to capital gains. Consequently one would expect a positive or at least neutral attitude to dividends relative to capital gains, for this type of investors.

The second factor decisively relating the corporate governance system to dividends is agency problems related to the separation of ownership from control. In corporate governance systems, such as the Swedish, where ownership is further separated from control via control instruments such as vote-differentiated shares, the agency conflicts described by Jensen and Meckling (1976) are aggravated. From this perspective influential shareholders such as institutions may demand higher levels of dividends in order to force firms to go to the capital market for external funding. Hence be subject to monitoring by the external market, a notion that would hold particularly when there is a separation between ownership in terms of capital and control. The reduced levels of cash flow will thus mitigate the free-cash flow problem as described by Jensen (1986) and thus lead to less inefficiency, in terms of managerial discretion. Based on the arguments of the agency theory the hypothesised relation between institutional shareholdings and dividends is therefore positive when capital rights are separated from control rights.

Research by amongst others Miguel et al (2004); Pindado and de la Torre (2006) and Crutchely et al (1999) have shown that the relationship between dividends and institutional ownership is non-linear, and marginally diminishing. Although positive, the impact of increasing ownership leads to a convergence of the monitoring and entrenchment effects. This notion has also been widely supported by previous literature (Morck et al., 1988; McConnell and Servaes, 1990; Gedajlovic and Shapiro, 1998). One would therefore expect that any impact of institutional ownership on dividend policy is positive but diminishing.

The causal relation between dividends and ownership in terms of signalling is as mentioned more complex, if existent. Separate empirically testable hypothesis of this relationship is thus hard to formulate. Based on this and the arguments above about taxation concerns and the agency theory, hypothesis 1a and 1b are formulated.

Hypothesis 1a: Institutional shareholdings have a positive effect on dividend changes when ownership in terms of capital is separated from ownership in terms of control.

Hypothesis 1b: Institutional shareholdings have a positive but marginally diminishing effect on dividend changes when ownership in terms of capital is separated from ownership in terms of control.

Hypothesis 1a and 1b are expected to hold both for ownership in terms of votes and capital.

As the agency problems related to the separation of ownership from control would be aggravated by the use of control instruments such as vote-differentiated shares, institutional owners and outside investors will demand higher dividends where such control instruments

are in place. A positive relationship can therefore be expected between dividend changes and vote-differentiated shares. Hypothesis two is therefore:

Hypothesis 2: The use of vote-differentiated shares has a positive relation to dividend changes.

Again, this relationship is expected to hold for ownership in terms of votes as well as capital.

As current periods earnings are of primary importance to any eventual dividend payout, an earnings component will be incorporated in the estimated dividend model, as suggested by Fama and Babiak (1968). The interpretation of this component is straight forward; higher earnings means more funds available for dividends and consequently a positive impact on dividends changes can be expected. To control for the previous period's earnings, an earnings trend component, will also be included in the model.

In addition to earnings another variable which must be controlled for is the previous period's dividends. The parameter estimate of this variable represents the speed of adjustment of dividends to new levels of earnings and is thus expected to be negative, meaning that there is some reluctance to change dividends immediately in response to changes in earnings (Short et al., 2002).

3. Method and Variables

To test the relation between institutional ownership and dividends a partial-adjustment model which accounts for earnings trends is used. The model is modified by interacted shareholdings of the different ownership types. A similar approach used by Short et al. (2002) is limited to using interactive dummy variables due to the lack of ultimate ownership data. In this paper however, the continuous shareholdings of the different ownership categories, focusing on institutional ownership, is used.

Following Short et al (2002) the derivation of the model is based on four related models for the dividend-earnings relation; the Full and Partial Adjustment models by Lintner (1956) the Waud model (1966) and the Earnings Trend model by Fama and Babiak (1968).[5]

3.1 The modified Earnings Trend Model

Assuming that for any year, *t*, the target level of dividend D^* for firm *i* at time *t* is related to the long-run expected earnings, E^*_{ti}, of firm *i* at time *t* earnings, by a desired payout ratio, *r*:

$$D^*_{ti} = rE^*_{ti} \tag{1}$$

Based on the Waud model ((1966) it is further assumed that the formation of expectations follows an adoptive expectation process of the form:

$$E^*_{ti} - E^*_{(t-1)i} = d(E_{ti} - E^*_{(t-1)i}) \tag{2}$$

[5] For extended discussion and derivation of the four models see Short et al (2002).

Then if ownership structure, by for example institutions (*Inst* representing the ownership of institutional investors), alters the desired payout ratio (*r*) firms would have another D^*_{ti}, so the model becomes:

$$D^*_{ti} = rE_{ti} + r_I E_{ti} \times Inst \tag{3}$$

where r_I is the impact on the firms' dividend payout policy related to institutional ownership.

This earnings generating process can then be combined with the adjustment models of dividends developed by Lintner (1956). The partial adjustment model in particular assumes that in any given year, the firm adjusts only partially to the target dividend level, like following:

$$D_{ti} - D_{(t-1)i} = \alpha + c(D^*_{ti} - D_{(t-1)i}) \tag{4}$$

where α is a constant representing the resistance to change dividends, and *c* is the "speed of adjustment" coefficient which represents managements unwillingness to adjust the dividends to the new target level immediately. With the target dividend level D^* for firm *i* at time *t*, as in equation (1) we can substitute in equation (4) and get the following model:

$$D_{ti} - D_{(t-1)i} = \alpha + c(rE^*_{ti} - D_{(t-1)i}) + \mu_{ti} \tag{5}$$

where the term u_{ti} is the usual residual term. So far the specification has yielded a partial-adjustment model. But one would also like to consider that earnings can follow a firm's specific trend or process (Fama and Babiak, 1968). Assume that the specific profit generating process, for firm *i* at time *t*, is of the form:

$$E_{ti} = (1+\gamma)E_{(t-1)i} \tag{6}$$

where γ is an earnings trend factor. If the firms' ownership structure also have a significant influence on the earnings of the firms it seems reasonable to assume a possible difference in the earnings trend factor. The profit generating process thus becomes:

$$E_{ti} = E_{(t-1)i} + \gamma E_{(t-1)i} + \gamma_I E_{(t-1)i} \times Inst \tag{7}$$

It is then possible to combine the Waud models adoptive expectation process in equation (2), with the partial adjustment model of equation (4) to get:

$$D_{ti} - D_{(t-1)i} = \alpha + c(r(d(E_{ti} - E^*_{(t-1)i}) + E^*_{(t-1)i}) - D_{(t-1)i}) + \mu_{ti} \tag{8}$$

Assuming that there is full adjustment of dividends to the expected change ($c \times d = 1$), and partial adjustment to the reminder, equation (8) can be rearranged and reduced. The reduced and empirically testable model accounting for both trends in earnings and adjustments to target dividend levels, equation (9), is consequently:

$$D_{ti} - D_{(t-1)i} = \alpha + rcE_{ti} + r\gamma(1-c)E_{(t-1)i} + r\gamma_I(1-c)E_{(t-1)i} \times Inst - cD_{(t-1)i} + u_{it} \tag{9}$$

Note that the term *Inst* is an example of an interaction term made up of an ownership variable (institutional ownership). In the same way other ownership variables can be tested by inserting another interaction term made up of relevant ownership variable (for example *Votdiff* which is a dummy of vote-differentiated shares interacted with previous period's earnings).

3.2 Variables

All data on the firms' book values and earnings are provided by the *Compustat-Global* database. The period covered is 1996 until 2005. The time period in the regressions is 1997-2005, due to the first difference in the dependent variable. Financial firms are removed from the sample, due to the particular nature of their investments. The ownership data is provided by *Ownership and Power in Sweden*[6], which is a unique database covering ownership structure, on a yearly basis, for all firms listed on one of the three major lists at the Stockholm Stock Exchange.

All aspects considered, the setup requirements produced a sample of 189 Swedish quoted firms. The sample firms correspond to an aggregate share of more than 85 percent of the total market capitalisation at the Stockholm Stock Exchange, and approximately 80 percent of the total Swedish export value.

The variable institutional ownership is made up of the aggregate ownership controlled by institutions, both in terms of cash flow rights (IC) and vote rights (IV)[7]. The group institutional investors consist of banks, pension and mutual funds, insurance companies and endowment foundations.[8] The different ownership categories and how they are defined and grouped are summarized in Table 1.

[6] SIS-Ägarservice
[7] The same notation applies for foreign ownership (FC) and (FV) etc., see table 1.
[8] Note that the typical Swedish ownership spheres, large scale conglomerates combining a number of control enhancing mechanisms and often controlled by a foundation, are not included in this definition. The incentives of this type of owners are probably substantially different from what is usually refereed to as institutional investors, i.e. financial intermediaries.

Table 1. Ownership Categories

Private	All shares controlled by individuals as well as other firms. The private owner can either be the founder of the firm or an investor who has acquired control.
Foreign	This owner can be an institution as well as an individual since it is hard to separate these two groups with certainty.
Institutional	All shares controlled by a Swedish financial institution belong to this category. In all cases the institutions belong to one of the three following types. *Insurance company* Insurance company-controlled shares are all firms that have an insurance company as their largest owner. Note however that mutual funds belonging to an insurance company make a separate group of controlling owner. *Mutual fund* As the name indicates, all shares controlled by a mutual fund; a fund can either belong to a bank; an insurance company or the state-owned pension funds. *Foundation* This category includes foundations donated by private individuals as well as, for example, various types of profit-sharing funds and pension funds tied to individual companies.

Table 2 provides a list of the variables used in the descriptive statistics and the regressions, together with their definitions.

Table 2. Variables

Variable name	Definition
$\mathbf{D_{ti}}$	Total amount of dividends paid by firm *i* in period t (million SEK).
$\mathbf{D_{ti}-D_{(t-1)i}}$	Change in total amount of dividends paid by firm *i* between period *t-i* and t.
$\mathbf{Prstkc_{ti}}$	Purchase of firm *i* stocks by firm *i* in period t (million SEK)
$\mathbf{TPay_{ti}}$	Total payout, dividends and repurchase of shares, by firm i in period t.
$\mathbf{TPay_{ti}-TPay_{(t-1)i}}$	Change in total payout, dividends and repurchase of shares, by firm i between period t-1 and t.
$\mathbf{E_t}$	Earnings, calculated as net profits from ordinary trading activities after depreciation and other operating provisions (million SEK).
$\mathbf{E_{t-1}}$	Earnings in period t-1
C1	Share of capital owned by the largest owner (cash-flow rights), per cent.
V1	Vote rights controlled by the largest owner (control rights), per cent.
FC	Share of capital owned by foreign investor's, per cent.
FV	Vote rights controlled by foreign investor's, per cent.
IC	Share of capital owned by institutional investor's, per cent.
IV	Vote rights controlled by institutional investor's, per cent.
Vote-diff	Dummy variable for vote-differentiated shares, 1 if dual-class shares, 0 if one-share-one-vote.
Sales	Total sales (million SEK).
Employed	Total number of persons employed by the firm in time t.
R&D-exp	Research and development expenses if reported (millions SEK).
WCap	Working Capital (millions SEK).

4. Descriptive Statistics and Ownership Concentration

Before continuing to the estimation results a more thorough assessment of the descriptive statistics is warranted. As mentioned in the introduction, Sweden is a particularly interesting case to study when evaluating the impact of corporate governance and ownership on firm performance. The Swedish corporate governance structure, characterized by a highly concentrated ownership structure, allows for this concentration to be retained and even reinforced by an extensive use of control instruments such as vote-differentiated shares.

Descriptive statistics for the variables in the regressions is provided in Table 3. In addition to the variables used in the regressions statistics of the firms Sales/Turnover, R&D-expenses, Working Capital is provided in Table 3, too. Also descriptive statistics of the five largest

owners in terms of capital share (C5) and votes (V5) is included in the Table. All figures both in the descriptive statistics and in the regressions have been deflated by 2006 years price level.

Table 3. Descriptive statistics all firms

	Mean	Median	Std. dev.	Min	Max	Obs
D_t	261.26	9.29	789.66	0	7862	1190
D_t-$D_{(t-1)}$	31.74	0	395.72	-5169.44	4939.99	1190
$Prstkc_{ti}$	28.10	0	318.10	0	6518.13	1190
$TPay_{ti}$	289.36	9.51	895.15	0	8996.52	1190
$TPay_{ti}$-$TPay_{(t-1)i}$	31.74	0	395.15	-5169.44	4939.98	1190
E_t	714.62	45.10	2797.37	-34529.32	30724.00	1190
E_t-$E_{(t-1)}$	78.53	8.71	2038.43	-40652.38	37146.87	1190
C1	23.77	20.50	15.16	1.00	74.50	1190
V1	34.84	31.30	20.75	2.50	95.10	1190
C5	47.01	45.9	18.40	6.40	97.60	1190
V5	58.15	59.75	20.99	6.40	98.80	1190
FC	20.59	16.20	17.47	0.00	79.60	1190
FV	18.12	11.30	18.25	0.00	93.50	1190
IC	14.11	11.5	12.28	0.00	54.90	1190
IV	11.14	8.10	10.94	0.00	67.6	1190
Vote-Diff	0.62	1	0.48	0	1	1190
Sales	11231.43	1204.26	31099.15	0.04	298428.10	1190
Employed	6.93	0.45	20.76	0.01	216.99	1190
R&D-exp	406.07	0	3010.69	0	49553.76	1190
WCap	1954.50	166.15	8535.88	-10884.00	110201.90	1190

All ownership variables, votes (V) and capital (C), are given in percentage. The vote-differentiation dummy variable (Vote-diff) takes the value one if the firm has vote-differentiated shares, zero otherwise. Sales are given in millions of Swedish kronor (SEK).

It is interesting to note the share of control rights controlled by the largest shareholder, V1. On average, the largest shareholder in the sample firms' control 34.84 percent of the votes in the firm, see Table 3. This concentrated ownership is as mentioned in the introduction remarkable, not only because of the concentrated ownership compared to other European and Anglo-Saxon countries, but also because of the relative size of the Swedish firms in the sample (mean Sales 11231.43 million SEK[9]). The sample of firms is therefore consistent with the view that the Swedish economy to a large extent is dominated by closely held, relatively large, often old industrial and multinational firms (Agnblad et al., 2001, Högfeldt, 2004, Jakobsson and Henrekson, 2006).

When considering cash flow-rights (C1), the share controlled by the largest owner is on average 23.77 percent, substantially lower than the vote rights (V1=34.84), but still remarkably high in an international comparison. The median values for these two variables also support this notion, that the single largest owner controls the firm to a large extent by vote-differentiated shares (median C1=20.50% and median V1=31.30%).

For the Foreign and Institutional owners cash flow rights seem to be more important than control, in line with our expectation. The ownership of vote rights for foreign and institutional owners (FV=18.12% and IV=11.14%) is substantially below the level of cash flow rights (FC=20.59% and IC=14.11). For both ownership types the difference is around three percent, which support the hypothesis that the two ownership types are in fact very similar. That is, the

[9] Approximately 1,2 Billion €, or 1,6 Billion $ as by June 2007.

majority of the foreign owners are in fact institutions. The incentive structure and the influence of ownership on the performance should therefore be similar for foreign and institutional owners, as expected by hypothesis 1a and 1b.

Dividing the sample according to whether or not the firms have vote-differentiated shares reveals some additional insights. Table 4, shows the descriptive statistics of the group of firms with only one type of shares (one-share-one-vote). This group represents 37 percent of the total sample of 189 firms, or 445 observations. It also seems that this group on average represents smaller firms, compared to the group of firms that have vote-differentiated shares described in Table 5.

Table 4. Descriptive statistics firms without vote-differentiated shares

	Mean	**Median**	**Std. dev.**	**Min**	**Max**	**Obs**
$\mathbf{D_t}$	130.14	0	544.10	0	5656.38	445
$\mathbf{D_t\text{-}D_{(t-1)}}$	18.55	0	186.74	-1006.33	2812.53	445
$\mathbf{Prstkc_{ti}}$	9.62	0	89.04	0	1158.50	445
$\mathbf{TPay_{ti}}$	139.76	0	555.14	0	5656.38	445
$\mathbf{TPay_{ti}\text{-}TPay_{(t-1)i}}$	18.55	0	186.74	-1006.33	2812.53	445
$\mathbf{E_t}$	312.20	10.69	1588.51	-5823.43	17972.37	445
$\mathbf{E_t\text{-}E_{(t-1)}}$	44.32	7.77	1210.15	-14052.01	18860.71	445
C1	22.09	19.4	13.78	2.50	74.50	445
V1	22.09	19.4	13.78	2.50	74.50	445
C5	43.91	42.3	17.63	6.40	89.20	445
V5	43.91	42.3	17.63	6.40	89.20	445
FC	22.39	18.2	17.94	0	77.00	445
FV	22.39	18.2	17.94	0	77.00	445
IC	14.03	11.3	12.01	0	54.90	445
IV	14.03	11.3	12.01	0	54.90	445
Vote-Diff	0	0	0	0	0	445
Sales	4646.75	650.63	12093.59	0.05	87661	445
Employed	2.48	0.39	5.96	0.03	39.61	445
R&D-exp	81.49	0	287.87	0	2875	445
WCap	565.97	113.95	1832.96	-6236.19	13727.85	445

All ownership variables, votes (V) and capital (C), are given in percentage. The vote-differentiation dummy variable (Vote-diff) takes the value one if the firm has vote-differentiated shares, zero otherwise. Sales are given in millions of Swedish kronor (SEK).

The group of firms with vote-differentiated shares consists of 745 observations which represent 63 percent of the total number of firms in the sample. Looking at the figures for Sales, R&D, and Working Capital, and comparing Table 4 and Table 5, confirm that the firms with vote-differentiated shares are on average larger than the firms without vote-differentiated shares.

Table 5. Descriptive statistics firms with vote-differentiated shares

	Mean	Median	Std. dev.	Min	Max	Obs
D_t	339.58	18.53	896.33	0	7862	745
D_t-$D_{(t-1)}$	39.62	0	478.83	-5169.44	4939.98	745
$Prstkc_{ti}$	39.14	0	395.79	0	6518.13	745
$TPay_{ti}$	378.72	18.54	1036.95	0	8996.52	745
$TPay_{ti}$-$TPay_{(t-1)i}$	39.62	0	478.83	-5169.44	4939.98	745
E_t	954.99	69.40	3293.19	-34529.32	30724	745
E_t-$E_{(t-1)}$	98.97	9.75	2401.13	-40652.38	37146.87	745
C1	24.77	20.90	15.86	1	74.10	745
V1	42.43	40.70	20.51	2.90	95.10	745
C5	48.86	48.50	18.61	8.90	97.50	745
V5	66.58	69.50	18.09	9.60	98.80	745
FC	19.51	15.30	17.10	0	79.60	745
FV	15.54	9.00	17.94	0	93.50	745
IC	14.15	11.60	12.45	0	54.70	745
IV	9.42	6.80	9.85	0	67.60	745
Vote-Diff	1	1	0	1	1	745
Sales	15164.57	1613.46	37642.09	1.02	298428.10	745
Employed	9.58	0.97	25.47	0.01	216.99	745
R&D-exp	599.97	0	3786.24	0	49553.76	745
WCap	2783.89	204.42	10611.02	-10884.00	110201.90	745

All ownership variables, votes (V) and capital (C), are given in percentage. The vote-differentiation dummy variable (Vote-diff) takes the value one if the firm has vote-differentiated shares, zero otherwise. Sales are given in millions of Swedish kronor (SEK).

The correlation between the different variables is provided in Table 6, provided in appendix A. The correlations confirm the negative relationship between both foreign ownership in capital and votes (FC and FV) and institutional ownership of votes and capital (IC and IV) relative vote-differentiation. Also a high correlation between dividends and earnings is evident as expected.

Repurchase of shares ($Prstkc_{ti}$) only constitute a fractional part of the total payout by the sample firms. Due to regulation, this way of distributing funds back to the shareholders has previously been closed for Swedish firms. The correlation matrix (Table 6 appendix A) nonetheless confirms a positive correlation between institutional ownership and this type of payout. As few firms in the sample have made use of this method to distribute cash to the shareholders, the focus of this paper is placed on dividend changes.

5. Empirical Results and Analysis

In order to test if there is any linear relationship between institutional ownership and dividend policy the partial adjustment model with interacted institutional ownership is estimated in Model 1. The estimation is made in the form of a pooled-OLS, and ownership is measured both as percentage of votes and capital. The results are presented in Table 7. The results support hypothesis 1, with a positive effect of institutional ownership on changes in dividends, for institutional ownership measured by votes. Although robust in terms of size and sign, the coefficient on institutional ownership is insignificant when ownership is measured in terms of capital. The estimated coefficient on previous periods dividends $Div_{(t-1)}$ is negative and significant which suggest that the firms adjust dividends slowly to changes in earnings, which confirms the findings in Short et al., (2002).

In order to account for a potential non-linear effect of institutional ownership on dividend changes another interaction term of squared institutional ownership and earnings is added (Grier and Zychowicz, 1994; Schooly and Barney, 1994; Crutchely et al., 1999), see Model 2. This allows for a marginally diminishing effect of institutional ownership on dividends changes. Pindado and de la Torre (2006) use a somewhat different approach with optimal breakpoints of the value-ownership relation estimated in Miguel et al (2004). As institutional ownership is measured as the aggregate ownership share by this type of investor, this specification seems unwarranted. Each individual institutional owner has its specific breakpoint associated with its investment profile etc. Consequently only a diminishing effect of aggregate institutional ownership will be tested. The results from the estimation of Model 2 are also reported in Table 7.

Table 7. Pooled-OLS estimations; Model 1 linear and Model 2 non-linear institutional ownership (votes) and (capital)

Dependent Variable (Div_t-$Div_{(t-1)}$)	**Model 1a (votes)**	**Model 1b (capital)**	**Model 2a (votes)**	**Model 2b (capital)**
$\mathbf{E_t}$	0.1247* (26.69)	0.1248* (26.60)	0.1236* (26.30)	0.1233* (26.16)
$\mathbf{E_{(t-1)}}$	-0.0612* (-5.21)	-0.0616* (-4.89)	-0.0777* (-5.49)	-0.1072* (-5.07)
$\mathbf{E_{(t-1)}}$***Inst**	0.0007* (2.56)	0.0007 (1.45)	0.0028* (2.71)	0.0055* (2.95)
$\mathbf{E_{(t-1)}}$***Inst^2**			-0.00005** (-2.09)	-0.0001* (-2.68)
$\mathbf{E_{(t-1)}}$***VoteDiff**	0.0133 (1.26)	0.0110 (1.02)	0.0193*** (1.76)	0.0112 (1.05)
$\mathbf{Div_{(t-1)}}$	-0.2122* (-10.30)	-0.2067* (-10.02)	-0.2224* (-10.52)	-0.2081* (-10.12)
constant	13.9757 (1.48)	13.8101 (1.46)	13.5043 (1.43)	15.5981 (1.65)
Number of obs=1190 Number of groups=189	R^2=0.3990 R^2adj=0.3965	R^2=0.3967 R^2adj=0.3942	R^2=0.4012 R^2adj=0.3982	R^2=0.4004 R^2adj=0.3973

t-statistics, in parenthesis.
* denotes significance at the 1% level, ** denotes significance at 5%, and *** denotes significance at the 10% level.

The estimates of the non-linear specification of Model 2 again reveal a positive and significant relation between institutional ownership and changes in dividends. As Model 2 is more correctly specified, institutional ownership both in terms of votes (model 2a) and capital (Model 2b), is found positive and significant. For ownership measured as votes the coefficient related to the use of vote-differentiated shares is also significant. This suggests that firms using vote-differentiated shares have higher levels of dividends, hypothesis 2. The speed of adjustment coefficient, related to previous period's dividends is significant and negative as expected. This period earnings are positive and significant as expected. Consistent with the equality and stability conditions of the model, the estimated parameter for previous period's earnings is negative.

As displayed by the descriptive statistics there are substantial size and scale effects in the sample of firms. For the OLS-regression to produce efficient estimates under such conditions we need to control that the data is homoskedastic. The Breusch-Pagan/Cook-Weisberg test[10] however, reveals that the sample suffers from severe heteroscedasticity, and consequently we cannot rely on the results of the OLS-estimation for inference. To account for this heteroscedasticity in the data a GLS-methodology is required. Utilizing both the cross-sectional and time-series properties of the data an FGLS-regression will allow heteroscedasticity in the panels (firms) as well as panel-specific correlation (AR(1)).

By including a time specific dummy variable it is also possible to control for temporal effects, so that one can control for the effect of macroeconomic variables that might influence the firms and their dividend behavior, as well as their ownerships structures.

Table 8 provides the results for the FGLS-estimations, Model 3, where ownership is measured both in terms of votes (Model 3a) and capital (Model 3b). As expected, institutional ownership is found to have a significantly positive effect on dividends payout, when ownership is measured in terms of votes, which support hypothesis 1. The presence of institutional owners is thus associated with firms that have a higher dividend payout ratio. For institutional ownership in terms of capital share, the results are insignificant but of the expected sign. The use of vote-differentiated shares is again found to be positively related to dividend changes in support of hypothesis 2. This relation holds for ownership measured both in terms of votes and capital.

[10] Breusch-Pagan/Cook-Weisberg test for heteroskedasticity
H_0: constant variance Variables: fitted values of Div_t-$Div_{(t-1)}$
Chi2(1) = 171.96 Prob>chi2 = 0.0000
Breusch-Pagan/Cook-Weisberg test for heteroskedasticity
H_0: constant variance
Variables: fitted values of E_t $E_{(t-1)}$ $E_{(t-1)}$*Inst (votes) $E_{(t-1)}$*Inst2 (votes) $E_{(t-1)}$*VotDiff Dummy $Div_{(t-1)}$
Chi2(1) = 171.96 Prob>chi2 = 0.0000
Each of these tests indicates that there is a significant degree of heteroscedasticity in this model. In order to get efficient estimators and account for this heteroscedasticity GLS estimation is thus required.

Table 8. Cross-sectional time-series FGLS estimations; Model 3 institutional ownership (votes) and (capital)

Dependent Variable ($\mathbf{Div_t - Div_{(t-1)}}$)	**Model 3a (votes)**	**Model 3b (Capital)**
$\mathbf{E_t}$	0.0817*	0.0821*
	(23.21)	(21.47)
$\mathbf{E_{(t-1)}}$	-0.0412*	-0.0395*
	(-6.15)	(-4.89)
$\mathbf{E_{(t-1)}}$***Inst**	0.0007***	0.0009
	(1.82)	(1.50)
$\mathbf{E_{(t-1)}}$***Inst**^{2}	-9.59e-06	-1.4e-05
	(-1.06)	(1.08)
$\mathbf{E_{(t-1)}}$***VoteDiff**	0.0244*	0.0217*
	(4.21)	(3.47)
$\mathbf{Div_{(t-1)}}$	-0.1878*	-0.1906*
	(-8.79)	(8.57)
constant	7.1562*	8.0771*
	(7.75)	(7.60)
Number of obs=1190		
Number of groups=189		

t-statistics, in parenthesis. Panels: heteroskedastic. Correlation: panel-specific AR(1).
* denotes significance at the 1% level, ** denotes significance at 5%, and *** denotes significance at the 10% level.

In order to investigate the role of institutional owners in the context of the agency conflict related to the separation of ownership and control the sample of firms is separated into two groups depending on whether or not they have vote-differentiated shares. Naturally the interaction term with the dummy for vote-differentiation is taken out of the regressions, as it would have produced collienarity.

Table 9 present the results from the FGLS-estimations when the firms are dividend into groups depending on whether or not they have a vote-differentiated share structure, Model $3a^I$ and $3b^I$ (not vote-differentiated shares) and Model $3a^{II}$ and $3b^{II}$ (vote-differentiated shares). The estimations are made for ownership both in terms of votes and capital.

Table 9. Cross-sectional time-series FGLS estimations; Model 3a firms with vote-differentiated shares, Model 3b firms without vote-differentiated shares

Dependent Variable (Div_t-$Div_{(t-1)}$)	**Model 3a^{I} (votes)**	**Model 3b^{I} (Capital)**	**Model 3a^{II} (votes)**	**Model 3b^{II} (Capital)**
E_t	0.0528*	0.0529*	0.0840*	0.0876*
	(9.71)	(9.71)	(19.76)	(18.41)
$E_{(t-1)}$	-0.0237*	-0.0235*	-0.0206*	-0.0215*
	(-3.09)	(-3.07)	(-4.17)	(-2.58)
$E_{(t-1)}$*Inst	-0.0013	-0.0012	0.0012**	-0.0015**
	(-1.48)	(-1.57)	(2.35)	(-1.97)
$E_{(t-1)}$*Inst^2	3.0e-05	3.2e-05	-9.15e-06	-2.9e-05
	(1.52)	(1.60)	(-0.74)	(-1.60)
$Div_{(t-1)}$	-0.0613***	-0.0598***	-0.2090*	-0.2282***
	(-1.80)	(-1.75)	(-7.97)	(-7.80)
constant	2.9757*	2.9029*	8.7769*	9.9986*
	(3.15)	(3.11)	(7.38)	(6.49)
Nr obs Model 4a=443^{A}				
Nr groups Model 4a=85				
Nr obs Model 4b=742^{B}				
Nr groups Model 4b=116				

t-statistics, in parenthesis. Panels: heteroskedastic. Correlation: panel-specific AR(1).
^{A} note: 2 obs dropped because only 1 obs in group. ^{B} note: 3 obs dropped because only 1 obs in group.
* denotes significance at the 1% level, ** denotes significance at 5%, and *** denotes significance at the 10% level.

As can be seen from Table 9, comparing Model 3a^{I} and 3b^{I} with Model 3a^{II} and 3b^{II}, institutional ownership only has a positive effect on dividend changes if the firms have vote-differentiated shares. This means that firms that separate cash-flow rights from control rights suffer more from agency problems, and that institutional owners require these firms to pay higher dividends in order to reduce the cash available for management. This result is in accordance with the predictions of the agency-theory arguments (Rozeff, 1982; Easterbrook, 1984; Jensen, 1986; Eckbo and Verma 1994; Zeckhauser and Pound 1990). No significance is found with respect to the non-linear parameter ($E_{(t-1)}$*$Inst^2$).

The coefficients on Earnings in period *t* (E_t), and in period *t-1* ($E_{(t-1)}$) is also significant at the one percent level. Previous periods dividend payout ($Div_{(t-1)}$) is again significant, both statistically and in real economic terms. This indicates that the firms only partially adjust to the dividends to meet changed target dividend levels.

A key assumption which must hold if the FGLS method is to provide reliable estimates is that the errors are randomly distributed. Most likely, the errors are in fact correlated to the regressors, or in other words, there are individual firm effects. To test weather this is true, a fixed effects model which allows not only time effects but also individual firm effects is tested (Model 4 in Table 11). The Hausman test, see Table 10, confirms that the suspicion of individual effects and the Hausman-H_0 of non-correlated errors can be soundly rejected.

Table 10. Hausman FE versus FGLS

Coefficients $(Div_t-Div_{(t-1)})$	**(b) FE**	**(B) FGLS**	**(b-B) Difference**	**Sqrt**(V_b-V_B) **S.E.**
E_t	0.10599	0.0816612	0.0243288	0.0030881
$E_{(t-1)}$	-0.1099932	-0.0411918	-0.0688013	0.0160255
$E_{(t-1)}$***Inst**	0.0066211	0.0007474	0.0058737	0.0010714
$E_{(t-1)}$***Inst**^{2}	-0.0001674	-9.59e-06	-0.0001578	0.0000238
$E_{(t-1)}$***VoteDiff**	0.0773946	0.0244164	0.0529782	0.0131911
$Div_{(t-1)}$	-0.6094095	-0.1878341	-0.04215754	0.024296
b = consistent under Ho and Ha; obtained from xtreg B = inconsistent under Ha, efficient under Ho; obtained from xtgls	Test: Ho: difference in coefficients not systematic chi2(6) = (b-B)'[(V_b-V_B)^(-1)](b-B) = 1321.77* Prob>chi2 = 0.0000			

*The Hausman test rejects the hypothesis that the errors are uncorrelated with the repressors. There seem to be significant firm effects. Thus a fixed-effects model is needed in order to produce efficient estimators.

The Hausman test confirms the existence of significant firm effects correlated to the regressors and the Fixed-Effects estimation method is consequently correct. Table 11 presents the results from this estimation with individual firm and time effects, Model 4. As before, Model 4 is estimated with ownership both in terms of votes (Model 4a) and capital (Model 4b).

Table 11. Fixed-effects estimations; Model 4 institutional ownership (votes) and (capital)

Dependent Variable $(Div_t-Div_{(t-1)})$	**Model 4a (votes)**	**Model 4b (Capital)**
E_t	0.1060* (7.86)	0.1065* (8.76)
$E_{(t-1)}$	-0.1100* (-2.85)	-0.1320* (-2.34)
$E_{(t-1)}$***Inst**	0.0066* (2.77)	0.0079** (2.23)
$E_{(t-1)}$***Inst**^{2}	-0.0002* (-2.69)	-0.0002* (-2.76)
$E_{(t-1)}$***VoteDiff**	0.0774* (3.08)	0.0514* (2.17)
$Div_{(t-1)}$	-0.6094* (-2.96)	-0.5582* (-2.81)
Fixed effects significant? Number of obs=1190 Number of groups=189	Yes* R^2 within=0.5054 between=0.4884 overall=0.1774	Yes* R^2 within=0.4913 between=0.4980 overall=0.1965

Robust t-statistics, in parenthesis.
* denotes significance at the 1% level, ** denotes significance at 5%, and *** denotes significance at the 10% level.

The results are now highly significant. Again, the coefficient of earnings in period *t* ($\mathbf{E_t}$) is significant and positive, and earnings in *t-1* ($E_{(t-1)}$) is significant and negative. As expected there is a significant earnings component related to dividends. The coefficients related of dividends in previous period ($Div_{(t-1)}$) are likewise again significant and negative with respect to dividend change. Recall that this term represents the "speed of adjustment" of dividend changes. The results for the estimation with institutional ownership both in terms of votes and capital share are in fact remarkably stable with regards to the size of the coefficients etc. The elasticity of dividends with regards to changes in earnings is around 30 percent, which seems highly plausible. This again confirms the correctness of the model formulation.

In both estimations vote-differentiated shares have a significantly positive effect on dividend changes. Again this is an indication that investors demand higher dividends in firms which allow vote-differentiated shares. Accordingly, hypothesis 1a, 1b, and 2 are corroborated.

As before with the FGLS-estimation, the sample of firms is separated into two groups depending on weather or not they have vote-differentiated shares. Again, the interaction term made up of earnings and the dummy for vote-differentiation is taken out of the regressions, as it would produce collinearity. Table 12 provides the results for the Fixed-effects estimation with institutional ownership, when the sample of firms is divided in two groups depending on weather or not they have vote-differentiated shares (Model $4a^{I}$ and $4b^{I}$ and Model $4a^{II}$ and $4b^{II}$).

Table 12. Fixed-effects estimations; Model 4a firms without vote-differentiated shares, Model 4b firms with vote-differentiated shares

Dependent Variable (Div_t-$Div_{(t-1)}$)	**Model $4a^{I}$ (votes)**	**Model $4b^{I}$ (capital)**	**Model $4a^{II}$ (votes)**	**Model $4b^{II}$ (capital)**
$\mathbf{E_t}$	0.1285* (3.73)	0.1285* (3.73)	0.0988* (6.79)	0.1011* (7.91)
$\mathbf{E_{(t-1)}}$	-0.0835*** (-1.71)	-0.0835*** (-1.71)	-0.0243 (-1.01)	-0.0737 (-1.44)
$\mathbf{E_{(t-1)}}$***Inst**	0.0006 (-0.11)	-0.0006 (-0.11)	0.0069* (2.61)	0.0079** (1.98)
$\mathbf{E_{(t-1)}}$***Inst^2**	5.37e-06 (0.04)	5.38e-06 (0.04)	-0.0002** (-2.45)	-0.0002** (-2.35)
$\mathbf{Div_{(t-1)}}$	-0.4287*** (-1.68)	-0.4287*** (-1.68)	-0.6594* (-2.76)	-0.5920** (-2.61)
Fixed effects significant?	Yes*	Yes*	Yes**	Yes**
Nr obs Model 4a=445	R^2	R^2	R^2	R^2
Nr groups Model 4a=87	within=0.6961	within=0.6961	within=0.4990	within=0.4815
Nr obs Model 4b=745	between=0.5934	between=0.5934	between=0.3745	between=0.3778
Nr groups Model 4b=119	overall=0.0827	overall=0.0827	overall=0.1902	overall=0.2178

Robust t-statistics, in parenthesis.
* denotes significance at the 1% level, ** denotes significance at 5%, and *** denotes significance at the 10% level.

Looking at the results of Model 4 in Table 12, there is as expected a positive but non-linear relation between institutional ownership and dividend changes when the firms have a vote-differentiated share structure (Model $4a^{II}$ and $4b^{II}$). Based on the arguments of Miguel et al., (2004) and the discussion about institutional owners' incentives, monitoring and entrenchment effects hypothesis (1b) of non-linearity between institutional ownership and dividend behaviour was formulated. To control for this eventual non-linearity additional

interaction terms of squared institutional ownership were added[11]. The significance of these estimated parameters confirms hypotheses 1a and 1b of a positive and diminishing effect of institutional ownership on dividend changes, both for ownership in terms of votes (column 3) and capital (column 4). For large investors in general, Mork et al (1988) find that profitability is higher for firms with shareholders that have up to 5 percent ownership stakes, beyond that, profitability drops (see section 2 for further discussion).

As the sample of firms is divided between firms who use vote-differentiated shares and firms that do not (Model $4a^{I}$ and $4b^{I}$ and Model $4a^{II}$ and $4b^{II}$), the estimated coefficient on previous period's earnings looses its significance in the group of firms that have vote-differentiated shares (Model $4a^{I}$ and $4b^{I}$).

The results for all the estimations are remarkably robust in terms of the sign and size of the coefficients. The pooled OLS results strongly support the results in the FGLS estimation. However, as there are significant individual firm effects the fixed-effects method is more appropriate, although the FGLS results point in the same direction. Furthermore the use of institutional ownership measured continuously and not simply by dummy variables related to fixed levels of ownership percentages provides a more thorough understanding of the non-linear relationship between ownership and dividend policies.

As much of the analysis is based on reported earnings, the usual caveats related to accounting figures apply. Ownership, however, is a very stable variable over time, even though institutional ownership belongs to the category of ownership that is perhaps most volatile. This and the inclusion of time and firm effects in the estimation give a good indication of the robustness in the results. All estimations have also been made with total payout (reported in Table 13 and 14, Appendix B). These results, although limited by the small number of firms involved in share repurchases in the sample, support the estimation results for dividends.

6. Conclusions

This paper investigates the relationship between institutional ownership and dividends. To test this relationship a version of the so called earnings trend model is utilized, with the inclusion of interaction terms made up of institutional ownership. Using a panel data methodology which accounts for firm-specific effects and time effects, unobservable heterogeneity is controlled for. Furthermore the relationship is tested by extending the investigation into a non-linear setting in which incentives, monitoring and agency-cost effects can be more accurately accounted for.

The results clearly show that institutional ownership, both in terms of votes and capital, where these two are separated, has a positive effect on dividend payout policies. So even if high desired levels of dividends can be seen as a sign of "short-sightedness" (Hutton, 1995 and Haskins, 1995), it might just as well be an effect of these owners' attempts to reduce the free cash-flow available to management as argued by Jensen (1986). Institutional owners might thus serve a monitoring role, and in doing so mitigate the problems associated with the separation of ownership and control in listed firms. The relation is found to be positive but diminishing which supports previous research concerning non-linearity and ownership structure. The use of a comprehensive database covering institutional ownership continuously

[11] A cubic specification of the model has been tested but yields no significant results.

allowed for this additional test and also the rejection of other functional forms of ownership such as cubic forms. Furthermore and in line with expectations, earnings have a positive impact on dividend changes.

By examining Swedish listed firms the paper also provides empirical evidence on the effects of control instruments such as dual-class shares on dividends policies. The result, in line with agency-cost theory, is that control instruments such as vote-differentiated shares, induce investors to demand higher levels of dividends as compensation for the increased agency-costs. This means that firms using this type of control instrument suffer more form subsequent agency-problems.

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Appendix A

Table 6. Correlation matrix pairwise correlation

Variable	Div_t	ΔDiv	Prstkc	TP_t	ΔTP	E_t	ΔE	C1	V1	C5
Div_t	1.000									
ΔDiv	0.518*	1.000								
Prstkc	0.152*	0.032	1.000							
$TPay_t$	0.936*	0.450*	0.490*	1.000						
ΔTP	0.508	1.000*	0.032	0.460*	1.000					
E_t	0.778*	0.107*	0.216*	0.763*	0.481*	1.000				
ΔE	0.197*	0.112*	0.066*	0.197*	0.518*	0.470*	1.000			
C1	-0.021	0.007	-0.064*	-0.042	0.010	-0.050	0.018	1.000		
V1	0.034	-0.033	-0.067*	0.006	0.010	-0.009	-0.017	0.780*	1.000	
C5	-0.092*	-0.013	-0.083*	-0.111*	-0.037	-0.114*	-0.063*	0.792*	0.660*	1.000
V5	0.029	-0.028	-0.079*	-0.002	-0.011	0.017	0.029	0.636*	0.823*	0.789*
FC	0.192*	-0.001	0.072*	0.195*	0.060*	0.191*	0.048	-0.212*	-0.207*	-0.219*
FV	0.062*	0.018	0.044	0.070*	0.043	0.095*	0.047	-0.151*	-0.269*	-0.145*
IC	0.203*	0.042	0.103*	0.216*	0.056	0.180*	0.029	-0.216*	-0.163*	0.197*
IV	0.209*	0.040	0.151*	0.238*	0.056	0.192*	0.019	-0.242*	-0.328*	-0.239*
VotDiff	0.128*	-0.016	0.045	0.129*	0.026	0.111*	0.013	0.086*	0.473*	0.130*
Sales	0.734*	0.027	0.176*	0.710*	0.150*	0.541*	-0.015	0.115*	-0.010	-0.157*
Emp	0.523*	0.113*	0,117*	0.503*	0.113*	0.433*	0.022	-0.139*	-0.014	-0.143*
R&D	0.409*	0.022	0.060*	0.382*	0.022	0.175*	-0.110*	-0.119*	-0.004	-0.134*
WCap	0.579*	0.149*	0.128*	0.556*	0.149*	0.356*	0.055	-0.133*	-0.015	-0.171*

Variable	V5	FC	FV	IC	IV	VotDiff	Sales	Emp	R&D-exp	WCap
Div_t										
ΔDiv										
Prstkc										
$TPay_t$										
ΔTP										
E_t										
ΔE										
C1										
V1										
C5										
V5	1.000									
FC	-0.208*	1.000								
FV	-0.268*	0.920*	1.000							
IC	-0.152*	-0.001*	-0.011	1.000						
IV	-0.321*	0.058*	0.064*	0.899*	1.000					
VotDiff	0.520*	-0.080*	-0.182*	0.005	-0.203*	1.000				
Sales	0.039	0.245*	0.050	0.184*	0.208*	0.164*	1.000			
Emp	0.034	0.295*	0.108*	0.158*	0.154*	0.166*	0.743*	1.000		
R&D	0.075*	0.164*	-0.031	0.027	0.033	0.083*	0.668*	0.395*	1.000	
WCap	0.045	0.204*	-0.003	0.097	0.117*	0.126*	0.790*	0.500*	0.902*	1.000

*Correlation coefficient significant at the 5% level.

Appendix B

Table 13. Fixed-effects estimations; Model 4 institutional ownership (votes) and (capital), Total Payout

Variable ($TPay_t$-$Tpay_{(t-1))}$	Model 4 (votes)	Model 4 (Capital)
E_t	0,1152* (10,65)	0,1138* (11,25)
$E_{(t-1)}$	-0,1428* (-5,31)	-0,1690* (-3,61)
$E_{(t-1)}$*Inst	0,0045** (2,36)	0,0068*** (1,84)
$E_{(t-1)}$*$Inst^2$	-0,0001** (-2,27)	-0,0001*** (-1,86)
$E_{(t-1)}$*VoteDiff	0,0873* (4,35)	0,0708* (3,75)
$TPay_{(t-1)}$	-0,3245* (-2,63)	-0,3193* (-2,61)
Fixed effects significant? Number of obs=1190 Number of groups=189	Yes* R^2 within=0,4396 between=0,2192 overall=0,3075	Yes* R^2 within=0,4375 between=0,2685 overall=0,2981

Robust t-statistics, in parenthesis.
* denotes significance at the 1% level, ** denotes significance at 5%, and *** denotes significance at the 10% level.

Table 14. Fixed-effects estimations; Model 4a firms without vote-differentiated shares, Model 4b firms with vote-differentiated shares, Total Payout

Variable ($TPay_t$-$TPay_{(t-1)}$)	Model 4a (votes)	Model 4a (capital)	Model 4b (votes)	Model 4b (capital)
E_t	0,1082* (3,83)	0,1082* (3,83)	0,1155* (9,63)	0,1141* (10,10)
$E_{(t-1)}$	-0,0836*** (-1,73)	-0,0836*** (-1,73)	-0,0564* (-3,46)	-0,1065** (-2,38)
$E_{(t-1)}$*Inst	-0,0025 (-0,51)	-0,0025 (-0,151)	0,0046** (2,30)	0,0076*** (1,85)
$E_{(t-1)}$*$Inst^2$	5,1e-05 (0,42)	5,1e-05 (0,42)	-8,7e-05** (-2,11)	-0,0002*** (-1,83)
$TPay_{(t-1)}$	-0,2569 (-1,46)	-0,2569 (-1,46)	-0,3239** (-2,41)	-0,3197** (-2,42)
Fixed effects significant? Nr obs Model 4a=445 Nr groups Model 4a=87 Nr obs Model 4b=745 Nr groups Model 4b=119	Yes* R^2 within=0,6752 between=0,5837 overall=0,1311	Yes* R^2 within=0,6752 between=0,5837 overall=0,1311	No R^2 within=0,4226 between=0,0308 overall=0,3452	Yes*** R^2 within=0,4207 between=0,0648 overall=0,3334

Robust t-statistics, in parenthesis.
* denotes significance at the 1% level, ** denotes significance at 5%, and *** denotes significance at the 10% level.