

INSTITUTIONAL OWNERSHIP AND RETURNS ON INVESTMENT

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Abstract

This paper examines how institutional investors influence investment decisions and returns on investment. To measure investment performance, we use marginal q , which measures the ratio of the return on investment to the cost of capital. Institutional owners are found to have a positive but marginally diminishing effect on performance. Our paper uses longitudinal data on Swedish firms from 1999 to 2005; during this period, the ownership structure of Swedish firms underwent dramatic changes as institutional investors increased their ownership shares, while ownership by Swedish households decreased. However, controlling owners - who were often founding families - maintained their control of firms by resorting to extensive use of dual-class shares. This was an important determinant of firm performance that eradicated the positive influence of institutional ownership.

Keywords: Corporate Governance, Institutions, Ownership, Performance, Tobin's Average Q, Marginal Q

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1. INTRODUCTION

The role of institutional investors in publicly listed firms has grown dramatically in recent decades; similarly, academic interest has increasingly focused its attention upon the impact of institutional investors on corporate governance. Because they are large and powerful, both foreign and domestic institutional investors are frequently called upon to solve or minimize managerial discretion problems and other governance issues (Demsetz, 1983; Shleifer and Vishny, 1986; Smith, 1996). However, it remains unclear as to whether institutional investors reduce or aggravate managerial discretion problems and how such investors affect investment performance.

This paper provides empirical evidence regarding the effect of institutional ownership on firms' investment performance. Recognizing that institutional investors are not identical to one another, we examine the effects of both domestic and foreign institutional investors. To measure performance, we employ a new methodology in which performance is calculated as the return on investment relative to the cost of capital. Many similar studies have used Tobin's average q as a measure of performance (Morck et al., 1988; Demsetz and Lehn, 1985; Agrawal and Knoeber, 1996; Loderer and Martin, 1997; McConnell and Servaes, 1990; Himmelberg et al. 1999; Cho, 1998; Demsetz and Villalonga, 2001; Dahlqvist and Robertsson, 2001; and Cronqvist and Nilsson, 2003; Gugler (2001) provides an extended survey). However, Tobin's average q has several

disadvantages. In particular, to assess investment efficiency, a marginal measure is more appropriate (Gugler and Yurtoglu, 2003). As our measure, therefore, we have used marginal q —the ratio of a firm's return on investment to its cost of capital—as developed by Mueller and Reardon (1993), which measures how much value is generated by marginal investment.

A distinctive feature of continental European and Swedish corporate governance is strong concentration of ownership control (Angblad et al. 2001). Pyramid schemes and dual-class shares are common methods of maintaining control. In Sweden, such ownership structures have produced remarkably persistent ownership structures—even with a thriving capital market. As in most continental European countries, large commercial banks play a fundamental role in this market (Högfeldt, 2005). Thus, Sweden provides an interesting opportunity to investigate the impact of ownership structures on firm performance. In summary, we find that institutional investors exert a positive effect on investment performance; concurrently, we find that dual-class shares have a negative effect on investment performance.

Because strong performance may attract institutional investors, we address the issue of reverse causality in this paper. Using marginal q rather than Tobin's average q as a measure of performance, however, mitigates both the reverse causality problem and that of omitted variables.

The next section provides a short description of Swedish corporate ownership; section 3 discusses our hypotheses regarding the influence of

institutional investors on firm performance. Section 4 explains the methodology employed in this study and the derivation of our marginal q measure. Section 5 describes the variables used and provides

2. CORPORATE OWNERSHIP IN SWEDEN

La Porta et al (1998) present a ranking of legal traditions around the world and place common law as more efficient than civil law. In more detail, they rank the Anglo Saxon legal system as superior, followed by the Scandinavian and German legal system. The French, the archetype of civil law systems, is ranked as the least beneficial for firm performance. The civil law systems are characterized by a concentration of ownership and control to a larger extent than in the UK and USA. In fact the dispersed ownership structure of UK and USA is an exception in a global perspective. Sweden, which is part of the Scandinavian legal system encompassing the Nordic countries, Sweden, Finland and Norway, is here an interesting example of how the ownership and control issues have been addressed over the last decades.

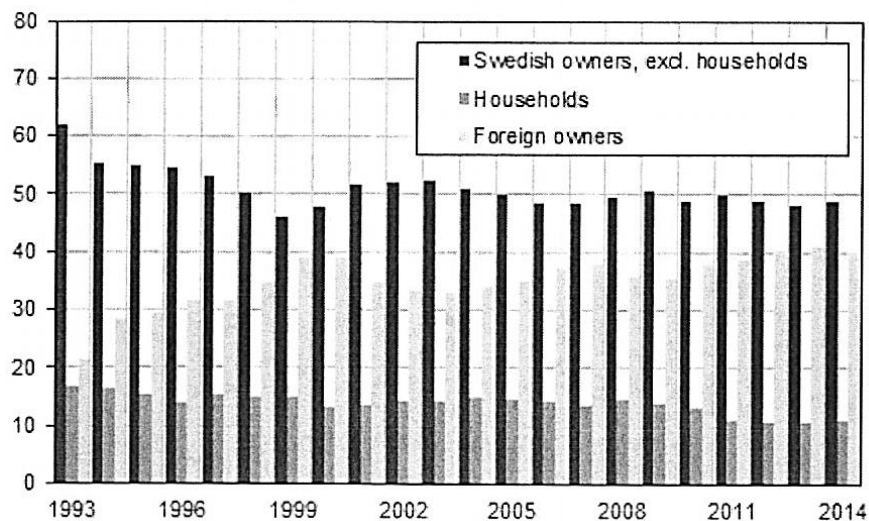
The Swedish corporate governance system has been remarkably successful in generating internationally competitive firms, such that the stock exchange is dominated by a few large Swedish-based multinational firms. To retain control in large growing listed firms is difficult for individuals. The financing of these companies put a constraint.

descriptive statistics, and section 6 describes our empirical analysis. Our results are presented in section 7. Section 8 summarizes the paper and draws conclusions.

Different control enhancing mechanisms have had to be resorted to. Most Swedish firms, even many large and public firms, are closely held and ultimately controlled by a single family. Dual-class shares (Angblad et al., 2001) that are combined with pyramid structures are important instruments for maintaining control of Swedish firms. Sweden is in fact among the few countries that extensively use these instruments simultaneously (La Porta et al., 1999). Closed investment funds have here had an important role to play in the pyramid structures.

However this ownership picture has changed during the last decades. Following the 1993 repeal of Swedish restrictions on foreign share ownership, foreign investors, particularly institutional investors, have acquired substantial stakes in leading Swedish companies (Figure 1). Currently, foreigners own approximately one-third of the equity on the Stockholm Stock Exchange (Statistics Sweden, June-2012). Concurrent changes in the Swedish pension system have also made substantial funds available for investment by private financial institutions. Domestic and foreign institutional owners, therefore, have become increasingly dominant and now jointly account for approximately 85% of market capitalization on the Stockholm Stock Exchange.

Figure 1. Ownership of shares listed on the Stockholm Stock Exchange (%) 1993-2014



Source: Swedish Financial Supervisory Authority

As shown in more detail in Table 1 the ownership shares of closed investment funds, households and insurance companies have declined since the early 1990s while foreign owners especially and to some extent also domestic open investment funds (mutual) have increased their ownership shares. The ownership sharers are likely to be susceptible to stock market fluctuations due to recessions and booms. An inspection of the Table 1 indicate that foreign ownership shares reach its max already in 1999 while open investment funds gets close to its max in 2005. Hence the period 1999-2005 is of interest.

Ownership stakes could tilt the incentives of insiders (such as managers and controlling owners) toward the pursuit of share-value maximizing strategies, but they may also lead to expropriation of outside minority shareholders. Concentrated ownership control has thus been found to be associated with both positive incentive effects and negative entrenchment effects (McEachern 1975; Jensen and Meckling, 1976; Morck et al., 1988; Stulz, 1988; Gugler et al., 2001). Which effect dominates is an empirical question and presumably depends on both the institutional framework - i.e., the particular instruments (such as dual-class shares) by which

control is maintained - and on the relative strength of non-controlling shareholders. Influential outside investors, such as institutional investors, might

possibly push the balance toward better management and better investment without actually having a controlling stake in the firm.

Table 1. Ownership of shares in companies quoted on Swedish exchanges

Year	Swedish households	Foreign owners	Closed investment funds	Open investment funds	Insurance companies	Other Swedish owners
2014	11.1	39.9	5.6	11.8	8.1	23.5
2013	10.9	41	5.4	11.7	8	23
2012	10.8	40.3	5.5	11.5	8.3	23.6
2011	11.2	38.7	5.3	11.9	8.7	24.1
2010	13.3	37.8	5.4	12.3	8.9	22.4
2009	13.9	35.4	5.3	12.6	9.1	23.7
2008	14.5	35.8	5.4	11.4	9	24
2007	13.4	38	5.6	10.9	8.3	23.8
2006	14.3	37.2	5.2	11.2	8.1	24
2005	14.8	35.3	5.3	11.8	8.7	24.1
2004	15	33.9	5.3	11.1	8.7	28
2003	14.4	33.1	5.6	11.6	9.2	26
2002	14.3	33.5	5.6	10.5	10.4	25.7
2001	13.7	34.6	6.1	9.8	11.6	24.2
2000	13.1	39	6.4	8.5	9.8	23.2
1999	15	39	5.9	8.3	12	19.8
1998	15	34.6	6.3	9.1	12.2	22.8
1997	15.3	31.6	6.5	9.4	12.6	24.6
1996	14	31.6	6.5	8.6	13.6	25.8
1995	15.4	29.6	6.7	9.1	13.3	25.8
1994	16.5	28.3	5.7	9.1	12.8	27.6
1993	16.8	21.3	6.8	9.9	12.8	32.9
1992	14.8	18	8.4	9.9	13.6	35.4

Source: Statistical Yearbook of Sweden 2014

Remark: The column other Swedish owners includes non-financial enterprises, banks, financial institutions, central and local government, social security funds and non-profit organizations.

3. INSTITUTIONAL INVESTORS AND HYPOTHESES

Most institutional investors, such as pension funds, life insurance companies and mutual funds, provide a better trade-off between risk and return than individual retail investors can achieve through direct holdings. Different types of institutional investors invest in different markets and take on particular types of clients for varying purposes, with many engaged in several markets simultaneously under fierce competition for clients and market share. Thus, institutional investors are a highly heterogeneous group that differs from one another with respect to the contractual relations between owners and managers, the rules that determine the distribution of risk and return and the definition of their liabilities.

Institutional investors are generally better than individuals at absorbing and processing information, an advantage that consumers are willing to pay for. However, this informational advantage may be large or small, depending on the type of institution and the type of information involved.

As a product of their size, institutions may have the possibility of exercising greater control over companies in which they invest. Berle (1960) argued that institutional investors may discipline managers simply by their importance as market participants - their "power without property" (Mueller, 2003) - whereas Hirschman (1970) showed how "voice" and "exit" can be used to reduce the moral hazards of managers. For these reasons, institutional ownership may mitigate inherent problems that arise with the separation of ownership and control (Berle and Means, 1932).

However, most institutional investors are themselves also characterized by separation of ownership and control, with resulting principal-agent incentive problems that may arise, for example, between boards of directors and asset managers. Asset managers have a fiduciary responsibility to individual investors, which is a relationship that may encourage a degree of caution and a desire to limit risk in the portfolio strategy. However, in the absence of perfect contracts and monitoring, asset managers may act in their own interests (e.g., generating excessive commission income) or in the interests of financial institutions with which they are related (e.g., intra-group financial support). These interests may be contrary to - or at least not directly consistent with - the interests of liability holders (Davis and Steil, 2001).

Despite the issues noted above and the high percentage of total market capitalization controlled by institutions, institutional investors are not typically engaged in controlling management because they tend to disproportionately invest in large companies; thus, their shareholdings in individual companies are frequently small (Goergen and Renneboog, 2001; Gompers and Metrick, 2001). Because aggregate institutional shareholdings in Swedish listed firms are approximately 10%, the potential benefits to institutional investors from active monitoring are unlikely to outweigh the costs of monitoring and tempt institutions to free ride (Shleifer and Vishny, 1997; Dahlqvist and Robertsson, 2001). Indeed, some institutional investors, such as mutual funds, may employ an expressly low-cost passive investment strategy with no intention to actively monitor any of the many

companies in their portfolios, preferring to simply sell off poorly performing firms ("exit"). The crucial empirical question therefore is whether the potential benefits of monitoring outweigh its costs. In addition, foreign institutional investors may have an informational disadvantage compared with domestic investors and thus be even more prone to a passive strategy.

Another reason for low institutional involvement in corporate governance issues relates to insider-trading regulations (Goergen and Renneboog, 2001). Unless institutional investors intend to simply "buy and hold", they must limit their involvement in corporate management.

For all these reasons, we might expect there to be a negative relationship between institutional ownership and firm performance, but there are also reasons to expect a positive relationship. Institutional investors are constantly evaluated by whether they succeed in generating shareholder value (Thomsen and Pedersen, 2000). Although "exit" may be employed to increase value, so may "voice" (as noted above).

Risk aversion is also less likely to play a role in any particular investment for institutional investors than for individuals because institutional investors are highly diversified and therefore may favor riskier projects with higher net present values. Considering these two aspects together with favorable financing conditions, we expect that there will be a positive relationship between institutional investors and investment performance (Nickel et al., 1997; McConnell and Servaes, 1990; Levin and Levin, 1982; Thomsen and Pedersen, 2000).

We therefore hypothesize that institutional investors use the influence that comes with ownership shares in a value-increasing manner and make the following hypothesis:

Hypothesis 1 (H1): Institutional investors positively affect investment performance.

Assuming that most of this positive effect occurs at a given threshold of ownership concentration, it seems plausible that the effect will not continue to increase linearly as institutional ownership rises (Morck et al., 1988; McConnell and Servaes, 1990; Gedajlovic and Shapiro, 1998; Pindado and de la Torre (2006); Miguel et al., (2004)). Therefore, our hypothesis two is the following:

Hypothesis 2 (H2): Investment performance increases at a diminishing rate with increasing institutional ownership.

It has been found that institutions have smaller ownership stakes in firms with vote-differentiated shares (Bjuggren, et al. 2007; Gompers and Metrick, 2001) and that institutional owners frequently "exit" such firms (Li et al., 2006), which supports the arguments of Bjuggren et al. (2007) about why vote-differentiated shares are likely to negatively affect investment performance. Thus, it is important to control for this effect in markets that permit these types of instruments. Therefore, we posit the following hypothesis:

Hypothesis 3 (H3): Separation of voting rights from cash-flow rights through the use of dual-class

shares reduces the positive effect of institutional ownership on firm investment.

Given the negative view of vote-differentiated shares, an explanation of why institutional investors purchase these types of shares is in order. Gompers and Metrick (2001) find that institutions tend to invest in liquid stocks. For many Swedish companies that offer both A-shares and B-shares (where each A-share confers ten votes, and each B-share confers only one vote), it is primarily B-shares that are regularly and publicly traded.

4. METHODS

To measure the effect of institutional ownership on investment performance, we estimated firms' marginal q values (Mueller and Reardon, 1993), which is essentially the marginal version of Tobin's average q . Such a measure is more suitable than Tobin's average q for our purposes because marginal q represents the return on the marginal, rather than the average, investment and thus indicates whether a firm is over- or under-investing relative to its cost of capital. The economic interpretation of marginal q is straightforward: for example, a q_m of 1.10, implies that an investment generates a 10% return above the cost of capital. For an investment to be efficient, the marginal q should equal one: if it is above one, there are additional profitable investments; if it is below one, less should be invested because the return is below the cost of capital. Marginal q can be derived in two ways: from the net present value rule of investment or, as here, directly from Tobin's average q .

Tobin's average q , q_a , which is the ratio of a firm's average return on capital to its cost of capital, is defined as the firm's market value at time t , M_t , divided by its replacement cost of capital at time t , K_t :

$$M_t / K_t = q_{a,t} \quad (1)$$

A q_a above one implies that the firm is earning above a competitive average return on invested capital. However, for adjustments of the capital stock, the marginal return on capital is more relevant. Marginal q , q_m , can be derived from average q as follows:

$$q_m = \frac{\Delta M_t}{\Delta K_t} = \frac{M_t - M_{t-1} - \delta M_{t-1}}{K_t - K_{t-1}} \quad (2)$$

where, $-\delta$ is the depreciation rate. Market value in period t can be written:

$$M_t = M_{t-1} + PV_t - \delta M_{t-1} + \mu_t \quad (3)$$

where, PV_t is the present value of cash flows of investment in period t , I_t , and μ_t is a standard error term. According to the net present value rule of investment, investment should increase to the point where $PV_t = I_t$, or $PV_t/I_t = 1$, which can be rewritten $PV_t/I_t = q_m$. Dividing both sides of Equation (3) by M_{t-1} and rearranging, we obtain the empirically testable equation,

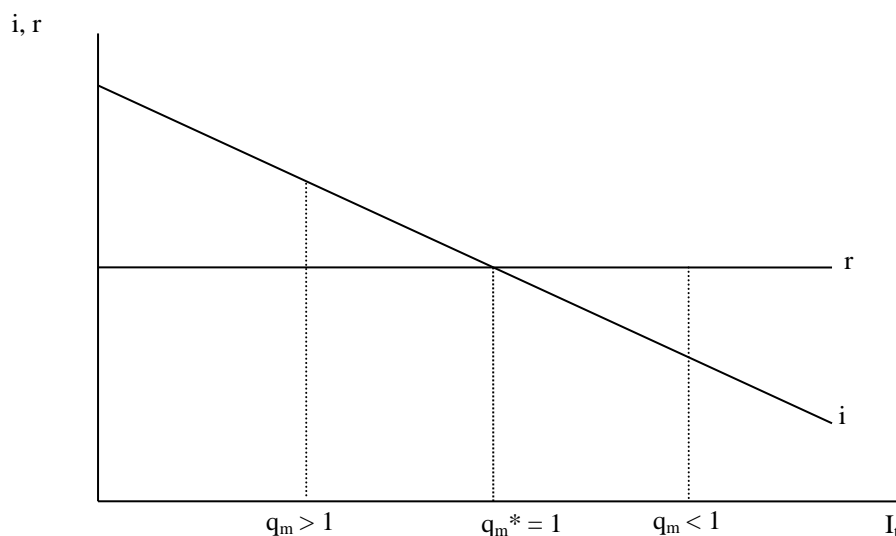
$$\frac{M_t - M_{t-1}}{M_{t-1}} = -\delta + q_m \frac{I_t}{M_{t-1}} + \frac{\mu_t}{M_{t-1}} \quad (4)$$

Equation (4) assumes that the capital market is efficient, such that projected future cash flows are unbiased estimates of actual future cash flows. As t increases, μ_t/M_{t-1} approaches 0.

Marginal q , q_m , has several advantages over average q . First, marginal q is more appropriate than average q for testing hypotheses regarding managerial discretion because average measures of performance confuse average and marginal returns.

Second, q_m has a straightforward interpretation. In Figure 2, i is the return on investment, r is the cost of capital, I is investment, and $q_m = (i/r)$ is marginal q . If a firm invests in a project that yields a return that is less than its cost of capital (i.e., if $q_m < 1$), it has over-invested, and shareholders would have been better served if the firm had distributed these funds to them directly. Conversely, if $q_m > 1$, the firm should have invested more ($q_m > 1$ in figure 2). For the firm to maximize shareholder-value, q_m must equal one.

Figure 2. Marginal q and the cost of capital



To estimate Equation (4), we require data on the market values of firms and their investments. The market value of a firm is defined as all its debt plus the total value of its outstanding shares.

According to the originators of marginal q (Mueller and Reardon, 1993), investment is defined as: $I = \text{After tax profits} + \text{Depreciation} - \text{Dividends} + \Delta \text{Debt} + \Delta \text{Equity} + R\&D + \text{ADV}$, where ΔDebt and ΔEquity are funds raised through new debt and equity issues. $R\&D$ (research and development) and ADV (advertising expenditures) are also forms of investment that may contribute to a company's market value and are therefore included.

5. DATA AND VARIABLES

Our firm ownership data, provided by *SIS Ownership Corp* (SIS-Ågarservice AB), cover all firms listed on the three major lists at the Stockholm Stock Exchange.¹ All data on firms' market values and investments (1999 to 2005) are obtained from *Standard and Poor's Compustat Global* database. The regressions cover 2000-2005 because we use the first difference in the dependent variable. For each

firm included in the panel, we obtained data for at least three consecutive years. Due to the particular nature of their investments, financial firms were omitted, leaving 110 non-financial firms, which accounted for more than 85% of the total market capitalization of the Stockholm Stock Exchange (and for approximately 75% of total Swedish exports by value).

We consider all shares owned by Swedish individuals or Swedish firms as *Private*. Institutional shareholders (*Institutional*) include banks, pension funds, mutual funds, insurance companies and foundations. Shares owned by foreigners (*Foreign*) include shares owned by both foreign individuals and institutions. Although foreign individuals and institutions are difficult to distinguish in the data, the majority are known to be financial institutions; we therefore treat all foreign investors as foreign institutional investors. Share ownership of domestic institutions entails both cash-flow rights (IC) and voting rights (IV). Foreign-owned shares are similarly designated (i.e., as (FC) and (FV)).

Table 2 shows the variables used in the regressions and their definitions.

¹ All firms reported their ownership to VPC (Nordic Central Securities Depository), which operates under the supervision of the Swedish Financial Supervisory Authority and functions as a central securities depository and clearinghouse.

Table 2. Variables and definitions

I_t/M_{t-1}	Investment normalized by market value
C1	Cash-flow rights held by the largest owner (%)
V1	Voting rights controlled by the largest owner (%)
FC	Cash-flow rights held by foreign owners (all assumed to be institutional) (%)
FV	Voting rights controlled by foreign owners (all assumed to be institutional) (%)
IC	Cash-flow rights held by domestic institutional investors (%)
IV	Voting rights controlled by domestic institutional investors (%)
(V1-C1)	Voting rights controlled by the largest owner minus cash-flow rights held by the largest owner (%)
Vote differentiation	Dummy variable for vote-differentiated shares: 1 if dual-class shares; 0 if one share/one vote.
Sales	Total sales in (millions SEK: currently 1 SEK = USD 0.126)

Table 3 presents descriptive statistics for the variables used in the regressions. On average, the largest shareholder controls 35.69 per cent of the votes in a firm. This concentrated ownership is remarkable compared with both other European and Anglo-Saxon countries and given the sizes of the firms involved (mean sales of SEK 13.189.4 million). The Swedish economy is dominated by closely held, relatively large and often old industrial and multinational firms (Agnblad et al., 2001; Högfeldt, 2005; Henrekson and Jakobsson, 2006, 2012).

The share of cash flow-rights (C1) held by of the largest owner is on average 23.41%, which is

substantially less than that of voting rights (V1=35.69%) but still high by international standards.

Domestic and foreign institutional owners together hold 35.49% of the cash flow rights of our sample companies but only 24.9% of voting rights, which is consistent with our expectations of reduced control. For both domestic and foreign institutional investors, the difference between the two types of rights is approximately 3%, which also supports the notion that the two ownership types are similar.

Table 3. Descriptive statistics (N=651)

	Mean	Std. dev.	Min	Max
$M_t - M_{t-1} / M_{t-1}$	0.128	0.468	-0.941	2.874
I_t / M_{t-1}	0.316	0.382	-1.118	3.539
C1	23.41	15.51	1.0	74.5
V1	35.69	20.22	2.5	89.5
FC	21.50	18.36	0.3	91.1
FV	18.79	19.19	0.1	93.5
IC	13.99	12.00	0	55.5
IV	10.65	10.42	0.1	54.9
FC+IC	35.49	21.48	0.3	94.2
FV+IV	29.44	22.15	0.2	94.2
V1-C1	12.74	12.50	0	49.1
Sales (SEK millions)	13189.4	31688.5	0.04	250780.7

There is statistically significant negative correlation between domestic and foreign institutional ownership, on the one hand, and control instruments such as vote-differentiation, on the other (correlation matrix in Appendix). The voting rights of the largest single owner (V1) are perfectly correlated with investment (I/M), whereas cash-flow rights (C1) are not. Both domestic and foreign institutional cash-flow rights show statistically significant positive correlations with sales.

6. EMPIRICAL ANALYSIS

To measure the effects of ownership type on investment performance, we employed a panel-data

set. Panel data were used to control for the possibility of correlated but unobserved time-invariant heterogeneity (Himmelberg et al., 1999) and to mitigate potential endogeneity problems.

To control for firm or industry specific effects, we used a fixed-effects model that included only time and industry effects. Although ownership typically differs significantly across firms, changes in managerial ownership occur slowly (Zhou, (2001). Thus, the use of firm fixed effects estimators may not reveal an effect of ownership on performance, even if one existed. Moreover, institutional owners most likely alter their ownership stakes more frequently than other types of owners. Industry variation may also be substantial, making fixed-effects models with industry effects viable as an

alternative to firm effects. An unbalanced panel dataset consisting of 651 observations was used for all estimations.²

In the regressions, the dependent variable was the percentage change in market value from period $t-1$ to period t , $(M_t - M_{t-1})/M_{t-1}$, while the ratio of investment in period t to market value at the end of period $t-1$, (I_t/M_{t-1}) , was used as an explanatory variable. Terms that interact I_t/M_{t-1} with various ownership variables (measured in percentages) were used to test the effects of ownership concentration and vote-differentiation on investment performance.

The estimated equations, which were estimated for both cash-flow rights and voting rights for each ownership type (domestic institutional and foreign), took the general form $Y = \beta_1 + \beta_2 X + \beta_3 XZ$. The functional form of the effect of ownership on performance was then tested using squared institutional ownership or foreign ownership interacted with I_t/M_{t-1} . The estimated equations thus had the form:

$$\frac{M_t - M_{t-1}}{M_{t-1}} = -\delta + \beta_1 \frac{I_t}{M_{t-1}} + \beta_2 Z_1 \frac{I_t}{M_{t-1}} + \dots + \beta_{i+1} Z_i \frac{I_t}{M_{t-1}} + \varepsilon_i \quad (5)$$

where, the Z terms represent other interacted explanatory variables. The marginal effect (q_m) of Equation (5) is:

$$q_m = \beta_1 + \beta_2 Z_1 + \dots + \beta_{i+1} Z_i \quad (6)$$

As noted above, the intercept δ is the rate of depreciation, which disappears in the differentiation and is therefore irrelevant to the interpretation of q_m .³

7. RESULTS

The estimated marginal q for the entire dataset is 0.693 (Table 4, first column), which indicates inefficient (over-investment) average performance of firms and is consistent with previous estimates (a q_m of approximately 0.6-0.7) using Swedish data (Gugler et al., 2002; Bjuggren et al., 2007). The estimate is also robust with respect to the choice of estimation technique. Quintile median regression and iteratively reweighted least squares, which control for non-normality and outliers, also generate estimates close to 0.70.

The use of vote-differentiated shares is expected to negatively affect performance; we tested this hypothesis by taking the difference between voting rights and cash flow rights held by the largest owner (in a firm without vote-differentiated shares, each owner has identical voting rights and cash-flow rights). This difference was then interacted with I_t/M_{t-1} . The results indicate that voting differentiation creates a wedge between voting rights and cash-flow shares that reduces performance (Table 5, second column). Firms without vote-differentiated shares have an average marginal q of 0.759, while firms with vote-differentiated shares structure have an average marginal q of only 0.695, supporting hypothesis 3 and earlier results (Bjuggren et al., 2007).

The positive signs of the IC (domestic institutional cash-flow rights) and IV (domestic institutional voting rights) terms (Tables 5 and 6) demonstrate that institutional ownership positively affects performance (Hypothesis 1). Controlling for non-linearity (Hypothesis 2) and vote-differentiation more than doubles the R^2 values, which suggests that dual-class shares affect the ownership-performance relationship (Hypothesis 3).

Consistent with our hypotheses, the effect of institutional ownership and control is found to be non-linear, with the negative signs for IC² and IV² in Tables 4 and 5 indicating a positive but diminishing effect. Additionally, the estimations are remarkably similar for both types of shares (cash-flow and voting rights). The negative effect of vote-differentiation is not significant in the estimations in which it is interacted with either institutional cash-flow rights or voting rights; however, the coefficients are negative, as expected. Interacting domestic institutional voting rights with the dummy for vote-differentiation doubles the R^2 -values, as shown by Table 5, which again shows the importance of the control.

Foreign "institutional" investor ownership also had a positive effect on performance both for FC and FV (Tables 7 and 8). These results are consistent with those found for domestic institutional ownership.

The results for foreign ownership significantly confirm hypothesis 3 that the use of vote-differentiated shares reduces the performance of firms both for cash-flow rights and voting rights (Column 4 in Tables 7 and 8), which is most likely due to agency conflicts that result from the separation of ownership and control in these firms.⁴

² The data set contains 110 firms over a period of 6 years. Of these 660 observations, 9 that were identified as outliers were deleted due to obvious errors in the data.

³ Note that when differentiating with respect to investment, δ , the depreciation rate, δ , disappears and is irrelevant to the interpretation of q_m .

⁴ As a robustness test, we also regressed domestic institutional and foreign ownership and dual-class shares on Tobin's average q (measured as market-to-book ratio) and controlled for sales and growth of sales (results available from the authors upon request). Dual-class shares had a negative effect on Tobin's average q ; the divergence between C1 and V1 was negative; and institutional investors had a positive but diminishing effect.

Table 4. Marginal q and interaction with Votes minus Capital (V1 - C1)

Dependent variable (M _t -M _{t-1})/M _{t-1}		
Constant (δ)	- 0.082*** (-3.36)	- 0.087*** (-3.51)
I _t /M _{t-1}	0.693*** (15.99)	0.759*** (12.95)
(V1 - C1) · I _t /M _{t-1}		-0.005* (-1.67)
Marginal q (q _m)	0.693	0.695
R ²	0.477	0.479
F-value	13.57	13.35
No. of observations	651	651
No of firms	110	110

t-values in brackets

* indicates statistical significance at the 10%, ** at the 5% and *** at the 1% levels

Table 5. Domestic institutional investors' cash-flow rights; Dependent variable: M_t-M_{t-1}/M_{t-1}

	Linear	Linear with vote-diff.	Quadratic	Quadratic with vote-diff.
Constant (δ)	-0.083*** (-3.38)	-0.083*** (-3.37)	-0.083*** (-3.42)	-0.088*** (-3.56)
I _t /M _{t-1}	0.679*** (12.98)	0.679*** (12.97)	0.629*** (10.44)	0.630*** (10.46)
IC	0.001 (0.50)	0.002 (0.43)	0.012** (1.74)	0.023** (2.22)
(IC) ²	-	-	-0.0003** (-1.68)	-0.0006** (-2.19)
IC*Vote-differentiation	-	-0.001 (-0.15)	-	-0.0147 (-1.43)
(IC) ² *Vote-differentiation	-	-	-	0.0005 (-1.52)
Marginal q (q _m)	0.693	0.693	0.738	0.727
R ²	0.217	0.478	0.229	0.482
F-value	13.24	12.95	13.03	12.51
No. observations	651	651	651	651
No of firms	110	110	110	110

t-values in brackets

* indicates statistical significance at the 10%, ** at the 5% and *** at the 1% levels

Table 6. Domestic institutional investors' voting rights. Dependent variable: (M_t-M_{t-1})/M_{t-1}

Dependent variable: (M _t -M _{t-1})/M _{t-1}	Linear	Linear with vote-diff.	Quadratic	Quadratic with vote-diff.
Constant (δ)	-0.085*** (-3.46)	-0.084*** (-3.39)	-0.084*** (-3.46)	-0.087*** (-3.52)
I _t /M _{t-1}	0.666*** (13.39)	0.664*** (13.23)	0.602*** (10.69)	0.610*** (10.63)
IV	0.004 (1.11)	0.003 (0.63)	0.020*** (2.64)	0.025*** (2.45)
IV ²	-	-	- 0.0005*** (-2.40)	-0.0006** (-2.33)
IV* Vote-differentiation	-	0.002 (0.37)	-	-0.0086 (-0.74)
IV ² * Vote-differentiation	-	-	-	0.0003 (0.75)
Marginal q (q _m)	0.670	0.717	0.824	0.751
R ²	0.217	0.479	0.242	0.484
F-value	13.28	12.96	13.21	12.60
No. observations	651	651	651	651
No of firms	110	110	110	110

t-values in brackets

* indicates statistical significance at the 10%, ** 5%, *** and 1% levels

Table 7. Foreign institutional investors' cash-flow rights; Dependent variable: $(M_t - M_{t-1})/M_{t-1}$

	Linear	Linear with vote-diff.	Quadratic	Quadratic with vote-diff.
Constant (δ)	-0.079*** (-3.24)	-0.078*** (-3.20)	-0.076*** (-3.15)	-0.102*** (-4.08)
I_t/M_{t-1}	0.624*** (10.90)	0.612*** (10.53)	0.525*** (7.26)	0.633*** (8.10)
FC	0.003* (1.84)	0.002 (1.06)	0.014*** (2.74)	0.019*** (2.85)
(FC) ²	-	-	-0.0002** (-2.23)	-0.0003*** (-3.03)
FC * Vote-differential	-	0.003 (1.22)	-	-0.0245*** (-3.48)
(FC) ² * Vote-differential	-	-	-	0.0005*** (3.86)
Marginal q (q_m)	0.688	0.720	0.752	0.607
R ²	0.240	0.482	0.252	0.497
F-value	13.38	13.12	13.27	13.28
No. observations	651	651	651	651
No of firms	110	110	110	110

t-values in brackets

* indicates statistical significance at the 10%, ** at 5%, *** at 1%

Table 8. Foreign institutional & investors' voting rights; Dependent variable: $(M_t - M_{t-1})/M_{t-1}$

	Linear	Linear with vote-diff.	Quadratic	Quadratic with vote-diff.
Constant (δ)	-0.081*** (-3.35)	-0.082*** (-3.40)	-0.085*** (-3.55)	-0.097*** (-3.96)
I_t/M_{t-1}	0.606*** (11.66)	0.593*** (11.38)	0.486*** (8.20)	0.534*** (8.57)
FV	0.005*** (2.97)	0.003 (1.41)	0.025*** (4.88)	0.025*** (4.03)
(FV) ²	-	-	-0.0003*** (-4.09)	-0.0003*** (-3.89)
FV*Vote-differentiation	-	0.0068*** (2.54)	-	-0.0130* (-1.72)
(FV) ² *Vote-differentiation	-	-	-	0.0003** (2.26)
Marginal q (q_m)	0.699	0.777	0.922	0.759
R ²	0.247	0.490	0.274	0.504
F-value	13.63	13.58	13.81	13.64
No. observations	651	651	651	651
No of firms	110	110	110	110

t-values in brackets

* indicates statistical significance at the 10 percent level, ** at the 5 percent level, *** at the 1 percent level

Because foreign owners are believed to be mainly institutional investors, it seemed appropriate to estimate the combined effect of domestic institutional and foreign "institutional" owners. This is done by summing domestic institutional and foreign ownership. The results for these estimations are found in Table 9 and 10.

Estimated marginal q 's are in the range 0.698-0.830 (indicating underperformance), although institutional ownership itself had positive effects and a negative effect when interacted with voting

differentiation; all the foregoing results are consistent with Hypotheses 1, 2 and 3.

Clearly, institutional ownership improved performance in our sample. If institutional investors were simply attracted to firms with superior performance, we would expect a linear relationship between the proportion of shares held by institutions and marginal q . The non-linear effect of institutional ownership on performance is therefore only consistent with the proposition that institutional investors affected performance (Gugler and Yortuglu; 2003).

Table 9. All Institutional investors (both domestic and foreign) cash-flow rights. Dependent variable: $(M_t - M_{t-1})/M_{t-1}$

	Linear	Linear with vote-diff.	Quadratic	Quadratic with vote-diff.
Constant (δ)	-0.081*** (-3.34)	-0.080*** (-3.29)	-0.079*** (-3.27)	-0.098*** (-3.97)
I_t/M_{t-1}	0.592*** (8.78)	0.587*** (8.65)	0.488*** (4.96)	0.566*** (5.63)
(IC+FC)	0.003** (1.96)	0.003 (1.40)	0.011** (1.99)	0.018*** (2.86)
(IC+FC) ²	-	-	-9.5e-05 (-1.46)	-0.0002*** (-2.95)
(IC+FC) * Vote-differentiation	-	0.001 (0.64)	-	-0.0169*** (-3.10)
(IC+FC) ² * Vote-differentiation	-	-	-	0.0003*** (3.39)
Marginal q (q_m)	0.698	0.729	0.759	0.731
R ²	0.481	0.481	0.483	0.492
F-value	13.24	13.09	13.16	13.04
No. observations	651	651	651	651
No of firms	110	110	110	110

t-values in brackets

* indicates statistical significance at the 10%, ** 5%, *** 1% levels

Table 10. All Institutional investors (both domestic and foreign) voting rights; Dependent variable: $(M_t - M_{t-1})/M_{t-1}$

	Linear	Linear with vote-diff.	Quadratic	Quadratic with vote-diff.
Constant (δ)	-0.085*** (-3.52)	-0.084*** (-3.47)	-0.088*** (-3.68)	-0.100*** (-4.09)
I_t/M_{t-1}	0.574*** (10.04)	0.559*** (9.72)	0.444*** (6.31)	0.499*** (6.85)
(IV+FV)	0.005*** (3.18)	0.003** (1.96)	0.019*** (4.03)	0.021*** (3.92)
(IV+FV) ²	-	-	-0.0002*** (-3.13)	-0.0003** (-3.62)
(IV+FV) * Vote-differentiation	-	0.004** (2.00)	-	-0.011** (-1.97)
(IC+FC) ² * Vote-differentiation	-	-	-	0.0003*** (2.55)
Marginal q (q_m)	0.721	0.765	0.830	0.793
R ²	0.486	0.489	0.494	0.501
F-value	13.69	13.53	13.79	13.48
No. observations	651	651	651	651
No of firms	110	110	110	110

t-values in brackets

* indicates statistical significance at the 10%, ** 5%, *** 1% levels

8. CONCLUSION

Although institutional investors are frequently thought to have little incentive to exercise control over management, it can also be argued that they nonetheless have a disciplining effect, which indicates that a positive relationship between institutional ownership and investment performance is expected. We examined the effects of institutional investors on firm performance in Sweden during the 2000-2005 period and considered domestic and foreign institutional investors both separately and together. All foreign investors were assumed to be institutional owners, as many are known to be financial institutions. We find the effect of foreign

investors on performance to resemble that of domestic institutional investors. As a performance measure, we use marginal q , which measures the return on investment relative to the cost of capital. The use of this variable alleviates problems such as endogeneity and reverse causality that are typically associated with average measures.

Utilizing a fixed-effects model to account for both time and industry effects, we find that domestic and foreign institutional investors (both separately and together) had a positive but diminishing effect on performance.

Using data on Swedish firms (instead of Anglo-Saxon firms, which are the usual subjects) also allowed us to control for the effects of vote-differentiated shares. In firms with vote-

differentiated shares, the positive effects of domestic and foreign institutional investors disappeared. This finding is consistent with agency-cost theory, which suggests that agency-costs are substantially higher in vote-differentiated firms.

As noted above, domestic and foreign institutional investors are found to have had a positive but non-linear (diminishing) effect on performance, which is a clear indication of the direction of causality. It has been suggested that institutional investors invest in firms with superior performance. However, our results are consistent with the conclusion that such investors can positively influence investment behavior, which is a conclusion further supported by the fact that this effect was absent (i.e., not statistically significant) in firms with vote differentiation.

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