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Abstract

We examine the causal relationship between blockholder ownership (measured by the fraction of shares controlled by large shareholders) and firm value (measured as the simple Tobin's Q) of the largest EU and US companies. Using Granger causality tests we find no significant causal effects either way in the US/UK, but in continental Europe we find a negative effect of blockholder ownership on firm value and a negative effect of firm value on blockholder ownership. Consistent with an overall non-linear relationship, as hypothesised by Morck, Shleifer and Vishny (1988) and Stultz (1988), the negative effect of blockholder ownership on firm value performance is found to be significant only for companies with high initial levels of blockholder ownership (> 10%), but insignificant for companies with low initial levels. Consistent with lower protection of minority investors and larger private benefits of control (Shleifer and Vishny, 1997) the causal relationships are only significant in continental Europe, even for high initial levels of blockholder ownership.

JEL classifications: G32, L20

Keywords: Blockholder ownership, firm value, Granger causality, system effects, and panel data analysis.

1. INTRODUCTION

Corporate governance and ownership have clearly become important topics in management as well as finance, economics and law. A key issue of concern is whether large owners (blockholders) can contribute to the solution of agency problems (Shleifer and Vishny, 1997). Although an enormous number of papers have analysed the impact of blockholder ownership or ownership concentration on firm value and other performance measures (Short, 1994), it has not been firmly established whether the presence of large owners does in fact improve company performance (Holderness, 2001). Historically, empirical research has examined the impact of ownership structure on firm value in simple regression models (e.g., Short 1994). But more recently a second generation of research (Loderer and Martin, 1997; Cho, 1998; Himmelberg, Hubbard and Palia, 1999) has built on a point raised by Harold Demsetz (1983), namely that ownership is an endogenous variable and that this must be taken into account in empirical estimation. Using simultaneous equation models the second-generation papers have concluded that the impact of ownership on performance is insignificant. This finding confirms the supposition voiced by Demsetz (1983): there should be no impact in equilibrium since this would imply that owners/investors would profit by reshuffling their portfolios. In particular, one might expect a significant reverse feedback from firm value to ownership structure as owners react to good or bad performance by buying or selling shares.

Despite the fact that previous studies have attempted to infer causality from cross-sectional data sets, causality is more readily understood as a process in time (cause preceding effect). This paper contributes to the ongoing research in this field by applying Granger causality tests (Granger, 1969) to examine the causal relationship between blockholder ownership and firm value. We analyse time series data on ownership (the fraction of shares that are

"closely held") and firm value (the simple Tobin's Q ratio) over a 10-year period (1988-1998) for 876 of the largest EU and US companies. The inclusion of EU companies is important since extensive empirical research has documented that ownership structure as well as its determinants and effects may differ across countries (Shleifer and Vishny, 1998, Pedersen and Thomsen, 1997, 2000). We find that system differences do matter. In the US/UK there is no evidence of causality either way, that is neither from firm value to ownership nor from ownership to firm value. However, in continental Europe we find evidence of fairly strong negative effects going both ways: a negative effect of blockholder ownership on firm value, and a negative effect of firm value on blockholder ownership. Since these effects are significant only for firms with high initial levels of blockholder ownership, this evidence may be interpreted as an indication that the high level of blockholder ownership in continental Europe has reduced firm value, at least from the viewpoint of minority investors.

2. THEORY AND LITERATURE REVIEW

We define blockholders as large owners who own at least 5% of a company's shares (typically more). We assume that such large owners are likely to be consulted on strategic issues (Holderness, 2001) and thereby influence the company's stock market performance. We are interested in examining, how stock market performance is affected.

A number of empirical studies have supported the assumption that blockholder ownership does influence corporate management. For example, blockholders have been found to affect executive compensation (Holderness and Sheehan, 1988; Mehran, 1995), executive turnover

(Denis, Denis & Sarin, 1997) corporate diversification and asset restructuring (Hoskisson. Johnson and Moesl, 1994; Denis & Sarin, 1999). Nevertheless, the impact on corporate value is disputed.

Although there is a presumption in the literature that large shareholders have greater power and stronger incentives to ensure shareholder value maximization (the incentive alignment hypothesis proposed by Zeckhouser and Pound, 1990), the theoretical relationship between large owners and company value is ambiguous. Blockholders may enjoy private benefits of control at the expense of small shareholders (Barclay and Holderness, 1989; Mikkelson and Regassa, 1991). Blockholder ownership above a certain level may lead to entrenchment of managers and majority shareholders who can expropriate the wealth of minority shareholders (Fama and Jensen, 1983; Morck, Shleifer and Vishny, 1988; Shleifer and Vishny, 1997). The owners' portfolio risk will increase with the ownership share, which may influence risk taking and expected returns (although Wright, Ferris, Sarin and Awasti (1996) find that it does not).

There may also be both positive and negative feedback effects from firm value to blockholder ownership. Blockholders may reduce their shares in a particular firm when share prices are high relative to expectations (Zeckhouser and Pound, 1990). Companies seem more likely to issue stock on the market and thereby reduce the level of blockholder ownership when share prices are high. With diffuse ownership, low share prices could invite outside raiders and others to acquire large stakes to replace the incumbent managers. On the one hand, these factors point to a negative effect of firm value on blockholder ownership. If blockholders have a strong preference to remain in control, on the other hand, higher market value makes it possible to finance a given level of investment by selling a smaller amount of stock to

outsider owners (La Porta, Silanes, Shleifer and Vishny, 2000) and thereby to minimize the residual loss resulting from agency problems. This scenario implies a positive feedback effect of firm value on blockholder ownership. A pecking-order hypothesis would point in the same direction (Myers and Majluf, 1984).

Empirically, the relationship is also uncertain. Suppose that there is a privately optimal level of insider ownership, which involves a trade-off between risk and incentive efficiency (Jensen and Meckling, 1976; Fama and Jensen, 1983; Demsetz, 1983; Shleifer and Vishny, 1997). Presumably, this optimal ownership share will differ from company to company because companies differ in terms of specific risk and the complexity of their activities (Demsetz and Lehn, 1985). Essentially, this means that the relationship between ownership structure and market value will vary across companies and industries as a function of company size, firm-specific uncertainty, risk and other factors that need to be verified empirically. This firm heterogeneity has been strongly emphasized by Himmelberg, Hubbard and Palia (1999). If owners have already adopted an optimal (shareholder value maximising) ownership structure, little can be learned from empirical studies that correlate ownership structure with firm value.

Empirical studies also have not uncovered robust findings. While earlier studies tended to find a weak positive association between owner control and accounting profitability (Berle and Means 1932, Cubin and Leech 1983, Short 1994), Demsetz and Lehn (1985) found no significant effect of ownership concentration on accounting profitability when controlling for determinants of ownership structure, and subsequent studies on international data have confirmed their findings (Bergstrøm and Rydkvist, 1990; Gerson and Barr, 1996; Pedersen

and Thomsen, 1999). Likewise, studies of the impact of large owners on firm value at first found significant positive (conditional and non-linear) effects (Lloyd, Hand and Modani, 1987; Zeckhouser and Pound, 1990; Oswald and Jahera, 1991; Li and Simerly, 1998; Morck Shleifer and Vishny, 1988; McConnell and Servaes, 1990; Thomsen and Pedersen, 2000). But more recently, a second generation of research (Loderer and Martin, 1997; Cho, 1998; Himmelberg, Hubbard and Palia, 1999, Demsetz and Villalonga 2001) has disputed the relevance of these findings and reported insignificant performance effects in simultaneous estimations of causes and effects of director ownership.

Loderer and Martin (1997) examine both Tobin's Q-values and abnormal stock returns to 867 acquisitions made by companies listed in the US from 1978-1988. They find a weak concave effect of director ownership on both performance measures when estimated by simple regression. However, the effect becomes insignificant when a simultaneous two-equation model is estimated that includes firm size and earnings volatility as determinants of director ownership. Abnormal acquisition returns are found to have a significant positive effect on director ownership, whereas Q-values are found to have a significant negative effect. The authors interpret these results as evidence that managers have inside knowledge and increase their shareholdings prior to good acquisitions while high share prices and Q-values induce them to sell out.

Cho (1998) examines investment as an intermediate variable between director ownership and performance measured by Q-values. On a sample of 326 Fortune 500 firms in 1991, he finds that Q-values have a *positive* impact on director ownership and that director ownership has a significant non-monotonous effect on investment, which again has a positive impact on Q-

values. When taking these factors into account in a three-equation model simultaneously determining director ownership, Q-values and investment, the non-monotonous effect of ownership structure on Q-values becomes insignificant.

Himmelberg, Hubbard and Palia (1999) use a panel of 300 Compustat firms over the period 1982-1992 to control for fixed firm effects as an indicator of unobserved firm heterogeneity that influences both ownership structure and Q-values. They find a significant impact of director ownership on Q-values even after controlling for some observable determinants of ownership structure, but the impact becomes insignificant when the fixed firm effects are taken into account.

Demsetz and Villalonga (2001) examine 223 US firms over the period 1976-1980, a sub-sample of the Demsetz and Lehn (1985) data. They distinguish between two dimensions of ownership structure, managerial ownership and ownership concentration among outside shareholders. Controlling for capital structure, capital intensity, advertising and research intensity, firm size, profit volatility, stock market risk and industry dummies for financial sector, media and utilities they find no significant effects of ownership structure on firm performance (Tobin's Q). In contrast, they find a significant negative effect of Q on both outside ownership concentration and managerial shareholdings.

In summary, empirical research has tended to find a positive direct effect of blockholder ownership or similar measures such as director ownership, ownership concentration, or owner-control dummies. However, the effect appears to be insignificant when attempts are made to control for the determinants of ownership structure (when ownership is treated as an

endogenous variable). Simple regression estimates are defensible if ownership structures are sufficiently stable to be regarded as exogenous, but ownership structures do appear to change over time, partly in response to past performance (Denis and Sarin, 1999). Moreover, the significance of firm heterogeneity (Himmelberg, Hubbard and Palia, 1999) makes it difficult to sort out causal relationships on cross-sectional data even with simultaneous equation models.

3. METHODOLOGY AND HYPOTHESES

While previous studies have relied mainly on cross-section data, this paper applies a time series analysis to test whether changes in blockholder ownership are followed by changes in firm value and vice versa. We apply a Granger (1969) test to explore the causal relationship between blockholder ownership (OS) and firm value (Q). One standard requirement for causality is that changes in the cause variable should precede changes in the effect variable, and Granger causality analysis essentially tests for this condition. To apply a Granger causality test for causality we consider the information sets I_t, t=1,…, 10 with $I_t = \{(Q_\tau, OS_\tau)\}_{\tau<t}$, Q_t and OS_t denoting the performance and the ownership at time t, respectively. Restricting attention to linear prediction with squared error loss we consider the models

$$(1) \quad Q_t = \alpha_1 + \beta_1 \mathbf{OS_{t-1}} + \beta_2 \mathbf{Q_{t-1}} + \mu_{1t}$$

$$(2) \quad OS_t = \alpha_2 + \beta_3 \mathbf{OS_{t-1}} + \beta_4 \mathbf{Q_{t-1}} + \mu_{2t}$$

The α´s and β´s are parameters of the models, and μ_{1t} and μ_{2t} are uncorrelated error processes. In these models if $\beta_1 \neq 0$, $\beta_4 = 0$ we infer unidirectional OS to Q. In this case,

including OS as a predictor for Q will decrease the prediction error (or increase explained variance). Similarly, if $\beta_1 = 0$, $\beta_4 \neq 0$, we infer unidirectional causality from Q to OS. If $\beta_1 \neq 0$, $\beta_4 \neq 0$ we infer bi-directional causality between Q and OS. To implement the tests we assume normality of errors, homogeneity of variance, condition on the first observation (Q_1,OS_1) and use OLS. β_4 is significant and β_1 is not.

One of the advantages of this approach is that a number of structural factors that influence both present and lagged values of Q and OS are controlled for by including the lagged value as an explanatory variable. However, both changes in ownership and firm value may be accompanied by changes in other variables. To filter out effects that are not attributable to Q and OS respectively, we have reported results that also include firm and time effects (i.e., the panel data analysis allows for random firm and time effects) as well as some relevant control variables. Since structural variables like industry, risk and uncertainty are constant over time, they are captured by the lagged response variables and should therefore not be included in Granger causality tests. Variables that affect trend changes in ownership and performance are captured by the time and firm dummies. Nonetheless some determinants of corporate ownership and performance, such as capital structure, capital intensity and firm size, may change over time and are included as control variables.

Although the effects of changes in blockholder ownership are theoretically uncertain, we propose the standard incentive alignment hypothesis for empirical testing.

Hypothesis 1. Blockholder ownership positively Granger-causes firm value (the incentive alignment hypothesis).

In other words, we propose to test whether a higher level of blockholder ownership causes share prices to increase.

Several previous studies have found non-linear relationships between managerial ownership and firm value (e.g., Morck et al., 1988; McConnell and Servaes, 1990; Thomsen and Pedersen, 2000). We recognise that the effects of changing blockholder ownership could depend on the initial level of concentration. At low levels of concentration, increasing ownership may imply increased monitoring, better incentive alignment, and a higher share price, whereas negative effects of increased entrenchment may be more important at high levels of blockholder ownership. We choose to explore these ideas by proposing the following hypothesis.

Hypothesis 2. For high levels of blockholder ownership the effect is reversed: blockholder ownership negatively Granger-causes firm value (non-linear effects hypothesis).

The relationship between blockholder ownership and firm value may also be contingent on system effects. In a series of influential papers La Porta, Silanes, Shleifer and Vishny (1999, 2000) have argued that national legal systems differ with regard to investor protection, and

that this factor has implications for blockholder ownership and firm value. Others have emphasised the importance of complementary institutions (Roe, 1991, 1994; Pedersen and Thomsen, 1997). The legal systems approach advocated by Shleifer and Vishny (1997) seems to imply that blockholder ownership curbs agency problems in civil law countries that provide less investor protection through the legal system. However, the high levels of blockholder ownership come at a price: large owners expropriate wealth from minority investors, because of managerial entrenchment, privileged access to inside information and increased risk aversion compared to diversified minority investors. In civil law countries, the net effect of changes in ownership is therefore unclear; increasing blockholder ownership may imply reduced agency problems and higher firm value, but also greater risk of expropriation of minority investors, a factor that should tend to lower market values. In contrast, if minority investors are better protected in common law countries, the positive effects of increasing blockholder ownership might be more pronounced - at least for equivalent initial levels. These considerations lead to Hypothesis 3.

Hypothesis 3. Increases in blockholder ownership more likely Granger-cause firm value in economic systems that protect minority investors better (system effects hypothesis).

As mentioned, there are also conflicting opinions regarding the reverse effect of market value on blockholder ownership. Depending on the supply curve for individual stocks (Zeckhouser and Pound, 1990), individual blockholders may be more tempted to sell some of their shares in a particular firm when share prices are high. One good reason is that the absolute risk of

owning a given ownership stake increases with its value. A negative effect of firm size on ownership concentration was proposed and supported by Demsetz and Lehn (1985) and numerous subsequent studies. Furthermore, companies seem more likely to issue stock to the market and thereby reduce the level of blockholder ownership when share prices are high. Finally, when caused by inefficient management a decreasing share price should in theory invite raiders and controlling shareholders to increase their holdings to repair the problem. These factors point to a negative effect of firm value on blockholder ownership.

Positive feedback is also conceivable. Higher market value makes it possible to finance a given level of investment with a smaller amount of stock to outsider owners (La Porta, Silanes, Shleifer and Vishny, 2000). If the blockholders want to keep as large an ownership stake as possible to align incentives (La Porta, Silanes, Shleifer and Vishny, 2000) or to avoid issuing too much new equity (Myers and Majluf 1984), this situation implies a positive effect of firm value on blockholder ownership. Since the effect of firm value on blockholder ownership is disputed, we suggest the following hypothesis for empirical testing.

Hypothesis 4. Firm value positively Granger-causes blockholder ownership (control preference hypothesis).

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4. DATA AND MEASUREMENT

A description of the variables used is found in Table 1. The database is drawn from the Worldscope electronic database (Worldscope/Disclosure, annually) and consists of all EU and US companies that had net sales and net assets exceeding US$ 2 billion in 1998 and for which a annual time series was available over the 1990-1998 period. The data set contains 876 companies with nine years of observation, giving a total of 7884 firm-year observations.

Firm value is measured by dividing the sum of the market value of equity and the book value of the total debt by the book value of assets. The Tobin's Q measure of equity at replacement costs was not available, so we use an approximation denoted (the "simple Q") by Loderer and Martin (1997). However, Chung and Pruitt (1994) found that the correlation between the "simple Q" and a measure of Q that attempts to use market values throughout is as high as 0.97. To correct for a right-skewed distribution of the firm value variable, we use log values.

Blockholder ownership is measured by the fraction of closely held shares (Worldscope/Disclosure, 1997) including shares held by owners who hold more than 5%; shares held by officers, directors and their families, shares held in trust, shares held by another corporation (except in a fiduciary duty by banks) or shares held by pension/benefit plans. This measure is somewhat broader than the measures of blockholder ownership used in previous studies since it involves the holdings of insiders (managers) as well as large outside investors. We reason that the measurement error is small if managerial ownership is less than 5%, and, if it is greater than that, managers should really be counted as blockholders. The main benefit of the measure is that it is available as a time series in the Worldscope database making up to nine consecutive years of observation for a large sample of US and European

companies (n=876) available. Previous research has found a high correlation between closely held shares and another concentration measure, namely the share of the largest owner (Thomsen and Pedersen, 2000). Since this measure is bounded between zero and 100, we use a logit transformation (see Table 1) to make the measure fit a normal distribution.

To test for non-linear effects we split the data in two sub-samples: high and low initial blockholder ownership. The median of the level of blockholder ownership in 1990 (the first year of our data window) is 9.8 per cent (mean 6.6 per cent). We therefore split the sample into two groups: low blockholder ownership (<10 per cent) and high blockholder ownership (> 10 percent). Furthermore, to test for differences in legal system (and the level of investor protection) we follow La Porta, Silanes, Shleifer and Vishny (1998) and distinguish between companies based in common law countries (US and UK) and civil law countries (continental Europe).

Control variables. While the Granger procedure and our use of random time and firm effects filter out the firm-specific heterogeneity that may influence both blockholder ownership and firm value, we have also included some control variables in order to control for possible changes in other determinants of ownership and performance, in addition to the structural factors captured by the lagged dependent variables and the fixed effects. Our control variables are similar to those adopted by Demsetz and Villalonga (2001), excluding advertising and research intensity measures (which we did not have access to) and structural variables like risk, profit volatility and industry effects that supposedly do not change over time and therefore cancel out in year-to-year changes. *Sales change* is intended to catch large changes in strategy and structure such as mergers and acquisitions that could be associated

with dilution of blockholder stakes. The strong negative association between firm size and ownership concentration (Demsetz and Lehn, 1985) could indicate a negative effect of changes in firm size on ownership concentration. Higher sales growth could also have a positive influence on firm value. *Sales/Asset change* (change in asset turnover) is expected to control for changes in capital intensity that could also influence the need for external finance and thereby influence corporate ownership structure. Himmelberg, Hubbard and Palia (1999) use fixed capital intensity as an indicator of low monitoring costs. A high sales/assets ratio may indicate high monitoring costs and perhaps a need to concentrate ownership. Asset turnover changes could also affect Q since higher turnover for a given assets will often mean higher accounting profitability. *Equity/assets ratio change* captures changes in capital structure, which may put more pressure on managers to maximize profits to meet debt payments (Jensen, 1986, 1989) and thereby increase firm value. Likewise, capital structure could also be associated with ownership structure. Stultz (1988) indicates that high inside ownership may increase leverage because owners with a control preference increase their voting control per dollar of equity by issuing debt. If external circumstances allow them to borrow more or force them to borrow less, this development could then also affect their ownership structure.

5. RESULTS

Table 2 provides a correlation matrix and some descriptive statistics.

// Insert Table 2 about here //

As might be expected, both Q-values and blockholder ownership (OS) are highly correlated with their lagged values: the correlation coefficients are well into the nineties. Blockholder ownership is negatively correlated with both present and lagged values of Q. Q-values are also negatively correlated with both present and lagged values of blockholder ownership. As a direct Granger test we first estimated the simple model, with common slopes and intercepts for all firms:

3. $Q_{it} = \alpha_1 + \beta_1 OS_{it} + \beta_2 Q_{i(t-1)} + \mu_{1,it}$

4. $OS_{it} = \alpha_2 + \beta_3 OS_{i(t-1)} + \beta_4 Q_{i(t-1)} + \mu_{2,it}$

the error terms $\mu_{j,it}$ being independent with variances σ_j^2 (j =1,2; t =1990, 1991…1998; i =1,2...876 firms).

Since Q is measured at the end of the year, we assume that changes in blockholder ownership from t-1 to t are reflected in Q-values at time t. In contrast, Q is expected only to have an effect on blockholder ownership in the next period. The number of lags included reflects statistical significance: all variables lagging more than one period were found to be highly insignificant so we only report models with one lag.

Table 3 reports some statistical results.

// Insert Table 3 about here //

Model I is estimated as an OLS regression model using the SAS procedure GLM (SAS 1999). No control variables are included.

The first column reports that firm value (Q) at time t-1 has a significant negative effect of –0.073 on blockholder ownership share (OS) when controlling for the past values of blockholder ownership. The second column reports that ownership share at time t-1 has a negative effect on firm value (Q) when controlling for the past value of firm value at time t-1. Both models are highly significant with very high F-values. As predicted, blockholder ownership is found to Granger-cause market value since lagged values of blockholder ownership have a significant effect on Q-values. However, the effect is significantly negative and not positive as hypothesised. In other words, Hypothesis 1 is rejected. Secondly, market value is found to Granger-cause blockholder ownership since lagged Q-values have a significant, negative effect on OS, which contradicts Hypothesis 4. In other words, both Hypotheses 1 and 4 are rejected.

In Model II we include some control variables, which are intended to capture the influence of unobserved third variables that might influence both blockholder ownership share and firm value. For example, increases in firm size/absolute risk and an increasing demand for capital (proxies: sales growth and an increasing sales/assets ratio) or insufficient equity (proxy: equity/assets) might induce the controlling coalition of blockholders to issue new equity and reduce their ownership share. However, neither of these control variables turns out to be significant. In contrast, a stock market premium seems to be associated with sell-offs (reductions in size), asset reductions (possibly as a result of outsourcing) and (contrary to a

standard agency theory hypotheses) with a more solid equity base. The Granger causality is not affected at all.

In Model III we enlarge Model I by allowing for random time and firm effects, i.e., we estimated the models:

$$5. \quad Q_{it} = \alpha_1 + \beta_1 OS_{it} + \beta_2 Q_{i(t-1)} + \lambda_i + \nu_t + \mu'_{1,it}$$

$$6. \quad OS_{it} = \alpha_2 + \beta_3 OS_{i(t-1)} + \beta_4 Q_{i(t-1)} + \phi_i + \gamma_t + \mu'_{2,it}$$

where the random firm effects in each equation, λ_i and ϕ_i, are independent with the variances $\sigma^2_{Q,\ Firms}$ and $\sigma^2_{OS,\ Firms}$, respectively, and means zero. Similarly, the random time effects within each equation, ν_t and γ_t, are independent with variances $\sigma^2_{Q,\ Time}$ and $\sigma^2_{OS,\ Time}$ and means zero. The errors, $\mu'_{1,it}$ and $\mu'_{2,it}$, are still independent with variances σ^2_j and means zero. Furthermore, the random firm effects, random time effects, and the errors are assumed to be independent.

The enlargement of the model, in Equations 5 and 6, thus lies in the error structure. In this model the random firm effects (that one can think of as random intercepts) correct for correlation between observations for a given firm (over the observed nine years) while the random time effects correct for correlation between observations at the same point in time. The random effects reflect the influence of unobserved variables characteristic for the individual firms (e.g. changes in strategy like mergers or sell-offs) and the points in time (e.g., fluctuations of the market).

The SAS Procedure TSCSREG (Time Series Cross Section Regression) with a variance component model that uses the Fuller-Battese method in the estimation (SAS 1999) is applied in order to estimate the model. The results of the estimation of the enlarged model with random time and firm effects are shown in Table 3, Model III. A Hausman test is conducted in order to test whether adding the random effects improves the models, and for both models the Hausman test turns out to be highly significant. This result indicates that the model with random firm and time effects gives a better fit of the data than a model without random effects. The split of the variance components shows that the significance of including the random effects is mainly a consequence of the firm effects that are substantially larger than the time effects.

Again, as in Model I, lagged values of Q are found to exert a negative and significant influence on blockholder ownership, and blockholder ownership is found to have a negative and significant influence on Q-values. Once again, Hypotheses 1 and 4 are rejected.

Model IV includes control variables (as in Model II) in addition to the random time and firm effects. Again, the results are qualitatively unchanged. Blockholder ownership causes market values to fall and high market values cause blockholders to sell out and reduce their shares.

The negative effect of blockholder ownership on market value clearly may indicate that blockholders enjoy private benefits of control and that small shareholders therefore benefit when their grip on the company is loosened. Alternatively, a booming share market and the emergence of new financial instruments may have shifted the balance between risk and

incentives and have caused share prices to increase when blockholders reacted to the new situation.

Non-linear effects

Previous cross-sectional studies have indicated that the effects of blockholder ownership on market value might be non-linear: for example, positive for small levels of blockholder ownership because of increasing incentive alignment, but negative for high values of blockholder ownership because of increasing managerial entrenchment. In order to test this Hypothesis we split the sample in two according to the initial level of blockholder ownership (low blockholder ownership < 10 percent and high blockholder ownership ≥ 10 percent). We also tried a standard 5% threshold, and the results were similar.

// Insert Table 4 about here //

Table 4 shows the results of the estimation shown for both sub-samples. Model I shows the direct Granger test (Equations 3 and 4) with the control variables and common slopes and intercepts for all firms. We find that the causal relationships become insignificant for firms with low initial levels of blockholder ownership, whereas they remain significant and are somewhat stronger for firms with high initial levels of blockholder ownership. For low initial levels of blockholder ownership, the effect of past firm value drops by a factor 10 from –0.07 to -0.007, and the effect on firm value drops by a factor 3 from –0.006 to –0.002. The effects of the control variables remain qualitatively unchanged for low levels of blockholder

ownership, but for high levels sales increases have a negative impact on blockholder ownership (as predicted). The equity/assets ratio has a negative effect, which fails to support the Stultz (1988) model, but agrees with many previous studies reported by Holderness (2001).

In Table 4, Model II shows the expanded model with random firm and time effects. As can be seen the qualitative results are very similar for the two models. Consequently, although the Hausman test in Model II indicates that the model with random firm and time effects fits the data, adding the random effects does not change the results qualitatively. For high initial levels of blockholder ownership, the effect of past performance is found to be stronger -0.179 compared to –0.098 without fixed effects, but the performance effect is slightly weaker, and only significant at the 19% level. The control variables have the same effect as in Model I except that the (unexpected) negative association between capital structure and blockholder ownership now becomes insignificant.

We find no significant effects of Q-values on ownership for low initial blockholder ownership, although the effect is significantly negative for high values of initial blockholder ownership. Hypothesis 2 cannot be rejected: the negative effects of blockholder ownership appear to apply only when the initial level is high.

System differences

Another possible hypothesis is that the relationship between ownership and firm value might depend on system effects. For example, Hypothesis 3 proposes that increasing blockholder ownership will have a more positive effect on market values in common law countries where the risk of expropriation of minority investors by blockholders is checked by higher levels of legal protection. An indirect effect of Hypothesis 2 might work in the same way. Since the average level of blockholder ownership is much lower in the US/UK, companies in these systems are less likely to experience negative managerial entrenchment effects when blockholder ownership increases.

In order to test Hypothesis 3, the Granger tests are first run separately for the common law countries (US/UK) and civil law countries (continental European nations) (as shown in Table 5, Models I and II).

// Insert Table 5 around here//

The estimates include random time and firm effects (Equations 5 and 6). In continental Europe, lagged values of Q are found to have no significant impact on blockholder ownership, whereas lagged blockholder ownership has a negative effect on valuation. In the US/UK neither the link from blockholder ownership to firm value nor the link from firm value to blockholder ownership is significant. In other words, Hypothesis 3 cannot be rejected since the effect of blockholder ownership on valuation is less negative or more positive in common law countries that are believed to offer better legal protection to minority investors.

In order to establish whether this effect is attributable to high initial levels of ownership concentration, we break down both the civil law and common law samples by initial levels of ownership concentration (below or above the threshold of 10 percent blockholder ownership). Table 5, Model III shows the estimations for the sample with high initial blockholder ownership for both civil law and common law firms. We find that the negative effect of blockholder ownership effect in continental Europe is significant for high initial levels, while it is insignificant for low levels of initial blockholder ownership (not shown in the table). In other words, there is some evidence that the system effect is attributable to (or at least co-varies with) a high level of blockholder ownership. Further analysis (Table 5, Model III) shows that the blockholder ownership effect on valuation is insignificant in the US/UK - also for initial high levels. In other words, the negative effect of blockholder ownership on firm value appears to be attributable to an interaction effect - the combined effect of high blockholder ownership in a continental European system.

It appears that the high level of blockholder ownership in continental Europe is excessive seen from a firm value viewpoint. A plausible reason for the negative effect on firm value is that lower levels of investor protection in continental Europe imply larger private benefits of control for large blockholders than in the US/UK. When blockholder control is relaxed, the market therefore responds favourably. The private benefits might also explain why the large owners have not adjusted their shareholdings to maximize firm value.

Some further, circumstantial support for Hypothesis 3 may be found by observing the time trends in blockholder ownership in continental Europe compared to the US/UK. If

blockholder ownership were negatively correlated with firm value in continental Europe, there would seem to be an incentive to reduce blockholder ownership over time. This is what Figure 1 shows.

// Insert Figure 1 about here //

After an increase at the end of the 1980s, blockholder ownership in Europe has declined steadily from 57 per cent in 1991 to 51 per cent in 1998. Over the same period, blockholder ownership in the US/UK increased steadily from 7 to 13 percent - where the effect of blockholder ownership was found to be slightly positive (although insignificant). In other words, there is some evidence that the level of blockholder ownership actually adapts to market signals.

6. CONCLUSION

This paper has contributed to the ongoing discussion on the causal link between ownership structure and firm value.

The results may be summarised as follows: for high levels of blockholder ownership, further increases are found to have a negative effect on firm value. For low levels, the effect is insignificant. Likewise, the effect is insignificant in common law countries (US/UK), where the legal protection of minority investors is said to be higher than in civil law countries

(continental Europe). In contrast, the effect is negative and highly significant for high initial levels of blockholder ownership and for companies based in continental Europe where the risk of blockholder expropriation of minority investors is presumably higher. Finally, we find evidence of a negative and significant feedback effect from firm value to blockholder ownership, perhaps because blockholders are more likely to sell out when they can get a higher price for their shares.

Compared to previous studies of managerial ownership, the present study has relied on a broader concept of blockholder ownership, which includes managerial ownership and shareholdings controlled by management. Furthermore, this study has emphasised marginal change effects whereas level effects have presumably been neutralised by controlling for lagged values and adding random effects. For example, there may very well be positive effects of a high level of blockholder ownership while developments in the financial markets, monitoring technology, and other control factors have made it possible to increase shareholder value by marginally lowering that level. An assessment of the overall relationship between blockholder ownership and market value must involve both level and change effects.

Taking the Demsetz (1983) critique into consideration, we propose that the observed negative effect of blockholder ownership may not be an equilibrium phenomenon, but rather a consequence of the restructuring of corporate governance and finance taking place in the largest European companies. Furthermore, hidden owner identity effects may be at work; many incumbent owners of the largest European companies - such as families, governments, banks or company groups - appear to have more complex objective functions than

maximising shareholder value (Thomsen and Pedersen, 2000). When these groups reduce their holdings relative to outsider portfolio investors, the markets may (correctly) infer greater emphasis on shareholder value. Moreover, incumbent blockholders may not want to adjust their holdings to maximise shareholder value if they also value the private benefits associated with ownership.

REFERENCES

Barclay, M. J., & Holderness, C. G.. 1989. Private benefits from control of public corporations. Journal of Financial Economics, 25 (2): 371-396.

Bergström, C., & Rydqvist, K. 1990. The determinants of corporate ownership: An empirical study on Swedish data. Journal of Banking and Finance, 14(2): 237-253.

Berle, A., &. Means, C. 1932. The modern corporation and private property. New York: Macmillan,

Cho, M. 1998. Ownership structure, investment, and the corporate value: An empirical analysis. Journal of Financial Economics, 47(1): 103-121.

Chung, K. H., & Pruitt, S. W. 1994. A simple approximation of Tobin's q. Financial Management, 23: 70-74.

Cubbin, J., & Leech, D. 1983. The effect of shareholding dispersion on the degree of control in British companies: Theory and measurement. The Economic Journal, 93 (370): 351-369.

Demsetz, H. 1983. The structure of ownership and the theory of the firm. Journal of Law and Economics, 26(2): 375-394.

Demsetz, H., & Lehn, K. 1985. The structure of corporate ownership: Causes and consequences. Journal of Political Economy, 93 (6): 1155-1177.

Demsetz, H., & Villalonga, B. 2001. Ownership structure and corporate performance. Working Paper. Social Science Research Network.

Denis, D. J., Denis, D. K., & Sarin, A. 1997. Agency problems, equity ownership, and corporate diversification. The Journal of Finance, 52 (1): 135-160

Denis, D. J., & Sarin, A. 1999. Ownership and board structures in publicly traded corporations. Journal of Financial Economics, 52(2):187-223.

.Fama, E. F., & Jensen, M. C. 1983. Agency problems and residual claims. Journal of Law and Economics, 26(2): 327-49.

Gerson, J., & Barr, G. 1996. The structure of corporate control and ownership in a regulatory environment unbiased toward one share-one vote. Corporate Governance, 4(2): 78-93.

Granger, C. W. J. 1969. Investigating causal relations by econometric models and cross-spectral methods. Econometrica, 37(3): 424-438.

Hill, C. W., & Snell, S. A. 1989. Effects of ownership structure and control on corporate productivity. Academy of Management Journal. 32(1): 25-46.

Himmelberg, C. P., Hubbard, R.G., & Palia, D. 1999. Understanding the determinants of managerial ownership and the link between ownership structure and performance. Journal of Financial Economics, 53: 353-384.

Holderness, C. G. 2001. A Survey of Blockholders and Corporate Control. Economic Policy Review (forthcoming).

Holderness, C., & Sheehan, D. 1988. The role of majority shareholders in publicly held corporations. Journal of Financial Economics, 20 (1): 317-346.

Hoskisson, R. E., Johnson, R. A. & Moesel, D. D. 1994. Corporate divestiture intensity in restructuring firms: Effects of governance, strategy and performance. Academy of Management Journal, 37: 1207-1252.

Jensen, M. C., & Meckling, W. H. 1976. Theory of the firm: Managerial behavior, agency costs, and ownership structure. Journal of Financial Economics, 3: 305-360.

La Porta, R., Lopez de Silanes, F., Shleifer, A., & Vishny, R. W. 1999. Corporate ownership around the world. The Journal of Finance, 54(2): 471-519.

La Porta, R., Lopez de Silanes, F., Shleifer, A., & Vishny, R. W. 2000. Investor protection and corporate valuation. Journal of Financial Economics, 58: 3-27.

Li, M., & Simerly, R. 1998. The moderating effect of environmental dynamism on the ownership and performance relationship. Strategic Management Journal, 19(2): 169-179.

Lloyd, W. P., Hand, J. P., & Modani, N. K. 1987. The effect of the degree of ownership control on firm diversification, market value, and merger activity. Journal of Business Research, 15(4): 303-312.

Loderer, C., & Martin, K. 1997. Executive stock ownership and performance. Journal of Financial Economics, 45: 223-255.

McConnell, J. J., & Servaes, H. 1990. Additional evidence on equity ownership and corporate value. Journal of Financial Economics, 27(2): 595-612.

Mehran, H. 1995. Executive compensation structure, ownership and firm performance. Journal of Financial Economics, 38: 163-84.

Mikkelson, W., & Regassa, H. 1991. Premiums paid in block transactions. Managerial and Decision Economics, 12(6): 511-518.

Morck, R., Shleifer, A., & Vishny, R. 1988. Management ownership and firm value: An empirical analysis. Journal of Financial Economics, 20(1): 293-315.

Morck, R., Nakamura, M., & Shivdasani, A. 2000. Banks, ownership structure and firm value in Japan. The Journal of Business, 73: 539-567.

Myers, S. C., & Majluf, N. S. 1984. Corporate financing and investment decisions when firms have information investors do not have. Journal of Financial Economics, 13: 187-222.

Oswald, S. L., Jahera Jr., J. S. 1991. The influence of ownership on performance: An empirical study. Strategic Management Journal, 12 (4): 321-326.

Pedersen, T., & Thomsen, S. 1997. European patterns of corporate ownership. Journal of International Business Studies, 28(4): 759-778.

Pedersen, T., & Thomsen, S. 1999. Economic and systemic explanations of ownership concentration among Europe's largest companies. International Journal of the Economics of Business, 6(3): 367-381.

Renneborg, L. 2000. Ownership, managerial control and the governance of companies listed on the Brussels stock exchange. Journal of Banking and Finance, 24(2): 1959-1995.

Roe, M. J. 1991. A Political Theory of Corporate Finance. Columbia Law Review, 1: 10-67.

Roe, M. J. 1994. Strong managers, weak owners - the political roots of American corporate finance. Princeton: Princeton University Press.

SAS, 1999. SAS/STAT User's Guide, Version 8. Cary, NC: SAS Institute.

Stultz, R.M. 1988. Managerial control of voting rights: Financing policies and the market for corporate control. Journal of Financial Economics, 20: 25-54.

Shleifer, A., & Vishny, R. W. 1997. A survey of corporate governance. Journal of Finance, 52(2): 737-83.

Shome, D. K., & Singh, S. 1995. Firm value and external blockholdings. Financial management, 24(4): 3-14.

Short, H. 1994. Ownership, control, financial structure and the performance of firms. Journal of Economic Surveys, 8(3): 203-249.

Thomsen, S., & Pedersen, T. 1998. Industry and Ownership Structure. International Review of Law and Economics, 18: 385-402.

Thomsen, S., & Pedersen, T. 2000. Ownership structure and economic performance in the largest European companies. Strategic Management Journal, 21: 689-705.

Trostel, A. O., & Nicolas, M. 1982. Privately held and publicly-held companies: A comparison of strategic choices and management processes. Academy of Management Journal, 25(1): 47-63.

Zeckhouser, R., & Pound, J. 1990. Are large shareholders effective monitors? An investigation of share ownership and corporate performance. In G. R. Hubbard, (Ed.), Asymmetric information, corporate finance and investment. Chicago: University of Chicago Press.

Worldscope. 1997. Data definitions guide. Bethesda, MD: Disclosure Inc.

Worldscope-Disclosure (annually). Compact D — CD-ROM.. Bethesda, MD: Disclosure Inc.

Wright, P., Ferris, S. P, Sarin, A., & Awasti, V. 1996. Impact of corporate insider, blockholder, and institutional equity ownership on firm risk taking. Academy of Management Journal, 39(2): 441-463.

Table 1. List of Empirical Variables

Code	Description	Definition
Q	Transformation of the sum of the market value of equity, and the book value of the total debt divided by the book value of assets	Log [(Market price-year end * Common shares outstanding + book value of total debt) / book value of total assets].
LAGQ		Lagged value of Q (one lag)
ANGLO	System. Headquarters based in an Anglo-American common law system or in a continental-European civil law system	Dummy=1 for common law countries (US, UK). =0 for continental European civil law countries. (La Porta et al., 1999)
OS	Transformation of the fraction of closely held shares (chs). Closely held shares are shares held by blockholders including officers, directors (and their families), trusts, pension/benefit plans, and shares held by another corporation or individuals that hold more than 5%	Log [chs / (100-chs)]
LAGOS		Lagged value of OS (one lag)
SALES CHANGE	Changes in sales in timespan between measure of lagged values and present values	(Present value of sales - lagged value of sales) / lagged value of sales
SALES/ASSETS CHANGE	Changes in sales/assets in timespan between measure of lagged values and present values	Present value of sales/assets - lagged value of sales/assets
EQUITY/ ASSETS CHANGE	Changes in equity/assets ratio in timespan between measure of lagged values and present values	Present value of equity/assets - lagged value of equity/assets

Source: Worldscope-Disclosure (annually)

Table 2. Correlation matrix

	1	2	3	4	5	6	7
1) Blockholder ownership	1.00						
2) One lag of blockholder ownership	0.92***	1.00					
3) Q-value	-0.14***	-0.11***	1.00				
4) One lag of Q-value	-0.13***	-0.10***	0.96***	1.00			
5) Sales changes	0.06***	0.06***	0.05***	0.08***	1.00		
6) Changes in sales/assets turnover	-0.01	-0.01	-0.03**	-0.04***	0.15***	1.00	
7) Changes in equity/assets ratio	0.03**	0.04***	0.02*	-0.04***	-0.12***	-0.08***	1.00
Mean	-2.77	-2.87	-0.25	-0.28	0.13	-0.01	-0.29
Standard deviation	3.00	3.03	0.78	0.77	0.38	0.17	6.59

Table 3. Granger Causality Tests

	Model I		Model II (including controls)		Model III		Model IV (including controls)	
Dependent variable	OS	Q	OS	Q	OS	Q	OS	Q
Intercept	-0.237***	-0.003	-0.231***	0.009**	-1.018***	-0.069***	-1.014***	-0.060**
$Q_{(t-1)}$	-0.073***	0.956***	-0.071***	0.964***	-0.119***	0.703***	-0.114***	0.715***
$OS_{(t-1)}$	0.913***		0.913***		0.625***		0.625***	
$OS_{(t)}$		-0.006***		-0.006***		-0.004**		-0.004**
Controls:								
- Changes in sales			-0.052	-0.056***			-0.028	-0.014*
- Changes in assets			-0.016	0.112***			-0.049	0.083***
- Changes in equity/assets			-0.003	0.006***			-0.002	0.006***
N (observations)	6430	6766	6411	6745				
F-value	18080***	34709***	72123***	14741***				
N (firm-years)					6428	6764	6406	6740
Hausman test					522***	530***	521***	528***
Variance components:								
- Firms					1.996	0.104	2.006	0.100
- Time series					0.030	0.005	0.030	0.005
- Error					1.085	0.040	1.085	0.038

***, ** and * = significant at 1, 5 and 10 per cent, respectively

Table 4. Granger Causality by Initial Level of Insider Ownership

	Model I				Model II			
Initial level of insider ownership	Low		High		Low		High	
Dependent variable	OS	Q	OS	Q	OS	Q	OS	Q
Intercept	-0.733***	0.041***	-0.136***	0.006	-1.729***	0.011	-0.337***	-0.083***
$Q_{(t-1)}$	-0.010	0.965***	-0.097***	0.969***	-0.004	0.757***	-0.183***	0.722***
$OS_{(t-1)}$	0.845***		0.837***		0.645***		0.581***	
$OS_{(t)}$		0.001		-0.008***		0.001		-0.006*
Controls:								
- Changes in sales	0.123	-0.065***	-0.083*	-0.056***	0.125	-0.041**	-0.074*	-0.014
- Changes in asset turnover	0.055	0.175***	-0.063	0.114***	0.005	0.160***	-0.045	0.084***
- Changes in equity/assets	-0.004	0.003***	-0.003	0.006***	-0.004	0.004***	-0.003	0.006***
N (observations)	3165	3270	3006	3214				
F-value	1504***	8060***	1642***	6939***				
N (firm-years)					3160	3265	3001	3209
Hausman test					228***	219***	243***	253***
Variance components:								
- Firms					0.735	0.070	0.828	0.108
- Time series					0.023	0.006	0.031	0.004
- Error					1.245	0.030	0.858	0.042

Table 5. Granger Causality Tests by System

	Model I		Model II		Model III High levels of initial insider ownership			
System	Continental Europe		US/UK		Continental Europe		US/UK	
Dependent variable	OS	Q	OS	Q	OS	Q	OS	Q
Intercept	-0.083	-0.162***	-1.421***	0.017	0.028	-0.175***	- 0.701***	0.041
$Q_{(t-1)}$	-0.063	0.726***	0.032	0.711***	-0.037	0.709***	-0.049	0.742***
$OS_{(t-1)}$	0.622***		0.619***		0.595***		0.560***	
$OS_{(t)}$		-0.010**		0.003		- 0.015***		0.002
Controls:								
- Changes in sales	-0.021	-0.016	-0.049	-0.012	-0.021	-0.014	-0.170*	-0.016
- Changes in sales/assets	-0.160	0.119***	-0.009	0.083***	-0.097	0.107***	0.045	0.091***
- Changes in equity/assets	-0.010***	0.009***	0.001	0.005***	-0.006*	0.009***	-0.002	0.004***
N (firm-years)	1763	1954	4637	4780	1563	1730	1432	1473
Hausman test	145***	163***	362***	350***	134***	142***	107***	103***
Variance components:								
- Firms	0.871	0.086	1.386	0.089	0.684	0.093	0.588	0.078
- Time series	0.008	0.007	0.008	0.006	0.007	0.007	0.064	0.005
- Error	0.574	0.037	1.273	0.037	0.390	0.038	1.336	0.044

Figure 1. Blockholder ownership