Industrial and Financial Economics
Master Thesis No 2004:37

The link between ownership structure and firm performance

Evidence from Sweden's listed companies

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ISSN1403-XXXX
Printed by Elanders Novum

Abstract

This thesis explores the link between ownership structure and firm performance among Sweden's listed companies. The data collected for this research is for the period 1999-2003 and the sample consists of 87 companies. Five specific research questions are applied to explore the relationships between the vote fraction held by controlling owner/owners and performance and vote differentiation and performance. The performance measures applied are stock return, ROA, ROE and Tobin's Q. The results indicate that companies with a dispersed ownership structure, meaning the largest owner holds less than 20% of total votes, are associated with worse performance regarding stock return, ROA and ROE, but are highly valued relating to Tobin's Q. We present evidence that the relationship between vote concentration and performance may be spurious. When considering endogeneity and firm heterogeneity, firm specific factors, industry effect and categorization of the controlling owner seem to play vital role. Further our research shows that the relationships between vote concentration and performance vanish, when considering other vote owners exceeding different thresholds (5, 10 and 20%). In line with previous research vote differentiation does not affect firm performance. Instead risk and size of the company are decisive in the extent to which companies apply vote differentiation tools.

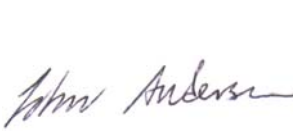
Key words: Company Performance, Vote Concentration, Vote Differentiation, Corporate Governance, Endogeneity

Acknowledgement

We would like to thank certain people who have been influential in the progress and completion of this thesis. First and foremost we would like to thank our supervisor and advisor, Lars-Göran Larson, Senior Lecturer in Economics at the Gothenburg School of Economics and Commercial Law. During the hours that he has spent with us, he has provided us with valuable help, guidance and advice on how to gain information, as well as how to structure and complete our research.

Additionally, we would thank Professor Lennart Flood at the Economics Department at the Gothenburg School of Economics and Commercial Law for his help in explaining and giving suggestions on how to treat various statistical matters during our research.

Gothenburg January 2004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Introduction

The introduction begins with a background description, introducing the reader to the subject. Thereafter the purpose of the thesis and the research questions are described. The chapter ends with the delimitations that we have established during the research.

1.1 Background

During our studies at the Graduate Business School (GBS), many courses have covered corporate governance and ownership control, i.e. in corporate finance, quantitative analysis, risk management and industrial organization.

In this thesis we study the relationship between ownership structure and firm performance among listed companies on the Stockholm Stock Exchange (SSE). Corporate governance and ownership control have been widely discussed in different tabloids and forums due to the scandals that have taken place. The Swedish corporate governance model is unique when compared to most other countries. Since Swedish firms make use of all three categories of control instruments allowed, vote differentiation, pyramid ownership and cross ownership.

The critique that has been brought forward against the Swedish corporate governance model is that strong controlling owners might take advantage of minority shareholders by controlling a large amount of vote power while at the same time only possessing a small portion of equity shares. This is mainly achieved by dual classes of shares and pyramid ownership.

The relationship between ownership structure and performance has been studied extensively by several researchers. Morck et al (1988) and McConnell and Servaes (1990) were among the first researchers who empirically examined the effect of ownership structure on firm performance. Both researches found a curvilinear relationship between Tobin's Q and the fraction of shares owned by insiders, implying that there should be a maximum point where the ownership structure would generate the maximum corporate value.

Other researchers, i.e. Demsetz and Lehn (1985) and Himmelberg et al (1999) found that ownership and performance are endogenously determined by firm specific factors and key variables in the firm's contracting environment.

The relationship has also been studied on Swedish data. For example Cronqvist and Nilsson (2002) and Chen (2004) have found relationships between vote concentration of the largest owner and firm performance. Peterson (1998) among others has further studied how the practice of vote differentiation is related to performance and firm specific factors.

1.2 Purpose

The main purpose of this thesis is to empirically examine if there is a relationship between ownership structure and firm performance among listed companies on the SSE. More specifically the relationships between vote concentration (vote fraction held by controlling owner/owners) and performance and vote differentiation and performance are examined. These relationships are studied in separate regression models. In addition, firm specific factors and industry effects are added in order to evaluate their impact.

Initially, our expectations were that we would find an optimal ownership structure that would be associated with the best performance. The expectations were that firms with weak control would be associated with poor performance while very strong owners would lead to expropriation of minority shareholder. We also expected that the practice of vote differentiation in some way would be related to firm performance.

1.3 Research questions

Our main research question is to explore the relationship between ownership structure and firm performance. The specific research questions are presented below:

1. How does firm performance affect the concentration of votes held by the controlling owner/owners?
2. How does firm performance affect the vote differentiation of the controlling owner/owners?
3. How does vote concentration and vote differentiation affect firm performance?
4. What is the interrelationship between vote concentration and vote differentiation among controlling owner/owners and firm performance?
5. What effect do firm specific factors, ownership specific factors and industry effect play in the interrelationship between vote concentration, vote differentiation and firm performance?

1.4 Delimitations

First and foremost, the data set has been collected from the SSE. Therefore the conclusions drawn from this study only hold true for companies in the Swedish market. A general conclusion of the

relationship of ownership structure and firm performance must be evaluated in an international environment.

Secondly, time has been a factor that has imposed a limitation on this thesis. The time distribution is presented in Figure 1. The data collection process has accounted for a major part of the 20 weeks set aside for this study. We have chosen standard measures concerning ownership structure, performance and control variables that have been most commonly used by other researchers and which are accessible. The data used has been collected from secondary sources in order to reduce the time spent on the data collection process. More precise performance measures could, for example, be obtained if the data was collected from annual reports and financial statements, because extraordinary items could be excluded. The same holds true for the ownership structure measures where the involvement of different owners was precise evaluated.

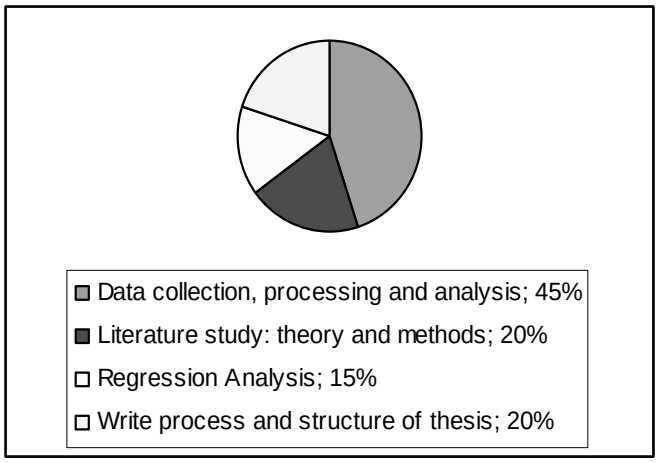

Figure 1: Time distribution of the thesis

Moreover, the regression models have been performed by applying standard OLS in the software Microsoft Excel. Due to the choice of software, simultaneous equations models applied by, for example, Himmelberg et al (1999) and Demsetz and Villalonga (2001) have not been applied. Because of limitations in time, we have only performed single equation models in Microsoft Excel.

2

Method

The following chapter describes which courses of action have been used to give a scientific answer to the research questions. We present the research model that has been used throughout the work. We describe the sample selection procedure to obtain our data set for the quantitative analysis. We describe the chosen variables, the statistical method applied and the econometric problems controlled for.

2.1 Courses of action

Our interest in the area of ownership control and ownership structure was awakened during the course of Integrated Project during our spring term studies at GBS. The extensive media coverage in combination with the fact that we wanted to do an investigating thesis got us into this field of work. To widen our perspective and to gain the necessary knowledge regarding the subject, we have read numerous articles, journals, books as well as research studies. The reading of articles gave us ideas of which data concerning different variables were necessary to collect. The process also gave us insight in what research models have been used in the past when performing similar studies within this area of work.

After gathering all the necessary data we applied the Ordinary Least Squares (OLS) method for our regression models. Following this, we tested the regression models for econometric problems in order to make sure that the data would lead us to valuable and not misleading results. After the regressions and the tests of the models were performed, we analyzed the obtained results from the econometric models and concluded our findings. During the work process we have

moved back and forth between theory and the results from the empirical findings. After getting an understanding of the underlying factors within the research area we were able to structure our theoretical framework. The information from the theory and results from the empirical findings lead us to come up with the more precise research questions.

2.2 Literature study

According to Andersen (1998) there are three main courses of action in the literature search process; to ask others, to read articles and to use the libraries databases.

We have had great help from our tutor, Lars-Göran Larsson, when it comes to getting advice on what literature to read and also about ways to find additional information. We have read numerous articles found at JSTOR, Business Source Premier and other databases. When searching for articles, we have especially looked for articles referred to by other researchers/scholars in the research area.

2.3Research model

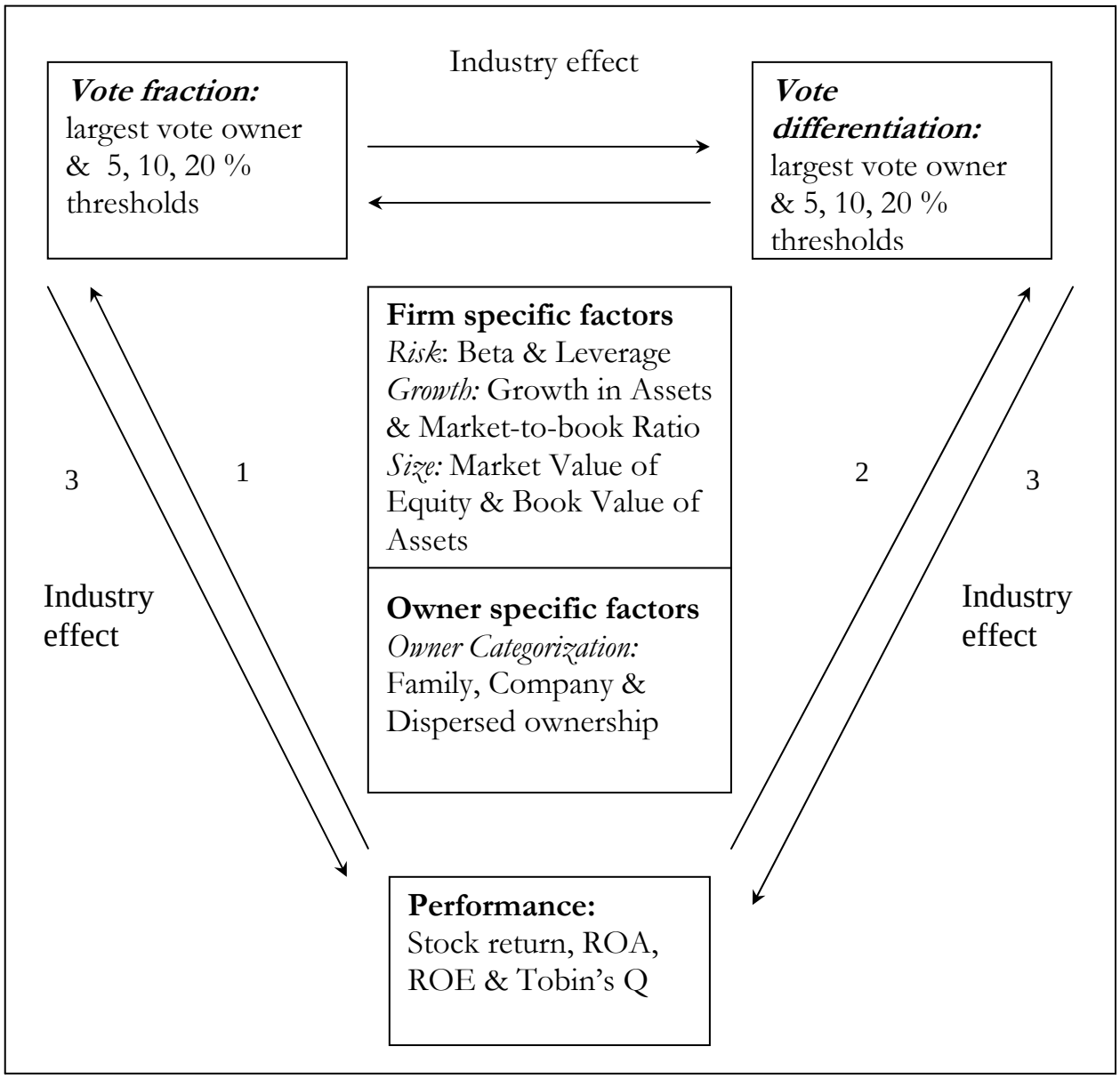

Figure 2: Research model

The research model presented in Figure 2 is connected to the five research questions stated earlier. The model illustrates the link between the variables used in the regression models. In the research model all the variables applied in the regression models are named. Three different kinds of regression models are applied in this thesis, namely; vote fraction models, vote differentiation models and performance

models. Arrow number one is tied to the first research question where the performance variables are set to explain the vote concentration of the controlling owner/owners. Arrow number two is tied to the second research question. The performance measures are used as explanatory variables for vote differentiation. The third arrow illustrates how vote concentration and vote differentiation can explain firm performance. The aim of the performance models is also to explore potential non-linear relationships between vote fraction held by controlling owner/owners and performance.

The fourth research question aims to explain the interrelationship between vote concentration and vote differentiation among controlling owner/owners and firm performance. This interrelationship is illustrated by all six arrows in the Figure 2.

Inside the triangular area of the research model the firm specific factors, risk, growth and size, are stated as well as the owner specific factors concerning the controlling owner. Outside the triangle we aim to illustrate the effect industry plays in the relationship between ownership structure and firm performance. The answering of research questions four and five are imbedded in the three main regression models and our findings will be presented in the empirical results and analysis chapter.

2.4 Sample selection procedure

For a firm to be included in the data set, it must be listed on the A-list most traded, A-list other, Attract 40 or the O-list. All in all we had a population of approximately 300 potential companies to choose from. Secondly, all firms must have been listed on the SSE for the five-year period which we are looking at. Regarding the choice of our sample period we think that the sample period represents both ups and downs

in the economy (see Section 4.1, overview of variables). According to Gomez-Meija et al (1987) pooling performance over a five-year time span reduces variability and provides a better long term indicator. In addition, it provides a more reliable and valid measure of firm performance than annual measures. Several researchers within the area e.g. Demsetz and Villalonga (2001) use a five-year period for the data set. Also we wanted a sample period that represents the conditions of today implying that the chosen time period is 1999-2003.

The third constraint for a firm to be included in the data set was that the firm had to be a manufacturing (production) firm. Hence regulated firms, such as utilities firms and financial firms are excluded (Han et al, 1998). We have classified banks and investment companies as financial firms. These are excluded in order to create comparability between the firms in our data set (Han et al, 1998). Also financial firms are subject to laws and regulation which are out of control of the firm. Regarding the classification, we have used the same classification as used in "Veckans Affärer" (2004).

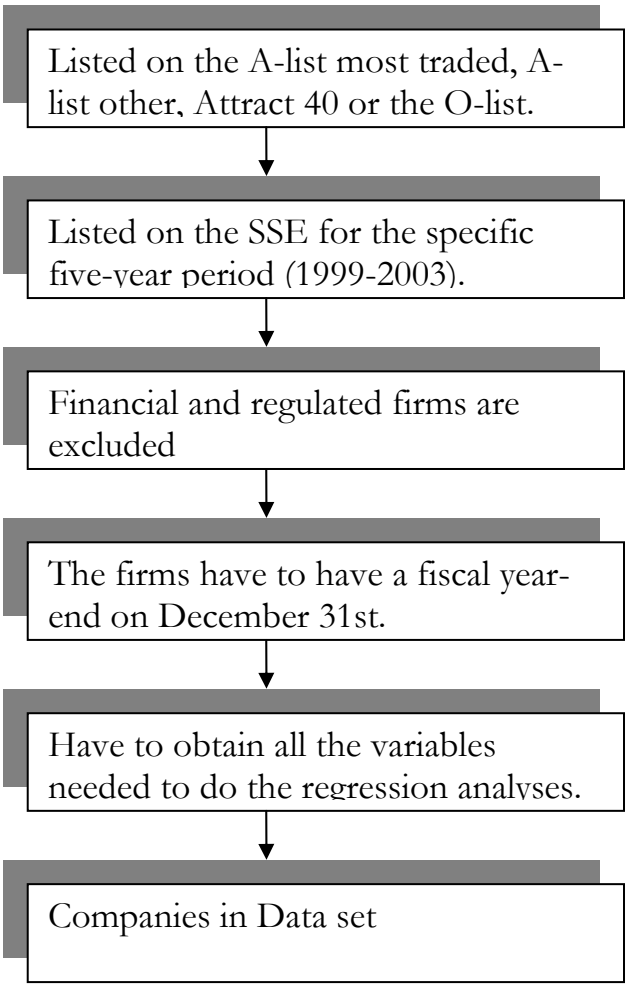

Figure 3: Sample selection model

We do not include firms with fiscal year-ends other than December 31 (Han and Suk, 1998). This criterion is needed to calculate meaningful earnings-price ratios (Banz and Breen, 1986). This criterion is also used to increase the comparability since most of the variables are measured at year-end. The final criterion is that if data for any variable is missing for one specific year, the company is excluded from the data set. The final data set consists of 87 companies.

2.5 Reliability and validity of study

Reliability measures how exact the research is and whether it consists of true and reliable information. It measures how the results are affected by coincidences and how secure and precise the measuring is (Andersen, 1998). The raw data is collected from secondary sources such as Ecovision AB and the OMX Group. It is vital that one take the necessary precautions when collecting the data. Different individuals have been contacted to make sure that the data is reliable and accurate. Regarding the human error, we have tried to eliminate this by carefully checking the figure for each variable for each year. Regarding our sample selection procedure we have chosen variables that have been commonly used in various well-known articles with high reliability. To ensure the reliability of our regression results we have tested for heteroskedasticity. We have also checked for multicollinearity between variables and discussed the problem of autocorrelation. The econometric problems and actions taken will be further discussed in Section 2.8.

Validity measures how well the empirical results match with the theory and whether it is relevant in the context (Andersen, 1998). The results obtained are both similar and different from results obtained by other researchers' findings concerning Swedish conditions.

Altogether we consider the reliability and validity of our study to be high**.** Throughout our study we have used cited work and research models developed by well known authors and researchers. We have carefully chosen sample selection procedure, variables and regression models and applied it to the Swedish conditions.

2.6 Selected variables

In this study we have applied discrete random variables and continuous random variables. A discrete random variable can take only a finite number of values. Discrete variables are commonly used in economics to record qualitative or non numerical characteristics. In this role they are sometimes called dummy variables (Hill et al, 2001). A dummy variable can take on two values, 0 or 1, in order to indicate the absence or presence of the related variable.

In this study three different dummy categories have been used to separate between different industries, different ownership categories of the controlling owner and different percentage brackets of the votes possessed by controlling owner/owners. When one uses the dummies in the regression model, one has to omit one of the variables to avoid the dummy variable trap of exact collinearity (Hill et al, 2001).

The other variables used in the regression models are continuous variables that can take on any "real" value (Hill et al, 2001). If not stated specifically in the text, the figures for calculating the different variables are year-end figures. For all the variables we have taken the average value over the five-year period unless anything else is specified. The headings for the variables are the same as in the research model (Figure 2)

2.6.1 Performance

For this study we have primarily focused on the relationship between company performance and ownership structure for the chosen companies. The chosen performance measures are; ROE, ROA, Stock Return and Tobin's Q.

Return on Equity (ROE)

ROE is calculated by taking the net result over shareholders' equity for each specified year. ROE represents what return the company is making on the shareholders' funds invested in the company. ROE assesses leadership's ability to get the job done. A business that has a high return on equity is said to be one that is capable of generating cash internally (Ross et al, 2002). For this thesis the accounting data concerning net results and shareholder equity have been collected from the software Ecovision ProTrader.

Return on Assets (ROA)

ROA is calculated by taking the net result over assets for each specified year. ROA measures how efficiently the company's assets are used to generate profit. This ratio is often used by investors and potential investors to evaluate a company's leadership. ROA is best used when comparing returns between different industries. Just as for ROE, ROA can be calculated in many different ways, i.e. one can apply results before taxes and interest instead of net results. However the net result is used frequently and since it is more accessible we decided to use the net results and not consider taxes, interest as well as extraordinary items.

Performance measures should not be sensitive to accounting choices and methods, they should evaluate the current management decisions, they should consider the risks of investment decisions and they should

not penalize managers for circumstances that are beyond their control (Damodaran, 2002). Neither ROA nor ROE fulfills these requirements. A better choice would perhaps be to use EVA or any other performance that consider adding "real" value through previous investments. However ROA is used by Chen (2004) and Cronqvist and Nilsson (2002), while ROE is used by Han et al (1999) among others. Because of the ease in accessing these measures and the wide knowledge of both, we decided to apply these instead of EVA. The figures for ROA have been collected from the software Ecovision ProTrader.

Stock Return

The next performance measure used is the geometric average stock return. According to the Journal of Finance, expected return and cash-flow news are identified as drivers of stock returns (Vuolteenaho, 2002). Hence, stock return is partly a profitability measure but also considers future expectations.

Stock return is an important performance measure since it actually shows the fluctuations that have occurred throughout the year and whether or not the stock has increased or fallen in value. We have looked at the stock return over a five-year period. This is motivated by the fact that short-term stock returns are too volatile to be used as a reliable measure of corporate performance (Han and Suk, 1998). Han and Suk (1998) have also used the geometric average stock return over a five-year period. The stock prices have been collected at the OMX Group (www.omxgroup.com, 2004-10-01) and are the stock prices of the first day of trade for each year. The stock prices for each year are the adjusted stock prices considering the splits and new issues that have occurred in some of the companies. However we do not account for

dividends payouts, which is in line with Han and Suk (1998). For companies with both A and B shares, the stock price for the stock which was most commonly traded was used.

Tobin's Q

Tobin's Q differs from the performance measures previously described since it is regarded as a valuation measure and is not related to profitability. The Tobin's Q variable is highly correlated with the market-to-book ratio. We have chosen to use Tobin's Q as a dependent performance variable, while the market-to-book ratio is used as an explanatory growth variable. Tobin's Q is much more commonly used especially in the international environment by e.g. McConnell and Servaes (1990) and Han and Suk, (1998), while the market-to-book ratio has been used as a performance variable by Peterson (1998) and also by Chen (2004). The formula for calculating Tobin's Q is market value of total assets divided by the replacement cost of total assets. We have chosen to use the simple Tobin's Q which is calculated by summing up market value of equity and book value of total debt and divided it by the book value of assets (Thomsen et al, 2003). The correlation between Tobin's Q and the simple Tobin's Q is extremely high. Chung and Pruitt (1999) found that the correlation between the two was 0.97.

2.6.2 Vote fraction

For the vote fraction we have used two different approaches. Firstly, we have applied the single largest vote owner as dependent variable, meaning we have looked at the percentage of voting rights of the largest vote owner. This is the most commonly used vote fraction measure used by e.g. Chen (2004) and Cronqvist and Nilsson (2002). Secondly we have used the simple fixed rule which uses the vote owners exceeding a threshold of 5%, 10% and 20%, respectively, to represent degrees of control. (Leech and Leahy, 1991). The threshold model is

used to show that there are other large vote owners, beside the controlling owner that might have impact on firm performance (Peterson, 1998).

Another way of evaluating the overall distribution of voting power is by using power indices where the ability to form a winning coalition is compared among different owners (Chen 2004). The Banzhaf Index and the Shapley-Shubik Index are two examples of power indices that exist. We have chosen not to include any of the power indices in our regression analysis. Chen (2004) finds that the Shapley-Shubik indices are highly correlated with the absolute vote fraction as the correlation coefficient is around 0.85. Since the calculation of these indices is time consuming, the simple fixed rule has been applied.

The data concerning voting rights and equity shareholding (used to calculate the vote differentiation) has been collected from the books "Ägarna och Makten" (Sundin et al, 1999-2003). In "Ägarna och Makten" (Sundin et al, 1999-2003) the historical ownership data and definitions of ownership spheres and families are published annually and represent the ownership structures at year-end. According to Agnblad et al (2001) this information is regarded as very reliable, i.e. the corporations are invited to correct the information before publication.

Besides the absolute vote fraction we also use the square of the vote fraction to test for a curvilinear relationship (McConnell and Servaes, 1990) between vote concentration of controlling owner/owners and firm performance. We also apply percentage bracket dummies to test if another non-linear relationship is present. The percentage brackets used are 0-20%, 20-40%, 40-60%, 60-80% and 80-100% to represent the vote fraction of the controlling owner/owners. Percentage brackets

have been modified to represent Swedish conditions. Morck et al (1988) use a similar procedure when they test for a piece-wise linear relationship between vote concentration and firm performance.

2.6.3 Vote differentiation

The vote/equity (v/e) ratio shows the relationship between the percentage of votes and the corresponding amount of equity (ownership) held by a controlling owner. If subtracting 1 from the v/e ratio, the variable excess votes is obtained (Cronqvist and Nilsson, 2002). The v/e ratio and excess votes measure the exact same thing and the correlation between the two is one. In addition to the v/e ratio, we have used the natural logarithm of v/e (ln v/e) to check if a non-linear relationship exists (Peterson, 1998).

2.6.3 Firm specific factors

The firm specific factors are; risk, growth and size according to the research model.

Risk

The two risk variables applied in this study are beta and leverage. The difference between the two chosen risk variables is that beta measures firm specific risk while leverage measures financial risk.

Beta is a commonly used risk variable when talking about stocks. Beta measures the volatility of a fund relative to a benchmark index. Another measure besides beta is the standard deviation, a measure that has been applied in other articles, e.g. Demsetz and Lehn (1985). Because of the standard form of beta and the simplicity and ease of comparison among companies, we apply beta instead. Han and Suk (1998) use beta as a measure for firm specific risk. A stock with a beta higher than one has higher risk than the average company in the market while a beta below

one is associated with a lower risk. The beta values have been e-mailed to us by Krister Säfström employed at Ecovision AB. The beta is calculated for the five-year period of study.

Leverage measures how much of the firm's total assets are financed by debt or equity. The most commonly leverage measures used are the debt/equity ratio and the debt/asset ratio. For this thesis, leverage has been calculated by taking book value of debt divided by book value of assets (D/A). Debt includes all non shareholders' equity. This leverage measure is used by Chen (2004).

Growth

Two different growth measures are applied in this study, growth in assets and the market-to-book ratio.

Growth in Assets was calculated by taking assets for the current year over assets for the previous year and then subtracting this figure by one. The figures were collected from the software Ecovision ProTrader. Other measures for growth in the firm are growth in sales applied by e.g. Himmelberg et al (1999). However we argue that growth in assets is a better measure for the "real" growth of the firm, as used by e.g. Chen (2004).

We considered using the earnings-price (e/p) ratio (Han and Suk, 1998) as a growth measure but since the interpretation of the e/p ratio is unclear when it is negative, we decided not to use this measure.

The Market-to-book ratio is similar to Tobin's Q. The market-to-book ratio measures how much higher the market value of equity is compared to the book value of equity. The market-to-book value can be seen as

both a valuation measure and a growth measure. It reflects investment opportunities that have been acquired or developed and in that sense it is connected to the firm's growth potential. It also may reflect valuation consequences of superior or inferior management of assets (Peterson, 1998). It will later be shown that the market-to-book ratio is strongly related to the firm specific risk of the company. The market value of equity is collected from the OMX Group (www.omxgroup.com, 2004-10-15). The book value of equity is obtained from Ecovision ProTrader.

Size

We have used two different size measures, *Market Value of Equity* and *Book Value of Assets*. The market value of equity was collected from OMX Group (www.omxgroup.com, 2004-10-10). For companies with both A and B shares we calculated the market value by adding the market value of equity for each share type to calculate the total market value of equity. The book value of assets was obtained from Ecovision ProTrader.

We have calculated the average market value of equity and the average book value of assets respectively and then taken the natural logarithm of these average values. The natural logarithm is used to scale down the high values of the size measures and is used by most researchers e.g. Himmelberg (1999).

2.6.4 Owner specific factors

Dummy variables have been used to categorize the controlling owner of the companies, meaning that we have looked at the single largest owner during the five-year period as well as the owner category it represents. The owner category dummies have been divided into three different categories for the largest owner, family ownership, company ownership

and dispersed ownership. To be included in the two first categories the same owner type has to have an average vote ownership of at least 20% over the five-year period.

Included under family ownership are all firms controlled by individuals as well as families. The private owner can be either the founder of the firm or an investor who has acquired control. (Agnblad et al, 2001). Family owned spheres (i.e. the Wallenberg sphere and the Douglas sphere) are included in this category while company owned spheres such as SHB sphere and SEB sphere are considered company owned spheres and therefore fall under the company owned category (Agnblad et al, 2001). Also included under company owned category are investment companies, regular companies and institutional owners.

For the third category we have included companies that do not reach the average 20% level of voting rights over the five-year period. Also, mutual funds are included under this category. There are five mutual funds included and all of them fall under the dispersed ownership category, not because they are mutual funds but because their ownership is less than 20%. Robur Mutual Funds and Sjätte AP Fonden are two of these companies. In the beginning we wanted to study the effects of institutional ownership i.e. mutual funds' effect on performance; however, since there are few companies that fulfill the criterion, the idea was abandoned. Foreign owners fall under the same criteria as the Swedish companies. We have made sure that these owners are either family or company controlled. All the owner category data has been collected from the books "Ägarna och Makten" (Sundin et al, 1999-2003).

Another categorization of the controlling owner that has been used by other researchers is to separate between private (individual) owners and institutional owners (Holmén and Högfeldt, 2002). We argue in line with Cronqvist and Nilsson (2002) that depending on if the controlling owner possesses only a smaller fraction of total votes it has a major impact on firm performance. Therefore we have set a cut-off value of 20% for the controlling owner to represent dispersed ownership, a practice used by Cronqvist and Nilsson (2002). Our data set consists of 42 family-, 26 company- and 19 dispersed ownership-controlled firms.

2.6.5 Industry effect

Our data set consists of companies from 7 different industries, as defined by "Veckans Affärer" (2004). The categorization of the 87 companies is as follows; 35 Industry Goods, 20 Information Technology, 9 Material, 8 Seldom Commodities (Sällanköpsvaror), 7 Real Estate, 7 Pharmaceutical, and 1 Everyday Commodity (Dagligvaror). We have mainly used industry dummies for industry goods and information technology while the other industries have been labeled as "Others" (a total of 32 companies). This procedure was taken since we do not have enough firms in these industries to make a general conclusion. However, in some cases the industry dummies for the other industries have been used independently.

2.7 Statistical method

The method used to test our research questions for this thesis is the Ordinary Least Squares (OLS). A regression analysis refers to a technique of studying the relationship among two or more variables (Hill et al, 2001). The OLS method serves as the best linear unbiased estimator (BLUE) between two or more variables (Hill et al, 2001, p.77). The Gauss-Markov theorem states that under five different

assumptions of the linear regression model, the estimators have the smallest variance of all linear and unbiased estimators (Hill et al, 2001, p.77).

We have used a cross sectional data collection which means that the data have been collected over the studied time period and then an average has been calculated. Our study involves more than one independent variable and is therefore a multiple regression analysis, meaning that two or more variables explain the variations in the dependent variable (Hill et al, 2001). The multiple regression analysis has been performed with help of the software Microsoft Excel.

2.8 Econometric problems and actions taken

It is important to recognize that when using cross-sectional data in econometric models, econometric problems such as heteroskedasticity multicollinearity and autocorrelation might occur. We have used cross sectional data in our analysis and are aware of the implications this might bring us.

Heteroskedasticity

Heteroskedasticity is a problem in econometric estimation because it violates the OLS assumption of constant variance between the dependent variable and the independent variable. Hill et al (2001, p.238) describe heteroskedasticity as the case when the variances for all observations are not the same. One has to note that there are consequences with heteroskedasticity for the least squares estimator. For example, if a linear regression model is heteroskedastic and the least squares estimator is used to estimate the unknown coefficients then the least squares estimator is still a linear and unbiased estimator but it is no longer the best linear unbiased estimator. (Hill et al, 2001, p.238). In

addition, the standard errors for the least squares estimator are incorrect and the confidence intervals and hypothesis may be misleading.

The occurrence of heteroskedasticity is most common when using cross-sectional data. We have investigated the existence of heteroskedasticity by estimating the different models using least squares and have plotted the least squares residuals. If the errors are homoskedastic, there should be no patterns of any sort in the residuals. If the errors are heteroskedastic, they may tend to exhibit greater variation in some systematic way (Hill et al, 2001, p.244). Since we did not find any patterns in the residuals it was not worthwhile to perform a formal test for heteroskedasticity, i.e. the Goldfeldt-Quandt test (Hill et al, 2001, p.245). The residual plots for the presented full regression models in order to test for heteroskedasticity are presented in appendix 5.

Multicollinearity

Multicollinearity exists when data are the result of an uncontrolled experiment, were many of the economic variables may move together in systematic ways (Hill et al, 2001, p.190). A more simplified description would be that multicollinearity exists when two or more independent variables are correlated. In the thesis we have checked for multicollinearity by the use of pair-wise correlation matrixes. A matrix is characterized by 1's on the diagonal and it is symmetric meaning that the information below the diagonal is identical to that above the diagonal. Microsoft Excel only presents the correlation coefficients below the diagonal. A commonly used rule of thumb is that correlation coefficient between two explanatory variables greater than 0,8 or 0,9 in absolute value indicates a strong linear association and a potentially harmful collinear relationship (Hill et al, 2001, p.190). In the analysis we

present whether high correlation or collinearity between variables may exist.

Autocorrelation

Hill et al (2001) describe how autocorrelation occurs when the current error term contains not only the effect of current shocks but also the carryover from previous shocks. Frequently changes in ownership are likely to take longer to manifest in operating performance than in market valuations (Cronqvist and Nilsson, 2002). Cronqvist and Nilsson (2002) have tried to solve the autocorrelation problem by measuring ROA at time t and all other variables at time t-1. In our case, since the ownership structure and the vote fraction possessed by controlling owners do not change much over the years, we argue that the problem of autocorrelation is minimal. Therefore we have decided to collect the performance measures, the vote variables and other control variables at year end.

F-test: Test of Significance

The F-test aims to distinguish whether we can reject the null hypotheses and determine if one or more of our variables are of significance. The ANOVA table obtained from the summary output after running the regression model presents the F-statistic and it also presents the significance that one can reject the null hypothesis. If the significance of F is below any critical level, usually a 5% level, one can with certainty say that at least one of the variables is of significance.

3

Theory

In this chapter we present a summary of the theory used to support our empirical results and analysis. The chapter begins by introducing how the Swedish corporate governance system works. It is followed by a presentation concerning general corporate governance theory and agency theory and how ownership control differs between different countries. The chapter ends with a discussion about theory concerning the specific models applied in this thesis.

3.1 Corporate Governance in Sweden

3.1.1 The Swedish history

100 years ago, Sweden was characterized by a rapidly advancing industrial sector and was carried by its two new social groups – capital and labor – that reshaped the economic, political and social arenas. A relatively small group of leading industrialists and bankers, most often recruited outside the establishment, represented the commercial interests (Högfeldt, 2004).

The Swedish labor market had ideological influences from Germany despite the fact that the leadership was primarily stimulated by ideas from the British labor movements that could be implemented politically. The labor and capital market together with the Liberal Party and the Social Democrats successfully fought for general and equal suffrage against The Old Right (Gamla Högern) that was organized around the king and supported by the nobility (Högfeldt, 2004).
In 1932 the Social Democratic vision of The Good Home (Folkhemmet) was not only the political answer to the turbulent

economic and political times with its focus on full employment policies but also represented the democratic modernity with strong emphasis on democratic values. To implement the vision of the good society, the economic policies promoted growth and full employment, particularly in the post world war II period until the 70's, and the development of a large public sector. In the mid 70's the society reached its peak of welfare, and 40 years of growth turned into 30 years of relative stagnation and recurrent economic, financial and budget deficit crises and significant loss of economic welfare. (Högfeldt, 2004)

The Swedish industry is often described as a champagne glass. Sweden has a lot of large companies, while in the middle segment there are not that many companies (Tson Söderström et al, 2003). In the lower segment there are a lot of companies. Sweden has the right culture to bring forward small companies, i.e. we have the so called "Gnosjö andan" which means that small companies build networks and help each others.

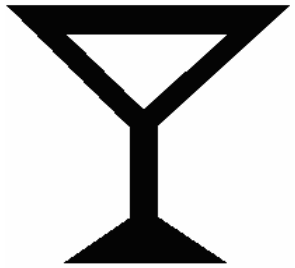

Figure 4: Illustration of Swedish industry: Champagne Glass

Sweden has several large, old and highly specialized firms in stagnating industries and a lack of new, growing firms in advancing industries. The structure of the Swedish industry may be a problem for the future in developing new, high technology companies. Also the ideological grounds have played an important role in the Swedish economy as the Social Democrats focusing on the largest listed firms. The government looked particularly on the amount that was spent on R&D and promoted policies that supported financing via retained earnings and borrowing from a strongly relation-based banking system but disfavored equity markets as supplier of capital for egalitarian reasons. The political

support of the dual-class of shares and pyramiding has been widely discussed outside the country (Högfeldt, 2004).

3.1.2 The Swedish conditions

Corporate Governance is a ”hot” topic in Sweden due to the number of financial scandals, mainly due to the compensation paid to present and former managers and directors. To find a solution to this problem and rebuild the confidence in the Swedish industry, the Swedish government appointed a Public Confidence Commission, led by the former Minister of Finance Erik Åsbrink. The main task for the Commission is to propose a code of ethics for companies listed on the SSE.

Skandia has played a starring role in Sweden as the scoundrel. It seems as if there must be a scandal before the society wakes up and does something about the problems. Not only Skandia have had doubtful businesses, ABB almost went bankrupt due to the high incentives paid to top management. Also Ericsson has had generous bonus programs to top management, despite the fact that the company was forced to ask the stockholders for a sustainable infusion of new capital of 30 billions SEK to manage their finances (Gyllenhammar, 2003). These financial scandals have a relationship to ownership control and have made the Swedish corporate governance model widely discussed both in the research areas and in the daily press.

The Swedish model for corporate governance has also been discussed outside the country. The EU commission has an ambition to break the existing control structure. The global pension and savings funds, which along Anglo-American lines, have sought stronger protection for minority shareholders and more disclosure in areas where Swedish companies still lag behind (Tson Söderström et al, 2003). One could not find any new large companies after the post world war II period. After

the IT bubble burst in the late 1990´s there has not occurred a lot in the Swedish industry and no large companies have been established. During the IT bubble, Icon Medialab and Framfab were two companies that were growing rapidly. Today the two companies are small players on the market. Most of the large Swedish companies have transformed separate business units to become a new firm with a new company name.

3.1.3 Ownership control in Sweden

When talking about corporate governance and ownership control there are three different stakeholders involved. Figure 5 illustrates the triangle drama between the different stakeholders involved; company management, the controlling owners and the large mass of minority owners. The minority owners can not or will not take control of the company. The major question is if it is the company management or the controlling owners who can better create a surplus value. In the USA it is company management that has control over the firm, while Sweden has majority of large controlling owners.

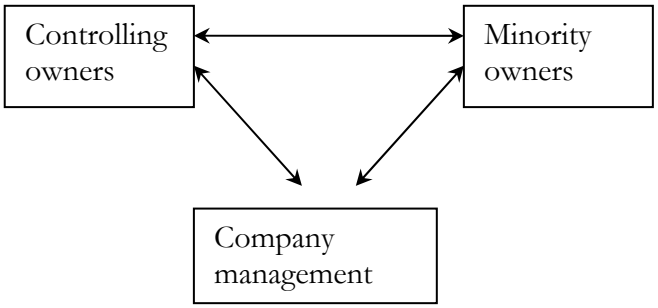

Figure 5: Ownership control: Triangle Drama

There are three main instruments for ownership control; vote differentiation, pyramid ownership and cross ownership. With these instruments an owner can control large listed companies with a limited capital stake, especially if the owner is allowed to combine these three instruments. According to La Porta (1999) Sweden is the only country being a "top-three country" in all of the three categories. In USA vote

differentiation is only allowed to be used on listed companies and even this method is used relatively sparingly.

Sweden is one of few countries that allows a combination of all three instruments to separate the ownership and control. The difference between the Swedish model compared to other European countries is the frequent usage of vote differentiation with a combination of the pyramid ownership via different investment companies as Investor and Industrivärden. Investor is controlled by the Wallenberg sphere: the companies that the Wallenberg sphere controls, account for half of the market value of the SSE (Tson Söderström et al, 2003).

In our data set, 63 companies apply vote differentiation. The trend for the companies on the SSE is that they try to smooth the deviation between vote and capital ownership. Ericsson, the Swedish Telecom company, has had one of the largest deviations between votes and capital on the SSE. The A share was worth 1000 times more in vote power compared to the B share. This system has been criticized a lot, both by shareholders and by different stakeholders. SHB and the Wallenberg sphere are the largest actors in Ericsson and they want the vote control over the company to protect the company from foreign owners. At an extra shareholders' meeting in August 2004, they decided to change the vote differentiation between A- and B-shares. The transformation entitles one A-share to one vote and one B-share to a tenth vote (www.ericsson.com, 2004-10-03).

Holmén and Högfeldt (2002) find that the instruments for separation of ownership and control are used differently in different companies. They have studied two groups, companies that were listed in 1979 and companies listed between 1979 and 1997 as well as two types of

ownership; private owners and institutions. Holmén and Högfeldt (2002) mean that the two owner categories value control differently, and the institutions are assumed to have a lower private value of control. The use of vote differentiation is a bit more common in newly introduced companies than in older companies. In the private owned companies 89 percent made use of vote differentiation while the corresponding figure for the institutions was only 48 percent. We can draw a parallel to USA where only five percent of the companies have made use of vote differentiation.

3.2 General corporate governance theory and agency theory

Berle and Means presented in 1932 an article discussing the problems arising from the separation of ownership and control in modern corporations. This article still retains a central position in economic theory and is often referred to and lies as a basis for the huge interest in the "separation of ownership and control" issue that leads to different agency problems. Berle and Means (1932) predicted that when managers hold little equity in the firm and shareholders are too dispersed to enforce value maximisation, corporate assets may be deployed to benefit managers rather than shareholders.

In 1976 Jensen and Meckling defined the concept of agency costs, showed its relationship to the "separation of ownership and control" issue and investigated the nature of the agency costs. Jensen and Meckling (1976) among others have in accordance with the convergence-of-interest hypothesis found that the performance of companies increases with management ownership.

However, Demsetz (1983) and Fama and Jensen (1983) pointed out the offsetting costs of too high management ownership. Managers'

entrenchment may give rise to expropriation of minority shareholders, since their natural tendency is to allocate the firm's resources in their own best interest (Jensen and Meckling, 1976). This "entrenchment" hypothesis predicts that corporate assets can be less valuable when managed by individuals with too large control of the company. Managerial, or in our case controlling owners', benefits include consumption of perquisites, but also involve pursuit of non-value-maximizing objectives such as investing in large negative net present value projects, sales growth, empire building and employee welfare (Jensen and Meckling, (1976), Fama and Jensen, (1983), Morck et al, (1988)).

As mentioned the convergence-of-interest hypothesis predicts that larger stakes among managers or controlling owners should be associated with higher market valuation. The prediction of the entrenchment hypothesis is not that clear-cut. The problem of entrenchment is not just a consequence of vote power. Some managers, by virtue of their tenure with the firm, status as a founder and so forth get attached to their work with relative small equity stakes, whereas other managers in firms with a large outside controlling owner may be only weakly attached to their jobs despite high equity ownership (Morck et al, 1988). They further argue that it is not possible to a priori predict which force that will dominate at any level of ownership, the convergence-of-interest hypothesis or the entrenchment hypothesis.

Demsetz presented in 1983 the theory that even small equity ownership by the managers may still force them towards value maximization. This is due to the market discipline of the firm, through e.g., the managerial labour market, the product market and the market for corporate control (Morck et al, 1988). Demsetz (1983) views the ownership structure of

the firm as an endogenous outcome of a maximizing process in which more is at stake than just accommodating to the shirking problem. Demsetz (1983) claims that the ownership structure is an endogenous outcome of competitive selection in which various cost advantages and disadvantages are balanced to arrive at an equilibrium organization of the firm. One can not simply state that diffuse ownership structure fails to yield the profit maximization criteria or that it does not yield an efficient resource allocation. Demsetz (1983, p.390) finishes the article with the following statement "In a world in which self-interest plays a significant role in economic behaviour, it is foolish to believe that owners of valuable resources systematically relinquish control to managers who are not guided to serve their interests".

In a broad perspective, vote concentration and other factors related to ownership structure changes with respect to changing conditions of law and regulation, as well as the economic development both within and outside the firm. Jensen and Meckling (1976) state that both law and the sophistication of contracts are products of a historical process in which there were strong incentives for individuals to minimize agency costs.

La Porta (1999) found that with the exception of firms in economies with very good shareholder protection, relatively few firms are widely held. This stands in contrast with the hypothesis presented by Berle and Means (1932), with the prediction that management should be in control of the widely held modern corporations because of the separation issue.

The thesis focuses on the Swedish corporate governance and control model, which is part of the continental European corporate governance model (Barca and Becht, 2001). The Swedish corporate governance

model is centered on the practice of dual class of shares and/or pyramid structure leading to controlling owner/owners with comparably small equity ownership (Rydqvist, 1998). These owners are usually referred to as Controlling Minority Shareholder (CMS) (Cronqvist and Nilsson, 2002). The type of governance problems shifts from a management and shareholder conflict which is present in the Anglo-American countries, to instead involve agency problems between controlling owners and minority interests. The main issue in the Swedish corporate governance model is therefore to restrict the expropriation of minority shareholders by the controlling shareholders, rather than restricting managers´ expropriation of shareholders as Berle and Mean (1932) predicted. According to La Porta (1999) the Swedish corporate governance model is relatively investor friendly in comparison to international practice. Despite this fact the Swedish governance model has come under severe attack in recent years.

3.3 Theory concerning specific models

3.3.1 Vote fraction models

Chen (2004) and Cronqvist and Nilsson (2002) have found that firm performance measured as ROA is positively related to the vote concentration of the controlling owner. Cronqvist and Nilsson (2002) also found that there exists a strong negative relationship between the controlling owners' vote ownership and firm value, measured as Tobin's Q, suggesting that controlling owners are associated with agency costs. They also found that the negative effect is largest for family controlled firms, suggesting that families are associated with the largest agency costs.

Stultz (1988) offers a theory of the relationship between management ownership and Tobin´s Q focusing on the takeover process. According

to this theory, management's preference for control and refusal to tender its shares forces acquirers to pay a higher premium to gain control when management's stake is higher. Relating these finding to the Swedish conditions, a dispersed ownership structure creates a higher risk for takeover, but also seem to generate higher market valuation. This implies that a dispersed ownership structure is associated with lower agency costs.

The results concerning Tobin's Q in the Swedish market differ dramatically from American results. McConnell and Servaes (1990) among others (see more details under Section 3.3.3, performance models) found that there exists a curvilinear relationship between the vote fraction controlled by managers and firm value (Tobin's Q) and that increasing management ownership would generate higher firm value. In contradiction, Himmelberg et al (1999) found that ownership is strongly influenced by both observable firm characteristics and more importantly, unobserved firm heterogeneity (fixed-firm effects) in the contracting environment. When controlled for firm specific factors and fixed-firm effects, Himmelberg et al (1999) found no exogenous relationship between ownership structure and firm value. Altogether, the theory suggests the interest in testing different performance measures (Stock return, ROA, ROE and Tobin's Q) relationship to vote fraction of the controlling owner/owners.

Concerning the control variables applied in the regression framework, Himmelberg et al (1999) state that the optimal managerial ownership level involves a trade-off between diversification and incentives for performance. Since higher managerial ownership levels, all else being equal, imply less portfolio diversification for managers, one would expect that the higher the firm's specific risk, the lower the optimal

managerial ownership. One would expect not only this relationship for managerial owners, but possibly also for controlling owners in our data set. Demsetz and Lehn (1985) are of the opposite view, and claim that a firm's control potential is directly associated with the noisiness of the environment in which it operates and that noisier environments should give rise to more concentrated ownership structures. The firm specific risk, in our case beta, is associated with the type of instability for which control is most useful.

Regarding leverage, one conjecture is that that controlling owners use bank monitoring as a device or an alternative governance mechanism to counterbalance the perceived increase in agency costs of control (Holmén, 1998). Besides this, Chen (2004) also presents another conjecture, which is that controlling owners engage in less than efficient risky projects, which allows them to borrow more in order to keep control. Chen (2004) obtained a positive significant relationship between the vote fraction of controlling owner and leverage (D/A ratio). This implies that higher leverage facilitates a higher degree of owner control and that strongly controlled firms have a sufficiently well functioning governance system.

Demsetz and Lehn (1985) argue that as the value-maximising size of the firm grows, both the risk-neutral and risk-aversion effects of larger size ultimately should outweigh the shirking cost that is expected from a more diffuse ownership structure. Himmelberg et al (1999) argue that size has an ambiguous effect on the scope of moral hazard by managers and owners. On the one hand, monitoring and agency costs can be greater in larger firms, creating a desire for higher managerial ownership. In addition, larger firms employ more skilled and wealthier managers, suggesting a higher level of managerial ownership. On the other hand,

large firms might enjoy economies of scale in monitoring by top management, leading to lower optimal level of managerial ownership.

Chen (2004) argues that normally the bigger the firm, the lower the ownership/vote concentration, indicating size should be negatively related to vote concentration. This does not exclude the possibility that large firm can have a powerful owner/founder with a limited amount of shareholding. We will later see that vote differentiation exhibits a positive relationship to size.

Chen (2004) argues that a firm with a high growth potential is more likely to be related to a controlling owner with possibly high voting rights. Dual classes of shares enable the owner to have control of the firm but at the same time reduce the owner's risk exposure in the firm by holding fewer shares. This enables owner-controlled firms to grow faster than they otherwise would.

Chen (2004) found that the market-to-book ratio does not exhibit any significance to the vote power in the single equation framework. However, when applying a simultaneous equations model she concludes that increasing vote power has a strong negative effect on the market-to-book ratio.

3.3.2 Vote differentiation models

If divergence between vote power and ownership of equity leads to large deviations from value-maximizing behaviour, firm performance will be negatively affected. Mikkelson and Partch (1994) and Peterson (1998) among others have not found a relationship between the controlling owners' ratio of vote power to equity ownership and firm performance.

Cronqvist and Nilsson (2002) found that a greater vote differentiation through the practice of dual classes of shares does not have any direct effect on firm value. The result suggests that it is the level of vote ownership by controlling owners that is the source of agency costs. The use of dual class of shares only seems to have an indirect effect on firm value, by enabling controlling owners to reach a high level of vote ownership for a fixed lower level of capital investment (Cronqvist and Nilsson, 2002).

Peterson (1998) found that shares with superior voting rights are traded at a large premium at the SSE and that this is evidence of significant private benefits of control that seems to expropriate minority shareholders. However, Peterson (1998) presents two alternative explanations that despite the vote differentiation of controlling owners they do not seem to pursue personal non-profit maximizing objectives leading to poorer performance.

Firstly, Peterson (1998) found that controlling owners use other organizational constraints that limit the potential of non-value-maximizing behaviour. This organizational constraint includes especially the firm's capital structure that works as a substitute for equity ownership in controlling agency costs in companies with an institutional controlling owner. Debt may for institutional owners' work both as a bond on the shareholders' incentive to misuse the free cash flow as well as allowing the bondholders to act as a substitute form of monitoring. Theory therefore expects, the higher the financial risk, measured as debt-asset ratio, the higher the vote differentiation.

The motivation for high vote differentiation may also arise when the risk of replacing incumbent management with less efficient

management is high. This occurs when the firm's environment is uncertain, i.e. when the risk of the firm is high, when the firm is small or when the decision and control are in the hands of the same individuals (Peterson, 1998). However, Peterson (1998) found that firm specific factors such as firm risk and firm size are not related to the vote differentiation of the controlling owner.

Peterson (1998) also found that owner-specific characteristics may be an important reason for the vote differentiation among different companies. Denis and Denis (1994) and DeAngelo and DeAngelo (1985) found that the choice of ownership structure for individual and family controlled firms is more closely related to owner-specific than to firm-specific factors. They found evidence that high vote differentiation may be an efficient form when the controlling owner is substantially involved in managing the firm.

In our models we will run regressions with v/e as a dependent variable instead of as e.g. Peterson (1998) performed his regressions with the natural logarithm of vote differentiation (ln v/e) as the dependent variable. As the correlation matrixes indicate, the two measures' correlation with different variables are rather similar and as will be presented later, the results we obtain are stable to changes from vote differentiation to the natural logarithm of vote differentiation.

3.3.3 Performance models

In order to test the nature of the relationship between the vote fraction of the largest owner and performance concerning stock return, ROA, ROE and Tobin's Q, we will check if a possible curvilinear relationship is present or if performance in other ways seems to exhibit a non-linear relationship to the vote fraction of the largest owners.

The literature presents different ways in which the relationship between performance and the vote fraction possessed by controlling owner/owners can be tested, assuming that a non-linear relationship is present. McConnell and Servaes (1990) and Stultz (1988) among others use both the vote fraction and the square term of the vote fraction possessed by corporate insiders, in the regression framework applying Tobin`s Q as the dependent variable. Han and Suk (1998) use the square term applied on stock returns instead. The square term is included to capture the potential curvilinear relationship between performance and vote fraction of controlling owner/owners.

The reason for including the square term is that one expects that the level of insider ownership is curvilinear related to firm performance. The hypothesis suggests that as managers or controlling owners increase their equity ownership, their interests coincide more with outside or minority shareholders, and thereby the agency problems may be resolved. Therefore one expects a positive sign on the vote fraction. However, if the square term shows a significant negative value it indicates that excessive insider ownership rather hurts firm performance, due to the problem associated with managers and controlling owners' entrenchment. If a positive sign is present for the vote fraction and a negative sign on the square of the vote fraction, an optimal point concerning ownership should be present generating the best performance.

Morck et al (1988) among others instead adopt a piece-wise linear regression to study the relationship between Tobin's Q and insider ownership. Morck et al (1988) separate out differences on valuation through Tobin's Q, depending on whether the board owns below 5%, between 5-25% or over 25% of the total outstanding shares.

We will study the potential non-linear relationship between vote concentration and firm performance, by adopting both the square term of vote fraction and the percentage dummies in the regression framework.

According to Han and Suk (1998) beta should be positively related to stock return, size negatively related to stock return and growth positively related to stock return. We know from the studied period that IT companies, representing high risk companies, have lower performance both when looking at stock return and accounting profitability. Chen (2004) also stated that larger companies historically have recorded higher profit margins compared to other companies. In general, larger companies have lower firm specific risk. Therefore it is expected that size should be positively related to both stock return and accounting profitability whereas the firm specific risk should be negatively related to the performance measures mentioned. Han et al (1999) state that leverage should have a positive effect on ROE.

4

Empirical results

This section starts out with an overview of statistics of each variable included in the regression models. Thereafter we present explanations of summary statistics. We finally present our empirical results from the vote fraction models, vote differentiation models and performance models.

4.1 Overview of variables

In this section we give a presentation of the year-by-year statistics for each variable. We present the mean, median, minimum and maximum value for each variable as well as the standard deviation. The average for each variable that is being used is also presented.

4.1.1 Performance

Stock Return	*1999*	*2000*	*2001*	*2002*	*2003*	*Geom. Avg.*
Mean	0,425	-0,007	-0,065	-0,203	0,461	0,002
Median	0,232	-0,058	0,007	-0,241	0,272	0,020
St. Dev.	0,735	0,421	0,379	0,365	0,672	0,186
Minimum	-0,457	-0,864	-0,861	-0,869	-0,483	-0,514
Maximum	3,536	0,964	1,235	1,007	4,321	0,409

Figure 6: **Overview : Stock Return**

ROA	*1999*	*2000*	*2001*	*2002*	*2003*	*Avg.*
Mean	0,026	-0,014	-0,034	-0,063	-0,012	-0,019
Median	0,047	0,047	0,030	0,024	0,031	0,029
St. Dev.	0,104	0,265	0,194	0,232	0,139	0,142
Minimum	-0,426	-1,433	-0,854	-1,218	-0,893	-0,603
Maximum	0,172	0,288	0,214	0,239	0,268	0,140

Figure 7: Overview: ROA

ROE	*1999*	*2000*	*2001*	*2002*	*2003*	*Avg.*
Mean	0,071	-0,001	-0,062	-0,168	-0,014	-0,035
Median	0,114	0,144	0,080	0,062	0,075	0,075
St. Dev.	0,209	0,569	0,399	0,713	0,255	0,309
Minimum	-0,883	-3,422	-1,670	-4,450	-1,062	-1,245
Maximum	0,431	0,688	0,411	0,364	0,407	0,264

Figure 8: Overview: ROE

Tobin's Q	*1999*	*2000*	*2001*	*2002*	*2003*	*Avg.*
Mean	2,224	1,757	1,462	1,201	1,513	1,631
Median	1,451	1,312	1,219	1,095	1,313	1,392
St. Dev.	1,921	1,169	0,779	0,440	0,771	0,782
Minimum	0,662	0,735	0,712	0,630	0,752	0,748
Maximum	13,441	6,853	6,378	3,661	6,125	5,072

Figure 9: Overview: Tobin's Q

From the stock return measures we can see that 1999 and 2003 were positive years. The strong positive stock return in 1999 is explained by the IT hype, while the positive return in 2003 represents the recovery from three weak years due to the IT bubble burst. For all four measures one can see that 2002 represents the weakest year with the clear negative stock return, negative accounting profitability measures and a low valuation according to Tobin's Q. The maximum and minimum values for each performance measures indicate that the performance varies substantially among companies.

4.1.2 Vote fraction and vote differentiation

Vote fraction of largest owner	*1999*	*2000*	*2001*	*2002*	*2003*	*Avg.*
Mean	0,384	0,389	0,379	0,371	0,375	0,380
Median	0,353	0,352	0,345	0,354	0,340	0,352
St. Dev.	0,203	0,208	0,212	0,211	0,214	0,200
Minimum	0,046	0,056	0,050	0,050	0,042	0,053
Maximum	0,895	0,895	0,906	0,906	0,927	0,900

Figure 10: Overview: Vote fraction of largest owner

v/e of largest owner	*1999*	*2000*	*2001*	*2002*	*2003*	*Avg.*
Mean	1,936	1,807	1,940	1,894	1,843	1,884
Median	1,470	1,460	1,492	1,470	1,470	1,496
St. Dev.	1,421	1,350	1,494	1,427	1,087	1,265
Minimum	0,996	0,605	0,704	0,710	0,823	0,882
Maximum	10,974	10,897	9,907	11,722	7,111	10,122

Figure 11: Overview: v/e ratio of largest owner

Figures 10 and 11 indicate that vote fraction and vote differentiation are stable over time. The average vote fraction controlled by the largest owner is 38 %. However, as can been seen, the vote fraction possessed by the largest owner differs dramatically among different companies. The vote differentiation also differs between different companies and controlling owners, from controlling owners that have ten times more votes than capital, i.e. Investor's ownership in Ericsson, to below 1.

4.1.3 Firm specific factors

Risk

Beta	*Average*
Mean	0,866
Median	0,615
St. Dev.	0,715
Minimum	0,135
Maximum	3,340

Figure 12: Overview: Average Beta

Leverage	*1999*	*2000*	*2001*	*2002*	*2003*	*Avg. Lev.*
Mean	0,544	0,558	0,563	0,571	0,558	0,559
Median	0,568	0,588	0,574	0,585	0,583	0,590
St. Dev.	0,186	0,195	0,177	0,175	0,190	0,176
Minimum	0,060	0,050	0,092	0,133	0,062	0,117
Maximum	0,872	0,958	0,915	0,888	0,882	0,888

Figure 13: Overview: Leverage

The statistics for the beta measure indicate that the companies in our data set have a lower average firm specific risk compared to the market. The median measure indicates that there are more low risk companies than high risk companies in our data set. The higher mean compared to median also indicates that we have several high risk companies in the data set. The minimum and maximum values further indicate that the risk differs between the companies. The leverage also varies between the companies. One can see that the average company is financed more through debt than equity.

Growth

Market- to-Book ratio	*1999*	*2000*	*2001*	*2002*	*2003*	*Avg.*
Mean	3,516	2,676	2,048	1,478	2,082	2,356
Median	1,935	1,784	1,737	1,262	1,787	1,743
St. Dev.	3,955	2,617	1,634	0,900	1,201	1,585
Minimum	0,332	0,350	0,373	0,341	0,621	0,415
Maximum	25,801	14,544	9,442	4,592	7,097	8,214

Figure 14: Overview: Market-to-book ratio

Growth in assets	*2000*	*2001*	*2002*	*2003*	*Avg.*
Mean	0,355	0,054	-0,043	-0,007	0,090
Median	0,167	0,049	-0,041	-0,027	0,063
St. Dev.	0,812	0,323	0,212	0,183	0,213
Minimum	-0,617	-0,505	-0,516	-0,526	-0,293
Maximum	6,508	1,979	0,874	0,725	1,576

Figure 15: Overview: Growth in assets

The market-to-book ratio is similar to the Tobin's Q. As can be seen, both measures experience the same fluctuations throughout the years. The market-to-book ratio/Tobin's Q has the highest value in 1999 and experiences the lowest value in 2002. The average company was valued more than twice as much in 1999 compared to 1999. Looking at the growth in assets, 1999 was an extreme year. This was mainly due to the increase in intangible assets in certain companies.

Size

MV of equity	*1999*	*2000*	*2001*	*2002*	*2003*	*Avg.*
Mean	18773	15836	11278	6037	7002	11785
Median	1299	1167	968	790	1163	1017
St. Dev.	115027	91568	50517	14632	16102	56254
Minimum	120	90	72	20	59	113
Maximum	1072275	851985	460718	99116	108762	518571

Figure 16: Overview: Market value of equity (MSEK)

Book Value of assets	*1999*	*2000*	*2001*	*2002*	*2003*	*Avg.*
Mean	9772	11721	12520	11392	10776	11236
Median	1501	1776	1815	1771	1755	1851
St. Dev.	25534	31067	32251	27978	25359	28321
Minimum	65	47	37	56	63	65
Maximum	202628	250314	250056	208267	182372	218727

Figure 17: Overview: Book value of assets (MSEK)

Figure 16 indicates that the average firm's market value of equity has fallen by 2/3 from the end of 1999 to the end of 2002. The book value of assets has not fluctuated that much. Looking at the minimum and maximum value for both measures, one can see that there is a large difference between the largest and the smallest. The large difference between the mean and the median is explained by a couple of large companies which brings up the mean value while the median value remains low.

4.2 Explanation of regression statistics

In this section a brief description of the summary output from the regression analysis in Microsoft Excel is presented.

The *R Square* is a descriptive measure of goodness of fit. It measures the proportion of the variation in the dependent variable that is explained by variation in the explanatory variables. R Square itself does not measure the quality of the regression model, and therefore one can not only look at the model generating the highest R Square when determining which model to use. However the R Square can be low in some regression models but will still be viewed as efficient since regression results using cross-sectional data normally record low values of R Square (Hill et al, 2001).

A relatively high *standard error* in comparison to the value of the *coefficient* indicates that the result can not be considered relevant. The *t Stat* equals the coefficient value divided by the standard error. The *P-value* explains the probability that the t-distribution can have a value that is greater than or equal to the absolute sample value of the test statistics (Hill et al, 2001).

The F value in the ANOVA table indicates whether the null hypotheses can be rejected or not, and concludes that one or more of the variables in the model is of significance. The *Significance F* value in the ANOVA table shows the probability that we can reject the null hypotheses.

When presenting the results from our empirical findings we refer to the correlation matrixes included in Appendix 1-4. In the correlation matrixes we have included the four performance measures, the two risk measures, the two growth measures and the two size measures. We also include the owner category dummies; family ownership and dispersed ownership along with the industry dummies; industry goods and IT. Besides these variables we have included the vote fraction and vote differentiation measure. Since we consider both the largest vote owner

and owner exceeding different thresholds (5, 10 and 20%) we have used four different correlation matrixes to be able to study the correlation between the different variables.

4.3 Vote fraction models

To test the relationship between performance and ownership structure, we began by separately regressing the different performance measures against the vote power of controlling owner/owners. We will look both at the single largest vote owner within the sample companies as well as different threshold vote fractions. The thresholds we use concerning votes are 5%, 10% and 20%. In addition to this we will in separate regressions study the relationship between firm specific factors (risk, growth, and size) and vote concentration of controlling owner/owners. We will also check for differences concerning industry effects and owner categorization of the controlling owner. Finally we will construct full regression models.

Applying the vote fraction of the single largest owner as the dependent variable we see that the three performance measures stock return, ROA and ROE in separate regressions all exhibit a strong positive relationship towards vote concentration. The relationships are significant at the 1% significance level and add explanatory power of around 10%, when looking at R Square in the summary output of the regressions.

Looking at the threshold vote fractions, the relationships towards the three performance measures disappear. The accounting profitability measures, ROA and ROE, still show positive signs in the correlation but the significance are not enough to conclude any relationship at the 10% significance level. The lowest p-value obtained is 0.12 for the 20%

threshold vote fraction model using ROA as the explanatory variable. Stock return can be considered completely uncorrelated towards vote concentration in all threshold vote fraction models.

In the separate regression applying Tobin's Q as the explanatory variable we find a negative significant relationship at the 1% significance level, applying the vote fraction of the largest owner as dependent variable. In the 10% and 20% threshold vote fraction models the relationship is negatively significant at the 10% significance level, while in the 5% threshold vote fraction any conclusion about the relationship can not be drawn. Tobin's Q, like the three other performance measures, adds explanatory power of around 10% (R Square in summary output) in the relationship to the vote fraction of the largest owner. The results concerning the relationship between vote fraction of controlling owner/owners and the four performance measures are summarized in Figure 18.

Vote fraction of largest owner			
	P-value	R Square	Relationship
Stock return	0,0030	0,0987	Positively related
ROA	0,0013	0,1153	Positively related
ROE	0,0046	0,0907	Positively related
Tobin´s Q	0,0024	0,1034	Negatively related
Threshold vote fractions			
Stock return	0,629 - 0,846	0,0005- 0,0028	Uncorrelated
ROA	0,119 - 0,220	0,0176 - 0,0283	Uncorrelated
ROE	0,476 - 0,671	0,0021 - 0,0060	Uncorrelated
Tobin´s Q	0,065 - 0,130	0,0267 - 0,0395	Slightly negative related

Figure 18: Regressions: Vote fraction and performance

The separate regressions show that there exists a positive relationship between the absolute vote fraction that the controlling owner/owners persist and the belonging vote differentiation. The significance for this relationship is positive and significant at the 5% level when applying all threshold vote fractions, while a positive relationship can not be determined by looking at the single largest vote owner. However, when studying the relationship between the vote fraction of the largest owner and the natural logarithm of vote differentiation (ln v/e), a transformed variable used by e.g. Peterson (1998), we also get a significant positive relationship here.

The vote concentration seems to vary between industries, implying that industry effects should be present. In the IT sector there are indications of a negative relationship to the vote fraction of the largest owner. Other models show that the vote fraction of largest owner seems to be higher in the real estate industry, even if it is not significant at the 5% significance level. Since there are not many real estate firms included in the data set, it is difficult to conclude that the real estate industry in general has controlling owners with higher vote fraction than in other businesses.

When applying threshold vote fractions as the dependent variable we can also here see industry effects. Industry goods now seem to have a positive relationship to the vote fraction, especially in the 5% threshold vote fraction model. The correlation matrix indicates that industry goods are significant at the 5% level while the whole model only is significant at the 10% level. This phenomenon is the case in many of our separate regressions. However, even if we can not get separate significance for different industry dummy variables, we conclude that industry effects play some role in the concentration of votes. The

explanatory power (R Square in summary output) indicates that this is the case.

The owner category dummies prove to add most explanatory power to the vote fractions persist by the controlling owner/owners. This is natural since we have created a cut-off value of 20% for the owner category representing dispersed ownership. The results from our regressions show that both when regressing vote fractions of largest owner and vote fractions of different thresholds there is a negative significant relationship between the vote fraction and the dispersed ownership category. For family controlling firms there is a significant positive relationship to the vote fraction of the largest vote owner. The positive relationship for family controlling owner loses significance when looking at threshold vote fractions. Applying the 20% threshold vote fraction as the dependent variable, the family owner category dummy only is significant at the 10% level, while its effect vanishes more in the 10% and 5% threshold vote fraction models. Company as owner category generates divergent results. Together with the family owner category dummy there seems to be a positive relationship, while together with the dispersed owner category dummy the relationship is negative to the vote fraction. This is the case in all vote fraction models, leading us to conclude that we can not say whether company controlled firms in general have lower or higher vote ownership. The explanatory power of the owner category dummies are greatest in the largest owner vote fraction model where the dummies explain over 40% in the variation of the controlling owner's vote fraction. The explanatory power successively decreases in the threshold vote fraction models, from 26% in the 20% threshold vote fraction model to around 12% in the 5% vote fraction model.

The firm specific risk, measured as beta, is negative significant to the vote concentration of the largest vote owner. This indicates that in companies with higher risk the vote concentration is lower. IT companies, we know from the recent IT stock bubble, represent high risk companies. As already mentioned in the separate regression between industry dummies and controlling vote fraction, within IT companies, the vote concentration of the largest owner was in general lower. In a separate regression between beta and the industry dummies we get a highly positive significant relationship between beta and IT and an explanatory power (R Square) of around 60%, which is regarded as extremely high. Besides IT, the pharmaceutical industry also seems to have higher firm specific risk. The relationship between beta and the vote fraction completely disappears in the separate regression models where we look at threshold vote fractions for controlling owners. The separate regression results between vote fraction of controlling owner/ owners and beta, along with the other firm specific factors are summarized in Figure 19.

	P-value	R Square	Relationship
Vote fraction of largest owner			
Beta	0,0070	0,0824	Negatively related
Leverage	0,7413	0,0013	Uncorrelated
Market-to-book ratio	0,0086	0,0784	Negatively related
Growth in assets	0,8100	0,0007	Uncorrelated
Size - ln MV E	0,7813	0,0009	Uncorrelated
Size - ln BV A	0,2896	0,0132	Uncorrelated
Threshold vote fractions			
Beta	0,576 - 0,785	0,0009 - 0,0037	Uncorrelated
Leverage	0,358 - 0,550	0,0042 - 0,0100	Uncorrelated
Market-to-book ratio	0,131 - 0,184	0,0207 - 0,0267	Uncorrelated
Growth in assets	0,447 - 0,754	0,0012 - 0,0068	Uncorrelated
Size - ln MV E	0,840 - 0,963	0,0000 - 0,0005	Uncorrelated
Size - ln BV A	0,492 - 0,661	0,0023 - 0,0056	Uncorrelated

Figure 19: Regressions: Vote fraction and firm specific factors

As the correlation matrixes indicate a slight positive correlation between leverage and the vote fraction possessed by the controlling owner/owners is present. However there is no significance in the relationship. The lowest p-value obtained when regressing leverage and vote fraction separately is 0.36, implying that leverage does not explain the concentration in vote ownership.

The correlation matrixes show a negative sign in the correlation between the vote concentration of controlling owner/owners and the average growth rate in assets. However the significance is not enough as the lowest p-value is obtained in the 10% threshold vote fraction model of 0.45. This leads us to conclude that the real growth of the firm does not affect the concentration of votes by the controlling owners in Swedish firms.

We find a significant negative relationship between the vote fraction of the largest owner and the market-to-book ratio. The correlation is still negative in the threshold vote fraction models, while the significance varies between p-value of 0.13 in 10% and 20% model and 0.18 in 5% threshold vote fraction model.

There is a positive sign in the correlation between the size variables and the vote concentration in all vote models. Though, the significance is low and reaches its best value for the size variable, ln BV A, with a p-value of 0.29. This leads us to conclude that the size of the firm is insignificant in explaining the vote concentration of the controlling owner. This is due to the fact that the sample companies to a large extent use dual classes of shares and/or pyramidal structure which effectively reduce the size effect.

When performing regression models with several variables to check for the significance in different variables, there are a few aspects to consider. We have earlier noted that there exists a high correlation between beta and the industry dummies, where particularly the IT industry is strongly positively correlated to beta. It is also the case that the performance measures (stock return, ROA and ROE) and beta are highly negatively correlated which the correlation matrixes indicate. Besides this, the market-to-book ratio is highly positive correlated with beta. When we are constructing our combined full regression models we therefore must keep in mind the high correlation that exists between beta and the performance measures (stock return, ROA and ROE), the market-to-book ratio and the industry dummies, especially the IT industry.

Vote fraction largest owner = $\beta_1+\beta_2$StockReturn$+\beta_3$Beta$+\beta_4$Leverage $+\beta_5$GrowthInAssets $+\beta_6$Market-to-bookRatio$+\beta_7$Size$+e$

Regression Statistics	R Square			
	0,136			
ANOVA	*F*	*Significance F*		
	2,102	0,062		
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0,469	0,111	4,223	0,000
Stock return	0,255	0,152	1,676	0,098
Beta	-0,017	0,042	-0,420	0,676
Leverage	-0,032	0,137	-0,231	0,818
Growth in Assets	-0,043	0,106	-0,406	0,686
Market-to-book ratio	-0,020	0,016	-1,239	0,219
Size - ln BV A	-0,001	0,014	-0,056	0,955

Figure 20: Vote fraction as dependent variable (stock return)

In Figure 20 we have included all the firm specific factors, in order to check the stability of the positive relationship between stock return and the vote fraction of the largest owner. As can be seen, stock return is

now only vaguely significant at the 10% significance level, while the other variables do not seem to exhibit any relationship towards vote fraction possessed by the controlling owner. The R Square measure specifically indicates that adding the firm specific factors has not added much explanatory power to explaining the vote fraction of the controlling owner. This is explained by the fact that stock return, beta and the market-to-book ratio are related to each other. When excluding beta from the figure, both stock return and the market-to-book ratio become significant at the 10% significance level. This shows that when not taking the firm specific risk into account, the market-to-book ratio is negatively related to the vote concentration of the controlling owner.

Vote fraction largest owner = $\beta_1+\beta_2$ROA$+\beta_3$v/eRatio$+\beta_4$Beta$+\beta_5$Leverage $+\beta_6$GrowthInAssets$+\beta_7$Market-to-bookRatio$+\beta_8$FamilyOwnership $+\beta_9$DispersedOwnership$+$e

Regression Statistics	R Square			
	0,466			
ANOVA	*F*	*Significance F*		
	8,507	0,000000030082		
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	0,486	0,077	6,293	0,000
ROA	0,224	0,147	1,517	0,133
v/e ratio	0,007	0,015	0,487	0,628
Beta	-0,022	0,033	-0,681	0,498
Leverage	-0,139	0,106	-1,316	0,192
Growth in assets	0,056	0,080	0,699	0,487
Market-to-book ratio	-0,008	0,013	-0,617	0,539
Family Ownership	0,086	0,039	2,191	0,031
Dispersed Ownership	-0,209	0,050	-4,187	0,000

Figure 21: Vote fraction as dependent variable (ROA)

The accounting profitability performance measures, ROA and ROE, as mentioned are positively related to vote concentration of the largest vote owner. We check the stability of this relationship by adding different control variables. In Figure 21 we see that ROA no longer is significant positively related to the vote fraction of the controlling owner. The only variables that are significant are the owner category dummies; family ownership is positively related to vote concentration and dispersed ownership negatively related. The explanatory power of this model is much higher than in the previous model, indicating that the owner categorization of the controlling owner is most important.

Neither the v/e ratio nor the market-to-book ratio enters with significance. Including the natural logarithm of the v/e ratio does not impact the significance of vote differentiation to vote concentration of the largest owner. The reason why the v/e ratio is not significant is mainly due to the fact that it is highly dependent on the categorization of the controlling owner. As we will see in the vote differentiation models, a dispersed ownership structure is more often associated with lower vote differentiation. The same holds true for the market-to-book ratio. This will be illustrated more in detail in the performance models later on where we use Tobin's Q as dependent variable. As can be seen from the correlation matrixes the correlation coefficient between Tobin's Q and the market-to-book ratio is 0.89, and we conclude that the two variables are similar to each other.

In conclusion, the same holds true if we use stock return, ROA or ROE as explanatory variables. When considering the firm specific risk, industry effects or owner categorization of the controlling owner in combinations, the significance of the performance measures is gradually diminishing and finally reaches above the 10% significance level.

4.4 Vote differentiation models

The correlation matrixes show negative signs for the correlation between stock return and vote differentiation of controlling owner/owners. In case the dependent variable is changed to the natural logarithm of vote differentiation, the signs still hold true and the absolute level of the correlation is not changed to a larger extent. Concerning ROA and ROE, they are in general slightly positive correlated to vote fraction of the controlling owner, both using v/e or ln v/e as dependent variable. Tobin's Q alternates between positive and negative signs in the correlation towards vote differentiation of controlling owner /owners. We can never statistically determine the significance of any performance measure. The correlation from the separate regressions reaches its best significance in the 20% threshold vote fraction model, where Tobin's Q is used as the explanatory variable. A p-value of 0.18 is obtained in this model, indicating that no relationship should be present. For more details regarding the relationship between vote differentiation and the four performance measures, see Figure 22.

Vote differentiation of largest vote fraction owner			
	P-value	R Square	Relationship
Stock return	0,2253	0,0172	Uncorrelated
ROA	0,8372	0,0005	Uncorrelated
ROE	0,9072	0,0002	Uncorrelated
Tobin´s Q	0,9826	0,0000	Uncorrelated
Vote differentiation of threshold vote fraction owners			
Stock return	0,391 - 0,605	0,0032 - 0,0087	Uncorrelated
ROA	0,550 - 0,947	0,0000 - 0,0042	Uncorrelated
ROE	0,663 - 0,897	0,0002 - 0,0022	Uncorrelated
Tobin´s Q	0,177 - 0,343	0,0106 - 0,0214	Uncorrelated

Figure 22: Regressions: Vote differentiation and performance

Moving over to the control variables, a positive relationship between vote differentiation and the two risk measures was expected from

theory. We were far from obtaining any significant relationship between leverage and vote concentration or vote differentiation respectively. Leverage seems to be completely uncorrelated to ownership structure as the correlation matrixes indicate. This is something that holds true both using v/e and ln v/e as dependent variables. The result is stable in the largest owner vote fraction model as well as in the threshold vote fraction models. When we run separate regressions for the different owner categories we do not obtain any significance here either, indicating that different controlling owners do not use the capital structure in apparently different ways. The summarized results from the separate regressions between vote differentiation and the firm specific factors are presented in Figure 23.

Vote differentiation of largest vote fraction owner			
	P-value	R Square	Relationship
Beta	0,0214	0,0608	Positively related
Leverage	0,4331	0,0072	Uncorrelated
Market-to-book ratio	0,1596	0,0231	Uncorrelated
Growth in assets	0,4066	0,0081	Uncorrelated
Size - ln MV E	0,0004	0,1367	Positively related
Size - ln BV A	0,0022	0,1052	Positively related
Vote differentiation of threshold vote fraction owners			
Beta	0,001 - 0,004	0,0924 - 0,1196	Positively related
Leverage	0,540 - 0,900	0,0002 - 0,0044	Uncorrelated
Market-to-book ratio	0,046 - 0,068	0,0386 - 0,0460	Positively related
Growth in assets	0,636 - 0,947	0,0000 - 0,0026	Uncorrelated
Size - ln MV E	0,000 - 0,001	0,1176 - 0,1543	Positively related
Size - ln BV A	0,003 - 0,016	0,0659 - 0,0999	Positively related

Figure 23: Regressions: Vote differentiation and firm spec. factors

The firm specific risk, beta, is positively correlated at the 5% significance level to the vote differentiation both in the largest owner vote fraction model as well as in the threshold vote fraction models.

The natural logarithm of the vote differentiation, ln v/e, is positively related to beta at the 5% significance level in all threshold vote fraction models, while the significance is too low to draw a conclusion regarding the largest owner vote fraction model.

The size variables, the natural logarithm of market value of equity (ln MV E) and the natural logarithm of book value of assets (ln BV A), exhibit a positive relationship to vote differentiation. The size effect is largest when using ln MV E as the explanatory variable. For the size variables the significance is clearly below the 5% level in all vote fraction models, for largest vote owner as well as for threshold controlling owners. Applying the natural logarithm of vote differentiation, ln v/e, as the dependent variable, lowers the significance to some extent but the relationship is still significant at the 5% level. Using ln BV A as the explanatory variable the p-value is below 0.05 in all models except when using ln v/e as the dependent variable in the 20% vote fraction threshold model, where a p-value of 0.076 is obtained.

The correlation matrixes indicate a slight negative correlation between growth in assets and the vote differentiation of the largest owner. Using the vote differentiation in the threshold vote fraction models, a slight positive correlation can be seen. The results hold true both in applying v/e and ln v/e as the dependent variable in all separate regressions. The p-values are in all cases far too high to be able to state that any relationship should exist. The market-to-book ratio can be seen both as a growth variable, but also as a performance measure that shows the value that the management has added to the firm's assets. The separate regressions between vote differentiation and the market-to-book ratio indicate a positive correlation. Adopting the regular vote differentiation

measure, v/e, we obtain a significant positive relationship at the 10% significance level in the threshold vote fraction models, while we can not statistically say anything about the largest vote owner model.

In the vote models we concluded that vote differentiation was positively related to the vote fraction possessed by the controlling owner/owners. When we perform separate regressions using v/e and ln v/e as dependent variables and regress it against the percentage bracket (0-20%, 20-40%, 40-60%, 60-80%, 80-100%) dummies, as expected, we found indications that within the 0-20% percentage vote bracket the vote differentiation was lower and that in the higher percentage brackets mostly positive signs in the correlation between the vote differentiation and absolute votes were detected. When performing regressions with only one percentage bracket at a time, in the largest vote owner fraction model we found that the lowest percentage bracket had a statistically negative relationship to the v/e ratio, whereas the middle percentage bracket (40-60%) experienced a positive relationship to the v/e ratio.

The industry effects on vote differentiation we would regard as moderate. From the correlation matrixes we can see that the IT industry experiences a positive correlation to vote differentiation both looking at the largest owner and when looking at owners exceeding different threshold vote fractions. This is in line with the prediction. IT companies in general have higher firm specific risk than the average firm and as we concluded earlier, beta is significant positive related to vote differentiation. However from neither of our separate regressions using both v/e and ln v/e as dependent variable, can we statistically determine that IT companies in general have higher vote differentiation. It is the case that including other industry dummies, besides industry goods, the significance is further worsened.

The owner category the controlling owner represents seems to add explanatory power to the existence of vote differentiation. For the 10% and 20% threshold vote fraction models we find that dispersed ownership at the 5% significance level is negatively related to vote differentiation both measured as v/e and ln v/e. When looking at the largest owner and controlling owners exceeding the 5% threshold vote fraction we still find a negative sign but the relationship is now only significant at the 10% significance level. The results show that dispersed ownership representing our set cut-off value of 20% votes by the controlling owner, generally is associated with a lower vote differentiation.

When constructing the full variables regression models we again must consider the correlation that exists between beta, the performance measures (Stock return, ROA and ROE), the market-to-book ratio and the industry dummy variable IT. We have earlier concluded that vote differentiation is not heavily dependent on fixed industry effects. The signs attributed to different industry dummy variables that are not proved to be significant, we argue are depending more on firm specific factors captured by the beta measure. We therefore do not include the industry dummies in the presented regression model. To illustrate different variables effect on vote differentiation we include one full variable model, where we apply the v/e ratio for controlling owners exceeding the 10% threshold vote fraction level.

Vote differentiation (10% threshold) = $\beta_1+\beta_2$ROA$+\beta_3$Beta$+\beta_4$Leverage $+\beta_5$GrowthInAssets$+\beta_6$Size$+\beta_7$FamilyOwnership$+\beta_8$DispersedOwnership$+e$

Regression Statistics	R Square			
	0,3031			
ANOVA	*F*	*Significance F*		
	4,241	0,00029		
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-0,379	0,676	-0,560	0,577
ROA	0,486	1,012	0,480	0,633
Beta	0,582	0,199	2,918	0,005
Leverage	0,060	0,666	0,089	0,929
Growth in assets	0,320	0,504	0,635	0,527
Market to book ratio	0,009	0,083	0,108	0,914
Size - ln MV E	0,220	0,071	3,092	0,003
Family Ownership	0,023	0,246	0,094	0,926
Dispersed Ownership	-0,600	0,311	-1,930	0,057

Figure 24: Vote differentiation as dependent variable.

From Figure 24, as expected, we see that ROA, leverage and growth in assets do not exhibit any relationship to vote differentiation. The significant variables are beta, size and the owner category representing dispersed ownership. This is in line with the results from the separate regressions. The results are stable including, ln BV A, as size variable instead.

A bit surprisingly we find that the market-to-book ratio does not enter with significance. The nature of the market-to-book ratio's relation to vote differentiation is rather ambiguous. Depending on which control variables are included, the slight positive relationship that was detected in the separate regressions get weaker or completely vanish. In the analysis chapter we will discuss this issue in more detail.

Excluding certain variables, mainly beta, from the regressions the performance measures in some models enter with significance. This is explained by the fact that the size measures are strongly correlated with the performance measures which will be illustrated in the performance models later on. The case is that size also is strongly correlated with the v/e ratio. Together this leads to a spurious relationship between the v/e ratio and the performance measures. Including the firm specific risk in the model, which we know is strongly negative correlated with stock return, ROA and ROE, and strongly positive related to Tobin's Q the significance of the performance variables completely disappears which is expected.

4.5 Performance models

In the vote models we concluded that a positive relationship existed between the vote fraction controlled by the largest owner and three performance measures stock return, ROA and ROE, while we concluded that Tobin's Q was negatively related to the vote fraction of the controlling owner. In this section we will explore if there exists a non-linear relationship between the vote fraction and performance measures. We will primarily explore the potential non-linear relationship by testing for a curvilinear or piece-wise linear relationship.

To check if a curvilinear relationship between the vote concentration of the largest owner and the performance measures, stock return, ROA and ROE, is present we also include the square term of the vote fraction as explanatory variables. The signs are as expected and significant if a square relationship should be present when using both ROA and ROE as the dependent variable, a significant positive sign for vote fraction and a significant negative sign for the square of vote fraction. Applying stock return as the dependent variable we obtain the

expected signs for both vote fraction and square of vote fraction. However the significance exceeds the p-value of 0.10 for both variables. Relying on these results one would say that an optimum vote fraction controlled by the largest vote owner would be attributed with the highest accounting profitability, measured as either ROA or ROE.

To check if any other non-linear relationship is present we perform a separate regression between stock return, ROA and ROE respectively and the percentage bracket dummies. The regression result reveals that the lowest percentage bracket, 0-20% votes of the controlling owner, for all three performance measures are significantly negative related to performance. Concerning the other percentage brackets, they in general all show positive signs to performance, but it is impossible to determine whether any of the specific percentage brackets are associated with better or worse performance.

To check the significant negative relationship between Tobin's Q and the vote fraction of the largest owner we accomplish the same procedure. In this regression we obtain a significant negative sign for vote fraction and a significant positive sign for the square of vote fraction. Both variables are significant at the 5% significance level. This result indicates that there should be an optimum point whereas the vote ownership of the largest owner would yield the lowest Tobin's Q.

Assuming that a curvilinear relationship should not be present it is possible that in line with Morck et al (1988) assume a piece-wise linear relationship exists instead. We investigate this by searching for differences in Tobin's Q in different percentage brackets. The regressions using the percentage bracket dummies as explanatory variables reveal that the 0-20% percentage bracket is clearly significant

positive to Tobin's Q including all different percentage bracket dummies. The other percentage brackets do not exhibit any significant relationship towards Tobin's Q and they exhibit alternate positive and negative signs depending on which dummy variables are included.

The results concerning how vote concentration is related to performance are expected. We earlier saw that the market-to-book ratio was clearly positively related to the dispersed ownership category. The correlation matrixes indicate that Tobin's Q is even more positively correlated with dispersed ownership. The result suggests that firms with more dispersed ownership structures are more highly valued than firms with more concentrated ownership structure. The percentage dummies showed that only firms with a controlling owner in the percentage bracket 0-20% had a significant relation to Tobin's Q.

Han and Suk (1998) argue that the practice of piece-wise linear regressions, which the percentage brackets can be seen as, is at best ad hoc, implying that it generally signifies a solution that has been tailored to a specific purpose. However, we argue instead that the reliance on square terms to detect a curvilinear relationship should been seen with scepticism. We offer this opinion because only in the lower end of the vote concentration, in our cases representing the 16 companies in the percentage bracket 0-20% can a significant relationship be seen, while the other percentage brackets experience alternate positive and negative signs in the relationship to Tobin's Q. It is therefore questionable to conclude that an optimal point should be present, whereas Tobin's Q is the lowest. We argue that using percentage dummies or other piece-wise linear regressions are more suitable than assuming a linear or a curvilinear relationship between vote fraction and Tobin's Q. The percentage dummies and owner category dummies are better suited to

explain differences in Tobin's Q across companies. The same reasoning should be applied when we study the relationship between the other performance measures (Stock return, ROA and ROE) and the vote fraction of the controlling owner.

We have now seen that a dispersed ownership structure gives rise to a higher Tobin's Q and as a consequence companies with a controlling owner with higher vote concentration are in general lower valued. Concerning the other performance measures one can conclude that companies with a controlling owner with a vote ownership below 20% have experienced worse performance both when it comes to stock return and accounting profitability, compared to the rest of the companies included in the dataset.

Now the relationship between performance and the firm specific factors will be checked for. Later certain industry effects and what effect the categorization of the controlling owner has on the relationship to the performance measures will be controlled for. The separate regression results between the four performance measures and the firm specific factors are summarized in Figure 25.

Stock return	P-value	R Square	Relationship
Beta	7,1E-09	0,3274	Negatively related
Leverage	0,1685	0,0222	Uncorrelated
Market-to-book ratio	0,0007	0,1279	Negatively related
Growth in assets	0,0744	0,0370	Slightly positive related
Size - ln MV E	0,0412	0,0481	Positively related
Size - ln BV A	0,0014	0,1142	Positively related
ROA			
Beta	4,2E-07	0,2615	Negatively related
Leverage	0,0004	0,1399	Positively related
Market-to-book ratio	0,0046	0,0907	Negatively related
Growth in assets	0,8719	0,0003	Uncorrelated
Size - ln MV E	0,0003	0,1407	Positively related
Size - ln BV A	9,7E-07	0,2472	Positively related
ROE			
Beta	8,5E-10	0,3594	Negatively related
Leverage	0,0182	0,0639	Positively related
Market-to-book ratio	0,0019	0,1076	Negatively related
Growth in assets	0,9233	0,0001	Uncorrelated
Size - ln MV E	0,0004	0,1378	Positively related
Size - ln BV A	3,1E-06	0,2267	Positively related
Tobin´s Q			
Beta	3,9E-08	0,3005	Positively related
Leverage	8,2E-05	0,1677	Negatively related
Growth in assets	0,1207	0,0281	Uncorrelated
Size - ln MV E	0,7995	0,0008	Uncorrelated
Size - ln BV A	0,0002	0,1542	Negatively related

Figure 25: Regressions: Performance and firm specific factors

We have earlier seen that the firm specific risk, measured as beta, is strongly negatively related to stock return, ROA and ROE. We have earlier noted the strong positive correlation between the market-to-book ratio and beta. Since the market-to-book ratio is similar to Tobin's Q, as expected Tobin's Q is also strongly positive related to beta, which is indicated by the correlation matrixes. The correlation matrixes and the separate regressions show that stock return, ROA and ROE are strongly negative related to both Tobin's Q and the market-to-book

ratio. As earlier mentioned, we believe that much of the effect from the market-to-book ratio is captured by the beta measure.

Concerning leverage, in the separate regression we find a clearly positive significant relationship between leverage and the accounting profitability measures, ROA and ROE. On the other hand, leverage is negative related to Tobin's Q, indicating that increased financial risk through more debt financing, implies lower valuation through Tobin's Q. Finally, stock return and leverage do not seem to exhibit any relationship.

Growth in assets measures the "real" growth opposite to the market-to-book ratio. Growth in assets is significantly positive related to stock return at the 10% significance level. The correlation matrixes indicate that growth in assets and accounting profitability are uncorrelated, while growth in assets are positive correlated to Tobin´s Q, but not significant at the 10% significance level.

The separate regressions and the correlation matrixes show that a significant positive relationship between size and performance measured as stock return, ROA and ROE is present. This holds true applying both ln MV E, ln BV A as the explanatory variables. Concerning Tobin's Q, the size effect is more ambiguous. When ln BV A is used as the explanatory variable, a clearly negative relationship towards Tobin's Q is present, while any relationship applying ln MV E as the explanatory variable disappears. In line with Cronqvist and Nilsson (2002) and Chen (2004) we will measure size as ln BV A in the full variables regression models later on when Tobin's Q is the dependent variable. .

Industry seems to add much explanatory power to firm performance. When stock return is used as the dependent variable, industry effects seem to explain around 40% (R Square) of the variation in stock return. The industry effect is a little bit weaker applying ROA, ROE and Tobin's Q as dependent variables. In all cases the IT industry enters with high significance against the performance measures. The IT industry seems to have experienced much worse performance concerning stock return, ROA and ROE under the studied period compared to the other companies in the dataset. On the other hand, IT companies are much higher valued through Tobin's Q than other firms. Under the vote models we noted the high correlation between beta and the industry dummies and that IT companies had significant higher firm specific risk than others. We argue that much of the industry effects are captured by the beta measure.

In the separate regressions between the performance measures and the owner category dummies, in all cases a significant relationship for the dispersed ownership category is present. For ROA and ROE we get a highly significant negative relationship between the dispersed ownership category and performance. For stock return the relationship is not that clear, but still it is significant at the 10% significance level. The dispersed ownership category works in the opposite direction when it comes to Tobin's Q, implying that a dispersed ownership structure is associated with higher valuation. Concerning the other owner category types the relationship is not certain or significant. For company controlled firms it is impossible to state anything about its relationship to any of the performance measures. Family controlled firms show indications of having better performance when it comes to ROA, but it is not significant at the 10% significance level that a relationship should exist. On the other hand, family controlled firms seem to be lower

valued, implying they have significantly lower Tobin's Q. Regressing only the family controlled firms against Tobin's Q, a negative relationship is detected.

Now the potential non-linear relationship between firm performance and vote concentration of the largest vote owner will be explored. The first full variables regression model we present, include besides stock return a set of firm specific control variables as well as ownership category dummies.

$$\text{Stock Return} = \beta_1+\beta_2 V/E\text{Ratio}+\beta_3\text{Beta}+\beta_4\text{Leverage}+\beta_5\text{GrowthInAssets}+\beta_6\text{Market-to-bookRatio}+\beta_7\text{Size}+\beta_8\text{FamilyOwnership}+\beta_9\text{DispersedOwnership}+e$$

Regression Statistics	R Square			
	0,469			
ANOVA	*F*	*Significance F*		
	8,617	2,427E-08		
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-0,046	0,093	-0,498	0,620
v/e ratio	-0,010	0,014	-0,701	0,486
Beta	-0,134	0,028	-4,837	0,000
Leverage	-0,023	0,095	-0,240	0,811
Growth in Assets	0,250	0,073	3,411	0,001
Market-to-book ratio	-0,013	0,012	-1,100	0,275
Size - ln MV E	0,030	0,010	2,957	0,004
Family ownership	-0,020	0,036	-0,550	0,584
Dispersed ownership	-0,034	0,046	-0,743	0,460

Figure 26: Stock return as dependent variable

From Figure 26, as expected from the separate regressions, we find that growth in assets and size are significantly positive related to stock return, while beta is strongly negative related to stock return. Leverage does not exhibit any relationship towards stock return as expected. However, the

result concerning the market-to-book ratio and the owner category dummies are not the expected ones from the separate regressions. The reason for the market-to-book ratio's weakening significance is the same as mentioned before, the high positive correlation between the market-to-book ratio and beta. As can be seen, the effect of owner categorization of controlling owner completely disappears when considering firm specific factors. The results hold true when instead of owner category dummies we include the percentage dummies in the model or check for a curvilinear relationship. As expected the vote differentiation does not have any effect on stock return. This holds true when the other performance measures are used as dependent variables as well.

To check for a potential curvilinear relationship, we include the square term of vote fraction together with the absolute vote fraction in a model where ROA is applied as a dependent variable. Earlier in the separate regression model it was found that a significant curvilinear relationship between the vote fraction of the largest owner and ROA might be present. To check the stability of this relationship we include a set of control variables.

$ROA=\beta_{1+}\beta_2 Beta+\beta_3 Leverage+\beta_4 GrowthInAssets+\beta_5 Market\text{-}to\text{-}bookRatio+\beta_6 Size+\beta_7 LargestOwnerVoteFraction+\beta_8 SquareOfVoteFraction+e$

Regression Statistics	R Square			
	0,496			
ANOVA	*F*	*Significance F*		
	11,125	1,036E-09		
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-0,325	0,073	-4,431	0,000
Beta	-0,078	0,020	-3,931	0,000
Leverage	0,176	0,071	2,492	0,015
Growth in Assets	0,074	0,054	1,361	0,177
Market-to-book ratio	-0,004	0,009	-0,482	0,631
Size - ln MV E	0,028	0,007	4,009	0,000
Largest owner vote fraction	0,233	0,225	1,037	0,303
Square of vote fraction	-0,100	0,233	-0,431	0,668

Figure 27: ROA as dependent variable

The positive significances for leverage and size that Figure 27 shows are expected from the separate regressions, as well as the negative relationship between beta and ROA. Growth in assets do not exhibit any significant relationship to ROA as expected, while the market-to-book ratio is insignificant due to fact that beta is capturing the effect. The signs for vote fraction and the square of vote fraction are the expected ones, but the significance is far too low to conclude that a curvilinear relationship should be present. Any other non-linear relationship between the vote fraction of the controlling owner and ROA does not seem to be present either. Including the owner category dummies or the percentage bracket dummies, we can not see any significant negative relationship between the dispersed ownership category or firms with controlling owner in the lowest percentage bracket and ROA. It seems as if the control variables are capturing the effect of a relationship between vote concentration and ROA.

$ROE=\beta_1+\beta_2 Beta+\beta_3 Leverage+\beta_4 GrowthInAssets+\beta_5 Market\text{-}to\text{-}bookRatio+\beta_6 Size+\beta_7 0\text{-}20\%+\beta_8 20\text{-}40\%+\beta_9 40\text{-}60\%+\beta_{10} 60\text{-}80\%+e$

Regression Statistics	R Square			
	0,523			
ANOVA	*F*	*Significance F*		
	9,378	1,756E-09		
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	-0,33	0,15	-2,19	0,03
Beta	-0,24	0,04	-5,63	0,00
Leverage	0,11	0,15	0,72	0,47
Growth in Assets	0,15	0,12	1,30	0,20
Market-to-book ratio	-0,01	0,02	-0,40	0,69
Size - ln MV E	0,06	0,02	3,90	0,00
0-20%	-0,07	0,09	-0,78	0,44
20-40%	0,00	0,08	-0,04	0,96
40-60%	0,03	0,09	0,32	0,75
60-80%	-0,08	0,13	-0,64	0,53

Figure 28: ROE as dependent variable

The results are similar when applying ROE as dependent variable which is indicated by Figure 28. Instead of testing for a curvilinear relationship it is checked for a potential piece-wise linear relationship, captured by the percentage bracket dummies. As can be seen, no percentage bracket dummy exhibits any relationship to ROE. Any relationship between the vote fraction of the controlling owner and ROE cannot be seen when instead of percentage dummies we apply owner category dummies or when we test for a curvilinear relationship. The variables that are significant are beta and size, which is the same as when using ROA as dependent variable. However, leverage does not exhibit any significant relationship to ROE, which was the case for ROA.

Tobin's Q = $\beta_{1+}\beta_2$Beta+β_3Leverage+β_4GrowthInAssets+ β_5Size +β_6FamilyOwnership +β_7DispersedOwnership+e

Regression Statistics	R Square			
	0,468			
ANOVA	*F*	*Significance F*		
	11,710	2,231E-09		
	Coefficients	*Standard Error*	*t Stat*	*P-value*
Intercept	2,374	0,369	6,426	0,000
Beta	0,457	0,094	4,870	0,000
Leverage	-1,121	0,422	-2,657	0,010
Growth in Assets	0,276	0,304	0,908	0,367
Size - ln MV E	-0,064	0,040	-1,614	0,111
Family ownership	-0,183	0,150	-1,220	0,226
Dispersed ownership	0,199	0,188	1,057	0,294

Figure 29: Tobin´s Q as dependent variable

Figure 29 shows the last model, where we include Tobin´s Q as dependent variable. Because of the collinearity between Tobin's Q and the market-to-book ratio we have excluded the market-to-book ratio from Figure 29. Again it is the case that when including a set of control variables, the significance of any relationship between the vote fraction of the controlling owner and performance disappears. We get the expected signs for both family and dispersed ownership but the relationship is far from being significant. Again, beta enters with a positive relationship towards Tobin's Q, indicating that the higher the firm's risk, the higher the valuation of the firm. Besides beta, leverage is significantly negative related to Tobin's Q as expected. Surprisingly, size is not significantly negative related to Tobin's Q, which was expected from the separate regressions. The significance is obviously reduced dramatically when instead of ln BV A apply ln MV E as explanatory size variable.

5

Analysis

In this section we analyze the results from our three models; vote fraction models, vote differentiation models and performance models. The chapter ends with concluding remarks where we state our general conclusion regarding the link between ownership structure and firm performance.

5.1 Vote fraction models

In conclusion, when using the vote fraction of the largest owner as the dependent variable we conclude that stock return, ROA and ROE have a positive effect on vote concentration. Tobin's Q is negatively related to the vote concentration.

The stability in the results is tested by running regression between vote fraction of the largest controlling owner and the performance measures on yearly data and in time intervals shorter than the five-year period. Concerning ROA and ROE they are still positively related to the vote fraction of the controlling owner, while Tobin's Q still is negatively related to the vote fraction of the controlling owner. However the explanatory power (R Square) of the relationship is reduced drastically, from the previous level of around 10% in the separate regression over the entire 5-year period, to below 5% using yearly data. This speaks in favour of using average performance measures over longer periods of time if higher explanatory power and reliability is wanted. This is in line with what Gomez-Meija et al (1987) state.

Running regressions between stock returns for specific years and the vote fraction of the controlling owner the significant relationship disappears. This speaks in favour of using geometric average stock returns over a longer period of time, since short-term stock returns tend to be volatile and not suitable as a reliable performance measure. This is in line what Han and Suk (1998) claim.

The obtained results are in line with Cronqvist and Nilsson (2002) and Chen (2004). Both of these found a positive relationship between ROA and the vote fraction of largest owner. Cronqvist and Nilsson (2002) also found that Tobin's Q is negatively related to the largest owner. Our research differs from these two and others within the area in the sense that we also look at owners exceeding different percentage thresholds. When using threshold vote fractions as the dependent variable, the significance of all performance measures disappear. This speaks in favour of that the relationship between vote fractions for the single largest owner may be spurious. We argue that at least the owner exceeding the 20% threshold should have an impact on the performance of the firm.

The results from the regression indicate that neither size, leverage nor the growth rate of the firm had any impact on the vote concentration of controlling owner/owners. In the separate regression it was found that the v/e ratio was positively related to vote concentration and that the market-to-book ratio was negatively related in the largest vote owner fraction model. Both of the variables seem to be highly related to the owner categorisation of the controlling owner.

The significant relationship found between vote concentration and performance is worsened when applying a set of control variables. The

significant positive relationship that can be seen between the performance measures stock return, ROA and ROE may in line with what Himmelberg et al (1999) state to be a spurious relationship, not a casual one. Considering especially the firm specific risk but also industry effects and owner categorization of the controlling owner, the relationship is no longer significant. The reason why Cronqvist and Nilsson (2002) and Chen (2004) obtain a significant positive relationship between ROA and the vote concentration of the largest owner may be due to the fact that they have not considered the firm specific risk.

5.2 Vote differentiation

In line with Mikkelson and Partch (1994), Peterson (1998) and Cronqvist and Nilsson (2002) we find there is no relationship between firm performance and vote differentiation. This holds true, both looking at the single largest owner and owners exceeding different thresholds.

The only variables with significance in the vote differentiation models are beta, size and the dispersed owner category dummy variable. The positive relationship that the firm specific risk is exhibiting with vote differentiation holds true in all models, including a different set of control variables. This is true both looking at the largest owner and in the threshold vote fraction models. The results are in accordance with theory stating that a high vote differentiation should be expected when the firm's environment is uncertain, which occurs when the firm specific risk is high. Himmelberg et al (1999) argue that a high ownership of shares implies less diversification and that high risk therefore should have a negative effect on ownership concentration. On the other hand, when the environment is noisier the need for

control is more essential which should give rise to more concentrated ownership structures. This problem is in Sweden solved by the practice of dual classes of shares and other instruments that create a high vote differentiation, making it possible for controlling owners with a high fraction of votes to control the company with a smaller fraction of capital.

According to Peterson (1998) a negative relationship between vote differentiation and size should be expected, since the business environment that is surrounding smaller firms is usually more uncertain and involves higher risk and motivates more concentrated control ownership. The positive relationship between vote differentiation and the size of the firm is explained by the risk-neutral and risk-aversion effect stated by Demsetz and Lehn (1985). These effects lead to more diffuse ownership structures concerning equity ownership. In order to still be able to control large companies, the controlling owners must possess a high vote fraction, leading to a higher vote differentiation for larger than smaller companies. As mentioned earlier, several of Sweden's largest firms have a powerful owner/founder with limited amount of shareholding. Therefore the expected result is that larger companies are associated with higher vote differentiation.

Dispersed ownership shows a significant negative relationship to vote differentiation, implying that the practice of dual class of shares and other techniques creating larger vote differentiation is less frequent in dispersed controlled companies.

Peterson (1998) found that institutional blockholders use the firm's capital structure to control for agency costs. However our results indicate that different owner categories do not use the capital structure

in different ways in order to control for agency costs. Our results also indicate that the "real" growth of the firm, measured by growth in assets, does not seem to exhibit any relationship to vote concentration of controlling owner/owners.

The other growth measure used, the market-to-book ratio, was in the separate regressions positively related to vote differentiation. It must be noted that the market-to-book ratio does not measure the real growth of the firm. The market-to-book ratio can both be seen as a valuation measure for the management's ability to add value but also consists of expectations about future growth potential. The market-to-book ratio is highly positive correlated with beta, indicating that firms with higher risk are associated with higher market-to-book ratio. Besides beta, we saw in the vote models that dispersed controlled companies are associated with higher market-to-book ratio.

5.3 Performance models

In the performance models we aim to determine if a non-linear relationship exists between vote concentration of controlling owner and firm performance. In the separate regression models there existed a curvilinear relationship between ROA, ROE and Tobin's Q and the vote fraction possessed by the largest owner. This indicated that there should be an optimal point concerning vote concentration that would yield the highest ROA and ROE respectively, and the lowest Tobin's Q. However when using piece-wise linear regressions through the practice of percentage dummies, we only found significant results in the lowest percentage bracket category of the controlling owner, which represents dispersed ownership. We found that dispersed ownership was associated with a significant negative relationship with ROA, ROE and stock return while Tobin's Q was significantly higher for the dispersed

ownership category. We argue that the piece-wise linear regression is more suitable to describe the relationship between firm performance and vote concentration than both the linear and curvilinear regressions.

When adopting the piece-wise linear and curvilinear regressions in the full variables regression models, including a set of control variables, the significance of any relationship between vote concentration and firm performance disappears. This together with the fact that no relationship can be found in the threshold vote fraction models leads us to conclude that the relationship between firm performance and vote concentration may be of spurious kind and not casual.

The variable that is most important in explaining the performance measures is the beta measure. Beta is strongly negatively related to stock return, ROA and ROE, implying that high risk is associated with worse performance. On the other hand beta is positively to Tobin's Q, implying that the high risk companies are valued higher.

Besides risk, the size of the company seems to play an important role in the relation to performance of the company. Larger companies seem to have higher profit margins leading to higher accounting profitability but they have also performed better in regard to stock return compared to small companies during the studied time period. Concerning Tobin's Q the size effect is not that clear, though there seems to exist a negative relationship implying, that smaller firms are valued higher.

Concerning the other control variables, growth in assets has a positive relation to stock return whereas leverage is positively associated with the accounting profitability measures.

5.4 Concluding remarks

We have found that when only looking at the largest vote owner in the separate regressions there is a positive relationship between vote concentration and stock return, ROA and ROE respectively. Further there exists a negative relationship between vote concentration of the largest owner and Tobin's Q.

We have investigated these relationships by considering firm specific factors as well as owner categorization of the controlling owner. When taking these factors into account we have concluded that the relationships may be endogenously determined by the firm heterogeneity that exists between firms, in line with what Demsetz and Lehn (1985) and Himmelberg (1999) state.

The conclusion that there should be no relationship between vote concentration and firm performance is further based on the results from the threshold vote fraction models. No relationship could be found in these models. We argue that considering owners besides the controlling owner is of vital importance and once considering that fact, the spurious relationship that existed between vote concentration and firm performance, no longer holds true.

Further we argue that the relationship between vote concentration and firm performance should not be characterized by a linear regression. Instead a piece-wise linear regression represented by percentage dummies is more suitable. This is more suitable because it is only in the lower segment of vote concentration where one can find a clear significant relationship between vote concentration and firm performance. This lower segment is represented by the dispersed ownership category of controlling owner.

The relationship between vote concentration and the performance measures when looking only at the single largest owner is illustrated in Figure 30 and 31. The Figures illustrate that there exist no relationship between vote concentration and performance. Instead the relationship is spurious and is determined by firm heterogeneity. The firm heterogeneity depends to large extent on the firm specific risk. The firm specific risk, beta, is the central element in both Figure 30 and 31.

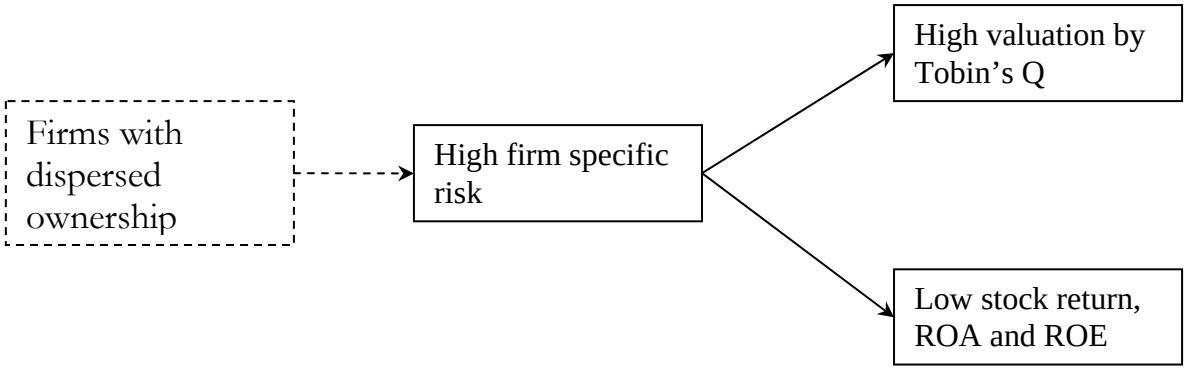

Figure 30: Firms with dispersed ownership

The results (See Figure 25) from our study indicate that companies with high risk are associated with worse performance both when it comes to stock return and accounting profitability. However, high risk companies are in general valued higher when it comes to Tobin's Q not that much because of value added by management but instead because of uncertainty about the companies' expected growth potential.

Further, Figure 19 showed that beta is negatively related to vote concentration. Regressing vote concentration against beta in a separate regression and with a set of control variables, except for the performance measures, we obtain a significant negative relationship. This implies, a dispersed ownership firm is associated with higher firm specific risk, as Figure 30 indicates. However, including any of the four performance measures in the regression, applying beta as dependent

variable, the significance of vote concentration having a relationship to beta vanishes. Therefore the box labelled "Firms with dispersed ownership" and the arrow to the box "Low firm specific risk" is dashed to illustrate the spurious relationship that exists.

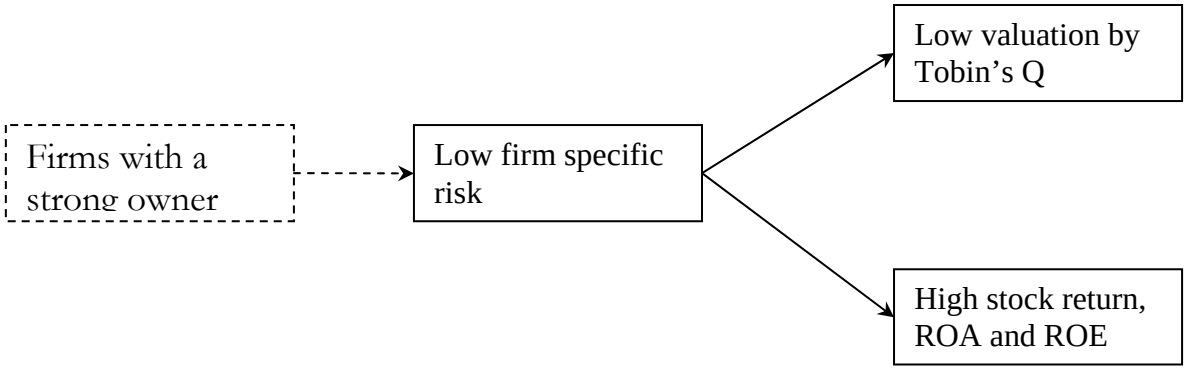

Figure 31: Firms with a strong owner

Figure 31 shows the opposite side of the coin. Firms with lower firm specific risk are associated with lower valuation when it comes to Tobin's Q. Our study shows that larger firms, which are associated with lower risk, had performed better both when it comes to stock return and accounting profitability. Again, we want to underline that the relationship between vote concentration and performance is spurious and determined by firm heterogeneity.

In line with Mikkelson and Partch (1994), Peterson (1998) and Cronqvist and Nilsson (2002) we find there is no relationship between firm performance and vote differentiation. Instead vote differentiation is associated with risk and size. Large firms and high risk companies make, to a larger extent, use of vote differentiation tools. Controlling owners make use of dual classes of shares and pyramid structure to gain control of the company by only possessing a smaller equity stake. Our study shows that vote differentiation tools do not seem to affect performance.

6

Conclusion and suggestions for further research

In this final chapter we summarize our answers to the research questions and give suggestions for interesting future research areas.

6.1 Conclusion

Throughout this thesis we have answered our stated research questions concerning the link between ownership structure and firm performance.

In the vote models we have in the separate regressions found a significant positive relationship between stock return, ROA and ROE and vote concentration of the largest owner, while Tobin's Q was negatively related. However when considering firm specific factors and the categorization of the controlling owner, the clear relationship vanishes. It was also the case that when looking at threshold vote fractions no relationship between firm performance and vote concentration was found. We argue that it is of vital importance that one also considers owners besides the controlling owner, something that has been neglected by some previous researchers.

In line with previous researchers we do not find any relationship between performance and vote differentiation of the controlling owner/owners. Instead vote differentiation is explained by firm specific factors which are beta and size. Regarding the relationship between vote concentration and vote differentiation we found that companies with a dispersed

ownership structure in general applied vote differentiation to a lesser extent.

In the performance models we concluded that the relationship between vote concentration and firm performance is better described as a piece-wise linear relationship instead of a linear or curvilinear. In the full variables regression models we found that no relationship existed between vote concentration and firm performance, neither when applying a square term of vote fraction to detect a potential curvilinear relationship nor when applying percentage dummies to detect a piece-wise relationship. Again firm-specific factors seem to play a significant role, especially risk and size.

In line with Demsetz and Lehn (1985) and Himmelberg (1999), we are of the opinion that the relationship between ownership structure and firm performance is endogenously outcome of firm heterogeneity and that no optimal ownership structure exists that is associated with the best firm performance. Otherwise, profit-seeking owners/investors could gain by re-arranging their portfolios. We argue that firms are governed by a network of relations and choices in the contracting environment, concerning i.e. financing, capital structure, ownership and compensation. Further the differences between companies are great, i.e. regarding risk and size. This implies that the ownership level is determined by only partly observed factors, firm heterogeneity, in the firm's contracting environment.

In the concluding remarks section, we summarized that Sweden's listed firms with dispersed ownership structure are associated with higher risk, implying higher market valuation, but worse performance when it comes to stock return, ROA and ROE. On the contrary, firms with a

strong controlling owner in general have lower firm-specific risk. This implies lower valuation, but better performance when it comes to stock return, ROA and ROE.

6.2 Suggestions for further research

During the course of this thesis several ideas and potential research areas have crossed our minds. The purpose of this section is to serve as a source of inspiration for further researchers who want to write research papers within this area of work.

One interesting idea is to separate companies according to size. In this study we have seen that large companies that in general represent maturing industries are associated with better performance regarding stock return and accounting profitability. It will be interesting to see if the results concerning the effect of vote concentration and vote differentiation on firm performance would remain the same if larger firms were excluded from the data set.

Another interesting aspect would be to use other performance measures. In this study we have only applied standard forms of performance measures. A more precise measure of performance would for example be EVA that shows the economic value added.

When it comes to the measures for ownership structure we have only applied quantitative data for possessed votes and capital by different owners. It would be interesting to in a more qualitative way to investigate managers' and owners' direct involvement in managing the firm and separate out the effect of active and more passive owners.

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Appendix 1 Correlation Matrix: Largest owner

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1	1,00																
2	0,55	1,00															
3	0,66	0,91	1,00														
4	-0,32	-0,45	-0,38	1,00													
5	-0,57	-0,51	-0,60	0,55	1,00												
6	0,11	0,32	0,21	-0,30	-0,14	1,00											
7	0,19	0,02	-0,01	0,17	0,11	-0,01	1,00										
8	-0,36	-0,30	-0,33	0,89	0,57	-0,07	0,13	1,00									
9	0,22	0,38	0,37	-0,05	-0,01	0,09	-0,09	0,12	1,00								
10	0,34	0,50	0,48	-0,41	-0,22	0,32	-0,11	-0,23	0,90	1,00							
11	0,31	0,34	0,30	-0,32	-0,29	0,03	-0,03	-0,28	0,03	0,11	1,00						
12	-0,13	0,02	-0,01	-0,01	0,25	0,04	-0,09	0,15	0,37	0,32	0,15	1,00					
13	-0,09	0,05	0,01	-0,14	0,12	0,02	-0,10	0,01	0,29	0,29	0,25	0,92	1,00				
14	0,20	0,26	0,28	-0,21	-0,36	0,23	-0,01	-0,23	0,08	0,20	0,14	-0,07	0,01	1,00			
15	-0,63	-0,46	-0,57	0,42	0,75	-0,05	0,02	0,50	-0,17	-0,32	-0,25	0,15	0,06	-0,45	1,00		
16	0,05	0,17	0,10	-0,23	-0,15	0,02	-0,08	-0,16	0,00	0,03	0,49	0,19	0,34	0,05	-0,04	1,00	
17	-0,18	-0,29	-0,27	0,35	0,22	-0,14	0,12	0,27	-0,14	-0,25	-0,61	-0,24	-0,30	-0,09	0,11	-0,51	1,00

1. Stock return
2. ROA
3. ROE
4. Tobin´s Q
5. Beta
6. Leverage
7. Growth in assets
8. Market-to-book ratio
9. Size - ln MV E
10. Size - ln BV A
11. Vote fraction
12. v/e ratio
13. ln v/e
14. Industry goods
15. IT
16. Family ownership
17. Dispersed ownership

Appendix 2 Correlation Matrix: 5% threshold

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1	1,00																
2	0,55	1,00															
3	0,66	0,91	1,00														
4	-0,32	-0,45	-0,38	1,00													
5	-0,57	-0,51	-0,60	0,55	1,00												
6	0,11	0,32	0,21	-0,30	-0,14	1,00											
7	0,19	0,02	-0,01	0,17	0,11	-0,01	1,00										
8	-0,36	-0,30	-0,33	0,89	0,57	-0,07	0,13	1,00									
9	0,22	0,38	0,37	-0,05	-0,01	0,09	-0,09	0,12	1,00								
10	0,34	0,50	0,48	-0,41	-0,22	0,32	-0,11	-0,23	0,90	1,00							
11	-0,05	0,13	0,05	-0,16	-0,06	0,09	-0,03	-0,14	-0,01	0,05	1,00						
12	-0,06	0,06	0,03	0,09	0,35	0,00	0,04	0,20	0,39	0,31	0,22	1,00					
13	-0,02	0,08	0,04	0,01	0,30	-0,02	0,12	0,10	0,33	0,27	0,30	0,92	1,00				
14	0,20	0,26	0,28	-0,21	-0,36	0,23	-0,01	-0,23	0,08	0,20	0,22	-0,11	-0,07	1,00			
15	-0,63	-0,46	-0,57	0,42	0,75	-0,05	0,02	0,50	-0,17	-0,32	-0,03	0,20	0,16	-0,45	1,00		
16	0,05	0,17	0,10	-0,23	-0,15	0,02	-0,08	-0,16	0,00	0,03	0,26	0,07	0,19	0,05	-0,04	1,00	
17	-0,18	-0,29	-0,27	0,35	0,22	-0,14	0,12	0,27	-0,14	-0,25	-0,33	-0,16	-0,23	-0,09	0,11	-0,51	1,00

1. Stock return
2. ROA
3. ROE
4. Tobin´s Q
5. Beta
6. Leverage
7. Growth in assets
8. Market-to-book ratio
9. Size - ln MV E
10. Size - ln BV A
11. Vote fraction
12. v/e ratio
13. ln v/e
14. Industry goods
15. IT
16. Family ownership
17. Dispersed ownership

Appendix 3 Correlation Matrix: 10% threshold

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1	1,00																
2	0,55	1,00															
3	0,66	0,91	1,00														
4	-0,32	-0,45	-0,38	1,00													
5	-0,57	-0,51	-0,60	0,55	1,00												
6	0,11	0,32	0,21	-0,30	-0,14	1,00											
7	0,19	0,02	-0,01	0,17	0,11	-0,01	1,00										
8	-0,36	-0,30	-0,33	0,89	0,57	-0,07	0,13	1,00									
9	0,22	0,38	0,37	-0,05	-0,01	0,09	-0,09	0,12	1,00								
10	0,34	0,50	0,48	-0,41	-0,22	0,32	-0,11	-0,23	0,90	1,00							
11	-0,02	0,14	0,05	-0,20	-0,03	0,09	-0,08	-0,16	0,00	0,07	1,00						
12	-0,06	0,06	0,05	0,09	0,30	0,01	0,05	0,19	0,39	0,32	0,23	1,00					
13	-0,04	0,08	0,06	0,03	0,24	-0,02	0,11	0,10	0,30	0,25	0,29	0,92	1,00				
14	0,20	0,26	0,28	-0,21	-0,36	0,23	-0,01	-0,23	0,08	0,20	0,19	-0,10	-0,06	1,00			
15	-0,63	-0,46	-0,57	0,42	0,75	-0,05	0,02	0,50	-0,17	-0,32	-0,01	0,19	0,15	-0,45	1,00		
16	0,05	0,17	0,10	-0,23	-0,15	0,02	-0,08	-0,16	0,00	0,03	0,31	0,07	0,19	0,05	-0,04	1,00	
17	-0,18	-0,29	-0,27	0,35	0,22	-0,14	0,12	0,27	-0,14	-0,25	-0,40	-0,20	-0,27	-0,09	0,11	-0,51	1,00

1. Stock return
2. ROA
3. ROE
4. Tobin´s Q
5. Beta
6. Leverage
7. Growth in assets
8. Market-to-book ratio
9. Size - ln MV E
10. Size - ln BV A
11. Vote fraction
12. v/e ratio
13. ln v/e
14. Industry goods
15. IT
16. Family ownership
17. Dispersed ownership

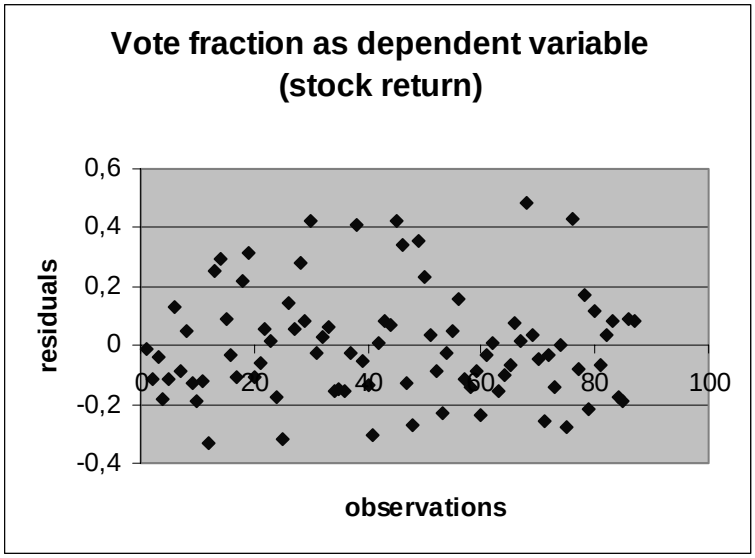
Appendix 4 Correlation Matrix: 20% threshold

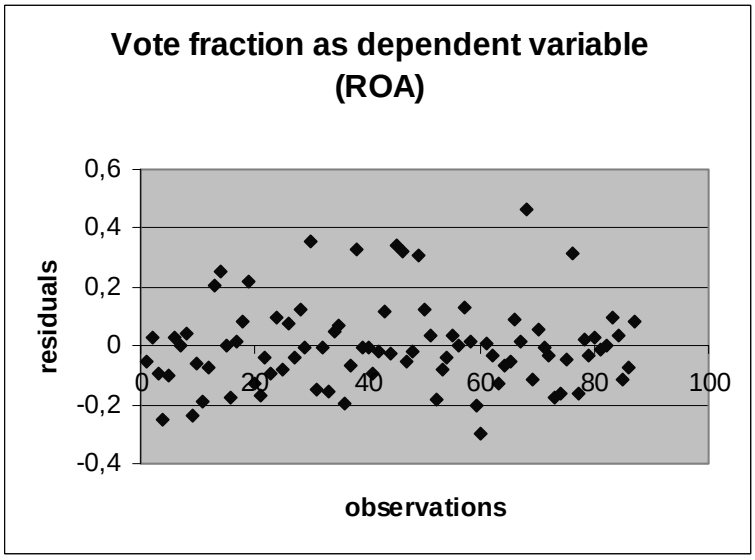
	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*	*11*	*12*	*13*	*14*	*15*	*16*	*17*
1	1,00																
2	0,55	1,00															
3	0,66	0,91	1,00														
4	-0,32	-0,45	-0,38	1,00													
5	-0,57	-0,51	-0,60	0,55	1,00												
6	0,11	0,32	0,21	-0,30	-0,14	1,00											
7	0,19	0,02	-0,01	0,17	0,11	-0,01	1,00										
8	-0,36	-0,30	-0,33	0,89	0,57	-0,07	0,13	1,00									
9	0,22	0,38	0,37	-0,05	-0,01	0,09	-0,09	0,12	1,00								
10	0,34	0,50	0,48	-0,41	-0,22	0,32	-0,11	-0,23	0,90	1,00							
11	0,04	0,17	0,08	-0,20	-0,05	0,05	-0,04	-0,16	0,02	0,07	1,00						
12	-0,09	0,01	0,01	0,13	0,32	-0,03	0,01	0,21	0,34	0,26	0,24	1,00					
13	-0,09	0,02	0,02	0,07	0,25	-0,06	0,05	0,12	0,26	0,19	0,28	0,92	1,00				
14	0,20	0,26	0,28	-0,21	-0,36	0,23	-0,01	-0,23	0,08	0,20	0,15	-0,13	-0,10	1,00			
15	-0,63	-0,46	-0,57	0,42	0,75	-0,05	0,02	0,50	-0,17	-0,32	-0,05	0,20	0,17	-0,45	1,00		
16	0,05	0,17	0,10	-0,23	-0,15	0,02	-0,08	-0,16	0,00	0,03	0,38	0,08	0,20	0,05	-0,04	1,00	
17	-0,18	-0,29	-0,27	0,35	0,22	-0,14	0,12	0,27	-0,14	-0,25	-0,48	-0,23	-0,28	-0,09	0,11	-0,51	1,00

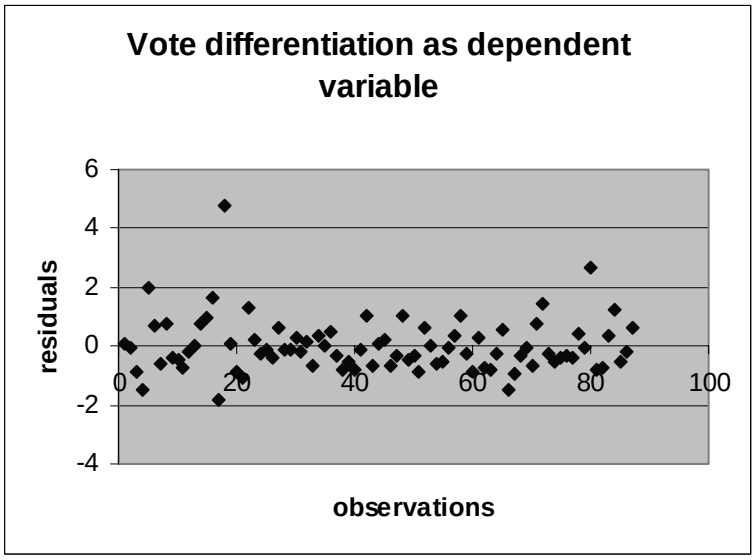
1. Stock return
2. ROA
3. ROE
4. Tobin´s Q
5. Beta
6. Leverage
7. Growth in assets
8. Market-to-book ratio
9. Size - ln MV E
10. Size - ln BV A
11. Vote fraction
12. v/e ratio
13. ln v/e
14. Industry goods
15. IT
16. Family ownership
17. Dispersed ownership

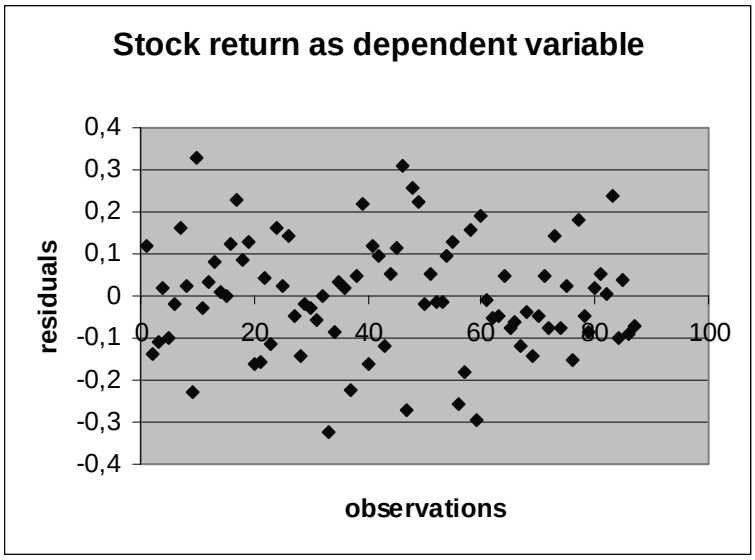
Appendix 5 Residual plots

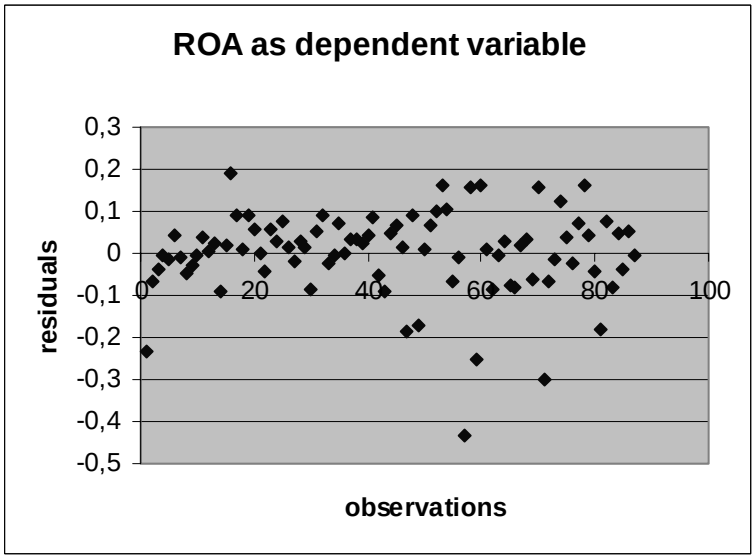
Residual plots in order to test for heteroskedasticity:

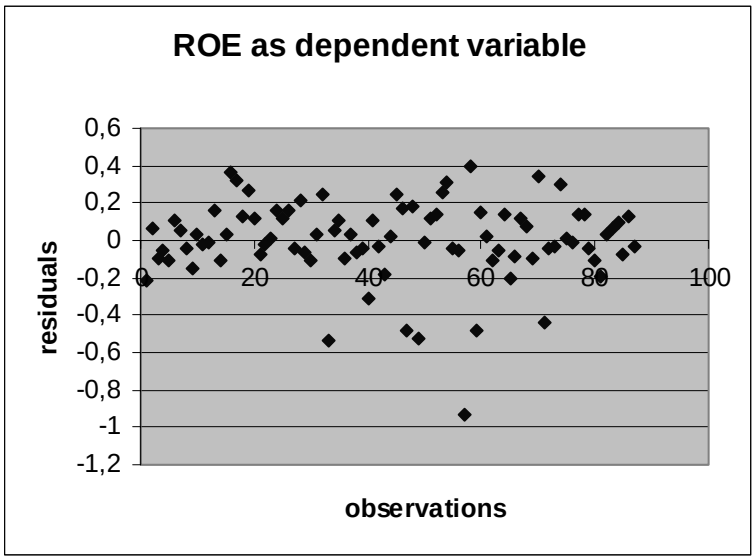


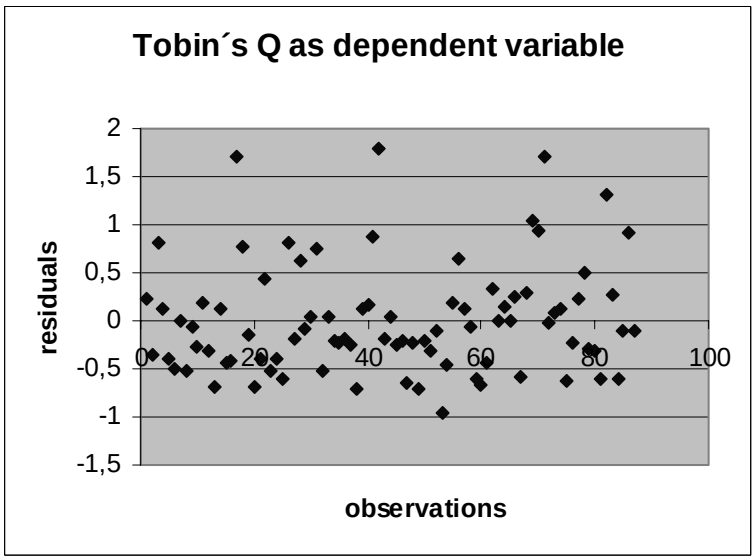



Vote differentiation as dependent variable
residuals
6
4
2
0
-2
-4
0
20
40
60
80
100
observations


Stock return as dependent variable
residuals
0,4
0,3
0,2
0,1
0
-0,1
-0,2
-0,3
-0,4
0
20
40
60
80
100
observations


ROA as dependent variable
residuals
0,3
0,2
0,1
0
-0,1
-0,2
-0,3
-0,4
-0,5
0
20
40
60
80
100
observations


ROE as dependent variable
residuals
observations
0,6
0,4
0,2
0
-0,2
-0,4
-0,6
-0,8
-1
-1,2
0
20
40
60
80
100


Tobin´s Q as dependent variable
residuals
observations
2
1,5
1
0,5
0
-0,5
-1
-1,5
0
20
40
60
80
100