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# CEO Ownership

## Relevant for Firm Performance?

- A Study of the Swedish Market -

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## Acknowledgements

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With best regards

Christian Bjärntoft

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## Sammanfattning

- Titel:** CEO Ownership – Relevant for Firm Performance? – A Study of the Swedish Market
- Seminariedatum:** 03/06/2009
- Ämne/kurs:** BUSM36 Degree Project Corporate and Financial Management (15ECTS)
- Författare:** Christian Bjärntoft, Olle Hammer
- Handledare:** Maria Gårdängen
- Nyckelord:** VD:s aktieinnehav, Tobin's Q, endogeneitet, agentteorin, entrenchment-teorin
- Syfte:** Syftet med denna uppsats är att undersöka om och hur en VD:s aktieinnehav påverkar företagets prestation beroende på om det är baisse eller hausse på den svenska aktiemarknaden. Vidare ämnar vi undersöka om detta eventuella samband håller även då vi undersöker om relationen är endogenetiskt bestämd.
- Metod:** Uppsatsen bygger på en kvantitativ metod och använder regressionsanalys samt deskriptiv statistik för att analysera orsakssambandet. Sambanden modellerades med hjälp av OLS- samt Two-stage Least Square regressioner. Datan hämtades främst från årsredovisningar och Datastream. Studien har en deduktiv ansats.
- Teoretisk referensram:** Den teoretiska referensramen består främst av den klassiska agentteorin samt entrenchment-teorin.
- Empiriskt material:** Företag listade på Nasdaq OMX Stockholm Large och Mid Cap mellan 2000 och 2006 har empiriskt undersökts. Undersökningen baseras på årsdata.
- Slutsats:** Resultaten från OLS-regressionerna konfirmerar ett positivt samband mellan företagsprestation och en VD:s aktieinnehav på den svenska marknaden. Sambandet håller under baisseperioden (2000-2002) och för hela undersökningsperioden (2000-2006). Dock är sambandet inte statistiskt säkerställt för hausseperioden (2003-2006). Resultatet antyder att rådande marknadsläge på aktiemarknaden påverkar sambandet, således har externa krafter en påverkan på resultatet. En Two-stage least square regression genomfördes för att undersöka om sambandet kunde vara endogenetiskt bestämt och slutsatsen är då att sambandet inte håller.

## Abstract

- Title:** CEO Ownership – Relevant for Firm Performance?
- Seminar date:** 03/06/2009
- Course:** BUSM36 Degree Project Corporate and Financial Management (15ECTS)
- Authors:** Christian Bjärntoft, Olle Hammer
- Advisor:** Maria Gårdängen
- Key words:** CEO ownership, Tobin's Q, endogeneity, agency theory, entrenchment theory
- Purpose:** The purpose of this thesis is to examine if and how CEO ownership affects firm performance on Swedish companies depending on the market conditions. We would also like to examine the question if this relationship still holds when taking the possibility of an endogeneity determined relationship into account.
- Methodology:** A quantitative approach using regression analysis and descriptive statistics have been used. The regression analysis was conducted with an ordinary least square regression and a two-stage least square regression. The information has been attained from annual reports and Datastream. The study has a deductive approach
- Theoretical perspectives:** The theoretical perspective has been derived from classical agency theory as well as entrenchment theory.
- Empirical foundation:** Companies listed at Nasdaq OMX Stockholm Large and Mid Cap during 2000-2006 has been empirically studied to obtain the data selected.
- Conclusions:** Results from OLS regressions confirms a positive relation between firm performance and CEO ownership on the Swedish market. The relationship holds for our bear market period (2000-2002) as well as for the whole period (2000-2006). During bull market the relationship cannot be statistically supported. The results imply that the market condition affects the relationship; hence external forces have an impact on the result. Thus a Two-stage least square regression was conducted in order to examine if the relationship could be endogeneity determined and the result is that the relationship could be determined by exogenous forces and thus; the relationship do not hold.

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# 1. Introduction

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*In the introductory section, background and motives behind the research will be explained which will lead forward to the purpose of this thesis. Furthermore, key definitions, delimitations as well as target audience and disposition of the thesis will be presented.*

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## **1.1 Background**

During the past year, the debate and criticism about CEO bonuses and incentive programs has increased in strength when the economic downturn and recession hit the world economy (Linnala, 2009). Executives with decision power have been accused for entrenching themselves with corporate perks. Along with the increasing masses of criticism, the economic downturn has had consequences for individual firms' profits as well as for their stock prices. Many shareholders, including CEOs with large ownership, have experienced a dramatic decrease in the value of their shares.

Generally during these bearish market conditions, focus shifts from shortsightedness to long-term perspective. In such economic climate, we believe that strong leadership showing confidence in the company is an important factor in the search for improved firm performance. High confidence could be represented through increased CEO ownership in the company, at least if choosing to believe the classic agency theory (Jensen and Meckling, 1976). Swedish CEOs following this belief are considered to be a part of the famous *Pilot School*<sup>1</sup> (Zaudy, 2008).

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<sup>1</sup> The pilot school builds on the agency theory which says that the company's CEO, who is the "corporate pilot", should buy stocks in the own company and thereby showing confidence in the company's future profits.

The CEO of the Swedish company Ericsson, Carl-Henric Svanberg, is one of the leading men following the Pilot School (Zachrisson, 2008). When Svanberg started as CEO, the company had problems with their business model and declining firm performance. Svanberg bought a large stake in the company and subsequently firm performance increased (Hedensjö, 2004). The question arises whether level of CEO ownership affects firm performance or not?

## ***1.2 Problem Discussion***

All shareholders are entitled to the same dividend per share, but insiders, such as the CEOs, have incentives to make investments and financing policies that benefit themselves but affect other shareholders negatively. This potential negative behavior can be explained by the game theory stating that all actors aim to maximize their own utility (Bernoulli, 1738). To align the CEO's interest with the shareholders' interest the CEO has to own shares in the own company. In that way the firm performance depends on the amount of shares owned by the CEO. According to agency theory, the greater level of ownership by the CEO, the greater firm performance is (Jensen and Meckling, 1976). However, Morck *et al.* (1988) argues that after a certain limit of ownership, the positive effect disappears and the relationship turns negative and the CEO starts to entrench herself with high salary and other corporate perks.

Previous studies examining the relation between insider ownership and firm performance have shown mixed empirical results. Some of them indicate no relationship at all (e.g. Himmelberg, Hubbard and Palia, 1999), while others (e.g. Holderness, Kroszner and Sheehan, 1999) have found a strong relationship between insider ownership and firm performance. There are also studies suggesting that the relationship is reverse, i.e. firm performance have an effect on insider ownership and not vice versa. Kole (1996) and Cho (1998) showed that firm performance had an impact on insider ownership and thus stating that a reversed causality exists in the relationship. This implies that when the CEO

believes firm performance will increase, the CEO increases her equity stake. (Kole, 1996)

Demsetz and Villalonga (2001) conclude that the differing results, providing different empirical evidence, stem from different measurements of variables, time periods and different techniques. To further examine the relationship between insider ownership and firm performance Demsetz and Villalonga (2001) examined if ownership structure was an endogeneity determined factor. Demsetz (1983) argued that in a competitive and efficient marketplace forces will make sure that every company chooses the most value maximizing ownership structure. This means that the ownership structure is an endogenous outcome of decisions that reflect the influence of shareholders, i.e. there should be no systematic relation between variations in ownership structure and variations in firm performance.

What we believe is the only study on the Swedish market examining the relationship insider ownership and firm performance has some weaknesses. Olsson and Öhlén's (2007) study found a significant relationship between relative CEO ownership above 3 % and firm performance, however they did not examine whether ownership was an endogeneity determined factor. Welch (2003) studied the same relationship on the Australian market and found a significant relation between insider ownership and firm performance, however when endogeneity was accounted for, there was no significant relationship.

None of the previous studies, as far as we know, take into consideration the fact that the current market condition might affect the relationship CEO ownership and firm performance. We believe, however, that the market conditions, whether it is bull or bear market, could have an impact on the relationship. Agrawal *et al.* (1987) found that level of leverage tends to increase with increased CEO ownership. This is in line with *free-cash-flow hypothesis* (Jensen, 1986), stating that increased leverage mitigate agency problems and thereby increases firm performance. Furthermore, it has been concluded that the level of leverage in turn is affected by market conditions (Murray and Goyal, 2004) and since level of leverage is affected by the market condition as well as the amount of CEO

ownership, leverage has an impact on firm performance. Hence, we believe the level of CEO ownership will affect firm performance differently during different market conditions.

Lastly, we are supposedly alone in taking endogeneity as well as different market conditions into consideration in our study of the link between CEO ownership and firm performance, this factor induce the importance of our study.

### ***1.3 Problem Definition***

How does the level of CEO ownership affect firm performance (Tobin's Q) and is there a difference depending on whether it is a bull or bear market? If endogeneity is accounted for, will the results still hold?

### ***1.4 Purpose***

The purpose of this thesis is to examine if and how CEO ownership affects firm performance on the Swedish market under different market conditions. In a second stage we will examine if the relationship is endogeneity determined.

### ***1.5 Delimitations***

Companies not founded in Sweden will be excluded since we only want to examine Swedish companies. Banks are excluded because of the complexity coupled with their balance sheets making it difficult to calculate some of the relevant measures, this is due to the fact that operating and financing activities are mixed and therefore the debt-level might not be accurate.

Our study is limited to only include the years between 2000 and 2006, which consist of one bear market and one bull market period. The reason for this delimitation is due to the time frame of this study. This study is delimited to examine companies on the Swedish stock exchange Nasdaq OMX Large and Mid

Cap. In other words, we have chosen not to examine Small Cap and the reason for this is also due to the short time frame for this thesis.

## 1.6 Definitions

*Bear market* – There is no formal definition of a Bear market period. However the informal definition is a drop of 20 % or more and it is expected periodically to correct an excesses found in a late stage of a bull market. In our study we use the period from, post it-bubble, year 2000 to 2002. During this period the Swedish OMXS Benchmark index dropped 49% from the top in 2000 until the bottom in year 2002.

*Bull Market* – There is no formal definition of a Bull market period either. However the informal definition is a period where stock prices rise faster than the average historical price change. In our study we use the period from 2003 until 2006. During this period the Swedish OMXS Benchmark index sky-rocked with an increase of 138 %.

*Endogeneity* – Demsetz (1983) argues that ownership structure is an endogenous outcome of decisions that reflect the influence of shareholders, i.e. there should be no systematic relation between variations in ownership structure and variations in firm performance. This phenomenon occurs in a regression model when one independent variable is correlated with the error term (Demsetz and Villalonga, 2001).

Term	Definition
<b>CEO</b>	Chief executive officer
<b>Tobin's Q</b>	Firm performance = $\frac{\text{Equity}_{MV} - \text{Equity}_{BV} + \text{Assets}_{BV}}{\text{Assets}_{BV}}$
<b>Size</b>	Market Capitalization
<b>Leverage</b>	Book value debt/equity-ratio
<b>Relative ownership</b>	Percent of company owned by CEO

<b>Absolute ownership</b>	SEK value of shares held by CEO
<b>OLS</b>	Ordinary least square regression
<b>2SLS</b>	Two-stage least square regression
<b>Bear market period</b>	2000-2002
<b>Bull market period</b>	2003-2006

## ***1.7 Disposition***

Chapter two gives an overview of the relevant theoretical framework that is used as a base in this thesis; we will also provide the reader with a compilation over the recent research regarding the relationship firm performance and insider ownership. In the third chapter our data gathering, methodology and course of action for this study is presented and evaluated. In the fourth chapter we will, due to the nature of this study, combine the empirical findings from descriptive statistics as well as regression models with the analysis of the findings. In the fifth and last chapter a conclusion of the compiled analysis and suggestion for future research is presented.

## ***1.8 Target Audience***

This thesis is intended for students, academics, investors and professionals that have an interest in the question regarding the relationship between Swedish CEO's ownership and a firm's performance. The reader should have basic knowledge in corporate finance, statistics and econometrics.

## 2. Theoretical Framework

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*In the second chapter the theoretical framework connected to the topic of this thesis will be presented. This section will provide analytical tools and academic theories that will form a strong theoretical base for understanding and for analyzing the empirical findings, all provided in chapter four.*

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### ***2.1 The Efficient Market Hypothesis***

In 1970 Eugene Fama published *The Efficient Market Hypothesis* (EMH) which states that in an active market, the market price of a financial instrument should reflect all available information such as historical prices, public information as well as insider information. All investors are assumed to be rational which means that the market correctly prices all securities. Furthermore, it means that all attempts to outperform the market with portfolio management are meaningless in the long run. Fama divides the effectiveness of the market into three forms reflecting available information; weak, semi-strong and strong market efficiency.

If the Efficient Market hypothesis holds, and investors know that higher CEO ownership results in better performance, it would be included in the stock price immediately and no abnormal returns would be found. However, Shleifer (2000) among others concludes that financial markets should not be considered efficient. He means that numerous studies show the opposite and that investors often underreact to corporate news announcements. This means that EMH is violated, and that, for example, CEO ownership announcements are not always priced into the stock. Since firm performance, measured as Tobin's Q, is dependent on stock returns the impact of the Efficient Market Hypothesis is of interest.

## ***2.2 CEO Utility Maximization***

Financial theory assumes that all actors in a market act upon rational behavior. An individual actor's optimal choice depends on what she believes other actors will choose. This is explained by Game Theory, where strategic interactions between rational actors produce outcome dependent on each actor's utility and/or preference (Bernoulli, 1738). Normative decision theory suggests that the actors are economically rational which means that she can (i) assess outcomes, (ii) calculate the alternative paths to outcome and that she can (iii) choose an action that yields her most-preferred outcome based on her individual decision (Bernoulli, 1738). The conclusion of game theory is that the actor will maximize her own utility (von Neuman and Morgenstern, 1944). Individual utility maximization leads us into the relation between a CEO and her alignment of interest with shareholders.

## ***2.3 The Relation of CEO Ownership and Firm Performance***

Two theories suggest different optimal CEO ownership levels. The agency theory suggests that due to the incentive alignment as a shareholder, a CEO with large ownership will act in the best interest of the company (Jensen and Meckling, 1976). The managerial entrenchment theory however suggests that when the CEO's ownership increases, she will behave in a non-firm value maximizing way, trying to entrench herself with high salary and corporate perks (Demsetz, 1983). Recent research (Welch, 2003) suggests that the relation between CEO ownership and firm performance is endogeneity determined which implies that the relationship could be false.

### **2.3.1 Agency Theory and Incentive Alignment Theory**

Berle and Means (1932) were first to identify a potential conflict between a company owner and its management. This situation arises when the management does not have any interest in the company. Jensen and Meckling (1976) defined this agency relation as a contract where the owner(s) (principal) hires a CEO (agent) to act and perform in a way that aligns with the owner's interest. If both

parties are utility maximizing, it is rational to think that the CEO will not always act in the best interest of the owner and she may search for a variety of personal interests. Jensen and Meckling (1976) also define two groups of shareholders, the first group which has decision-making authority, i.e. CEO with an ownership in the company, and the second one which does not have these types of authorities. These two groups are defined as insider and outsider shareholders.

Further, Fama and Jensen (1983) conclude that when separation between decision-making authority and ownership exist in a company, agency costs will arise since owners, who have residual claim on the company, need to control and monitor the decision management. Agency theories suggest that increasing monitoring costs, e.g. through incentive programs, will lead to a lower performance and a less profitable company. Moreover, when CEO ownership is low, the CEO will have lesser incentives to act in the shareholders best interest, which creates incentives for the CEO to divert resources to benefit her over shareholders (Blackburn *et al.* 1990). Other consequences are behavior such as empire building and investments in projects that increase firm size but without increasing the firm performance (e.g. Ghosh *et al.*, 2007), thus making decisions that are not value-maximizing. However, if the CEO has ownership in the company, her interest will be aligned with the shareholders in that what benefits herself will benefit shareholders; this implies that she will act in the best interest of the company (Jensen and Meckling 1976).

In summary, agency theory argues that the greater degree of ownership by the CEO, the better performance and profitability by the company, this is also called the incentive alignment theory. Criticism to the agency theory is that it assumes that individuals and organizations only are interested in maximizing their own self-interest and thereby ignoring the complexities surrounding an organizational life. However the relationship principal-agent should not be examined as an isolated phenomenon, instead one should take into account the surrounding environment. Factors such as social and political aspects should be considered in the complex environment surrounding an organization and thus the relationship between principal and agent is simplified in the agency theory. (Fama, 1980; Scott, 2003)

### 2.3.2 Managerial Entrenchment Theory

Demsetz (1983) pointed out costs of significant CEO ownership such as high salary and empire building. When the CEO owns none or only a small equity stake in the company she is working for, market discipline such as the managerial labour market (Fama, 1980) and the market for corporate control (Jensen and Ruback, 1983) may still force her to maximize firm value. However, if the CEO has a large ownership stake, that induces power and control enough to secure and guarantee high salary and her own employment, it would have a negative effect on firm performance (Morck *et al* 1988). A high level of stock ownership by the CEO leads to corporate decisions that are not maximizing firm performance due to entrenchment possibilities. That means that the CEO has the opportunity to expropriate other shareholders and entrench herself with high salary, empire building and corporate perks (Demsetz 1983; Morck *et al* 1988).

Entrenchment theory also suggests that decision monitoring will decrease when the ownership level by the CEO increases (Miguel, Pindado, and De La Torre 2004; Tosi and Gomez-Mejia 1994). This means that the CEO will be given more freedom to “do what she wants” with the company, which will further increase the entrenchment by the CEO. Han and Suk (1998) provided another empirical evidence of the entrenchment theory when they looked at the impact of inside ownership in a sample of 5500 companies over a four-year period and concluded that excessive insider control negatively impacted the firm performance.

To summarize the entrenchment theory, in contradiction to the incentive alignment theory, suggests that the higher level of CEO ownership, the more likely will the performance of the company decrease and the assets will be less valuable due to the entrenchment possibilities. The criticism that has been put forward against this theory is the same reasoning as with the agency theory. The entrenchment theory simplifies the relationship in an organization and fails to take into account the complexities with social and political aspects regarding relationships in an organization (Fama, 1980; Scott, 2003).

## ***2.4 Literature Review***

Main theories presented above have been discussed and empirically tested over the last decades; the main studies within the area will now be presented. Demsetz (1983) argued against Berle and Means (1932) theory that there is a relation between ownership structure and firm performance. Instead, Demsetz (1983) argue that in a competitive and efficient market place forces will make sure that every company chooses the most value maximizing ownership structure. In other words; the CEO ownership is an endogeneity determined variable and any observed correlation between ownership and firm performance could be false. Demsetz and Lehn (1985) were first to empirically test if this was true and conducted an OLS regression, the results supported Demsetz' (1983) theory.

Morck, Schleifner and Vishny (1988) support Jensen and Meckling's (1976) theory that there is a relation between insider ownership and firm performance. They examined 371 American companies and used Tobin's Q as a measure of firm performance and insider ownership as combined shareholdings of all board members with a minimum ownership of 0.2 %. Their result, after running a piecewise linear regression, is that there is a significant non-monotonic relation and that firm performance is increasing between 0-5 % ownership stake, decreasing between 5-25 % and finally increasing beyond 25 %. Morck *et al.* (1988) did not take into account that the relationship could be endogeneity determined.

McConnel and Servaes (1990) ran an OLS regression to examine the relation between Tobin's Q and insider ownership in two different samples with two time periods. However, they had not chosen the time periods dependent on specific market conditions. They found a positive relation for ownership up to a breaking point between ownership levels of 40-50%. Thereafter, as the ownership increased further there was a negative effect on firm performance. These findings suggest that the incentive alignment theory as well as the entrenchment theory co-exist but Demsetz (1983) argumentations regarding the endogeneity problem are not taken into account. McConnel and Servaes (1990) thus suggest that the relationship

between insider ownership and firm performance is curve linear and shaped as an inverse-U.

Hermalin and Weisbach (1991) did take into account the endogeneity problem and their results support Morck *et al.* (1988) findings. They found that Tobin's Q increases with insider ownership up to 1 %, then the relation is negative between 1-5%, then it becomes positive between 5-20% and finally it turns negative beyond 20%. This evidence further supports both the incentive alignment theory (Jensen and Meckling, 1976) and the entrenchment theory (Demsetz, 1983).

Furthermore, Kole (1996) also accounted for an endogeneity determined relationship which he grounded on the fact that the relationship was the opposite, i.e. the ownership structure was dependent on the firm performance. Moreover, Cho (1998) first replicated Morck *et al.*'s (1988) study and found a similar non-monotonic relation between Tobin's Q and management ownership. Then he also accounted for whether ownership structure was endogeneity determined and found that firm performance could have an effect on the ownership structure but not the other way around and thereby supporting Kole (1996).

Himmelberg, Hubbard and Palia (1999) extended Demsetz and Lehn (1985) study by using a fixed effects panel data model and concluded that almost all variation in CEO ownership can be explained by unobserved firm heterogeneity and that CEO ownership has no significant effect on firm performance. This result is interpreted as a support and empirical evidence on Demsetz' (1983) theory.

Holderness, Kroszner and Sheehan (1999) replicated earlier studies by Morck *et al.* (1988) and Demsetz and Lehn (1985) and found support for Morck *et al.* (1988) results, showing a positive relation between firm performance and insider ownership from 0 to 5% ownership level. They could not, however, find a significant relation beyond 5 % ownership. Holderness *et al.* (1999) also confirmed the endogeneity of insider ownership.

Demsetz and Villalonga (2001) re-examined earlier studies and found that when taking endogeneity into account, which they did by running a Two-least square

regression, there was no significant relation between insider ownership and firm performance. They also suggest that earlier research inconsistency in variable measurement, time periods and failure of researchers to acknowledge the endogeneity problem, may provide an explanation for the failure to reach a consensus.

Welch (2003) replicated Demsetz and Villalonga's study (2001) on the Australian market. She used an OLS regression and found a significant relationship between firm performance and ownership structure, which support Morck *et al.* (1988). However when endogeneity was taken into account in a Two-stage least square model, Welch (2003) found no statistic evidence of the positive relation between firm performance and ownership, further supporting Demsetz (1983) and Demsetz and Villalonga (2001).

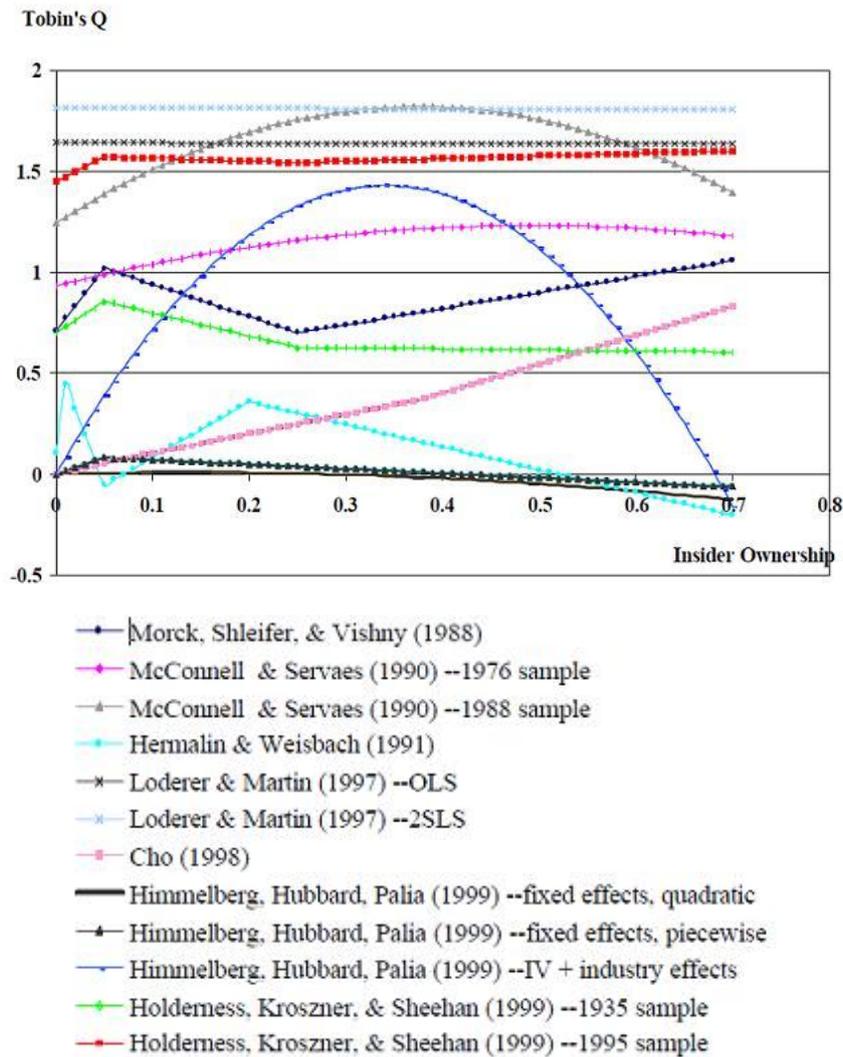
## ***2.5 Concluding Comments***

There are two schools with opposing views suggesting different relationship between CEO ownership and firm performance. Morck *et al.* (1988) state that both the incentive alignment theory and the entrenchment theory co-exist and that higher level of ownership increases firm performance, due to the CEOs alignment with the owner's interest, and that firm performance later decreases due to the entrenchment possibilities. Morck *et al.*'s model has been empirically studied and the results support and is interpreted as evidence on the positive relation between firm performance and insider ownership up to a certain limit where it turns negative (McConnel and Servaes, 1990; Hermalin and Weisbach, 1991; Holderness, Kroszner and Sheehan, 1999).

The second school, however, argues against Morck *et al.*'s (1988) findings of a positive relation between CEO ownership and firm performance. Demsetz (1983) argues that any such relationship is determined by other factors, e.g. the market forces. Academic researches, acknowledging Demsetz' (1983) theory and taking the endogeneity problem into account, have not found a consensus regarding the relation between firm performance and insider ownership. Some studies (e.g. Hermalin and Weisbach, 1991; Holderness *et al.*, 1999) have found a significant

relation even when the endogeneity problem has been accounted for and others (e.g. Loderer and Martin, 1997; Kole, 1996; Cho, 1998, Himmelberg *et al.*, 1999; Demsetz and Villalonga, 2001, Welch, 2003) have found no significant relation.

**Table 2: Research regarding the relationship insider ownership and firm performance**



(Demsetz and Villalonga, 2001)

Demsetz and Villalonga (2001) concludes that the lack of consensus in the academic research regarding the relationship, firm performance and insider ownership, could be due to different research methods, time periods and measure of variables (table 2). This should be thought of when comparing previous results with the result from our study on the Swedish market.

## 3. Methodology

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*This chapter outlines the methodology used when examining the relationship between firm performance and CEO ownership. The research approach, the data gathering process and criticism on methodology will also be presented.*

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### ***3.1 Research Approach***

Previous studies within the area, covering the relationship between insider ownership and firm performance, have used a number of different methodologies (Demsetz and Villalonga, 2001). Our aim is to empirically study if CEO ownership has any impact on firm performance and since previous research will be used to evaluate and analyze our findings, this study is considered to have a deductive approach (Bryman and Bell, 2003). When examining this relationship we primarily use a regression model. Regression models can be used to (i) test how much of the dependent variable that can be explained by the fluctuations in the independent variables, described with as high determination coefficient ( $R^2$ ) as possible and to (ii) test if the independent variable has any effect on the dependent variable. Our regression model is primarily used for the second purpose. (Brooks, 2002)

In our regression model a log-normal form is used, which will show sensitivity, or elasticity, in terms of percentage changes instead of in absolute terms. This method is chosen as it makes it easier to interpret the results which in turn will lead to a more comprehensive analysis.

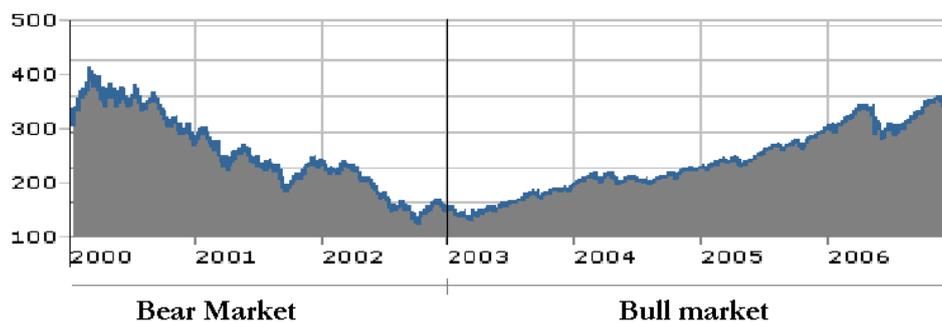
Furthermore, as a complement to the regression analysis and to provide the reader with better understanding of our data and the analysis, descriptive statistics will be

provided. The descriptive statistics analysis is also conducted to identify possible outliers. The analysis is generated in the statistical program SPSS and the sample are divided by years and by quartiles.

### 3.2 Data Gathering

We chose to gather data from companies listed on the Swedish stock exchange Nasdaq OMX Stockholm Large and Mid Cap. Olson and Öhlén (2007) used only data from companies on Large Cap, and to further improve their study we want to extend the sample they used. Due to the short time frame we chose to exclude companies on the Small Cap. The collected data covers the period 2000 to 2006, which includes a bear market (2000-2002) and a bull market period (2003-2006) (Table 3.1).

**Table 3.1: OMXS benchmark, Bear and Bull market**



(DI, 2009)

Even though we could have used more data and extended the time period we chose not to, due to lack of time. Companies that have not been listed the entire period and companies where all figures are not available are excluded to ensure reliability. As our intention is to examine the two different periods there will be 196 observations covering the bear market (2000-2002) and 265 observations covering the bull market (2003-2006). However, after descriptive statistics has been conducted, five more companies are excluded due to extreme deviations. Hence, our regression analysis is based on 64 companies in total and 181 observations in our bear market period and finally 246 observations in our bull market period. Our sample is unbalanced, thus some observations are lacking.

Sources that have been used for data gathering were primarily Datastream and annual reports. Datastream is one of the world's largest financial databases and it is used by academics, financial institutions and banks worldwide and therefore it forms a secure and reliable source (Thomson Datastream). The variables gathered from Datastream are Size, Leverage and inputs for Tobin's Q. Our data is considered secondary quantitative data.

Annual reports are the second source of information we have used in this study and their reliability is based on the Swedish corporate law foundation. All Swedish public companies are mandatory to have an auditor scrutinize and finally give her approval of its reliability (Aktiebolagslag, 2005:551). We are also aware that Swedish CEOs could have shareholdings in foreign insurance products. This implies that the correct CEO shareholdings could deviate from the amount of shares presented in annual reports even though the CEO shareholdings are double checked with *Ägarna och makten* by Fristedt and Sundqvist (1999-2006). This series of books is published by the Swedish Securities Register Center (SIS Ägarservice) and provide a complete register of all publicly listed companies on the Swedish stock exchange and its largest owners. Sweden is unique with such a comprehensive compilation of ownership structures, and thus our study is deemed reliable with high validity (Cronqvist and Nilsson, 2003). The information about CEO stock- and option holdings is gathered manually from annual reports for all 69 companies in the sample.

### ***3.3 Choice of Regression Model***

Since our observations cover both a cross-sectional and time series dimension, i.e. panel data, we use an Ordinary Least Square (OLS) regression model. The OLS model is the most commonly used regression model (Gujarati, 2006). In this study, the panel data consists of 64 companies with annual observations between 2000 and 2006 covering different variables that change over time. This means that five companies are excluded after the descriptive statistics analysis, due to extreme values (section 4.1.4); hence our regression analysis includes 427 observations. Our panel data is characterized as dated and regular since we have

frequent annual observations without exceptions. That is when the cell identifications are defined by a variable like year and the cell identification values follow a regular frequency.

The usage of panel data require fewer observations which will enable us to detect additional features of the data relative to pure cross-sectional and times series samples. Furthermore, panel data enable us to study adjustments of the dependent variable in response to changes in the independent variables. (Brooks, 2002)

Earlier studies have also used an OLS regression to find a potential relationship between ownership and firm performance (e.g. Demsetz and Lehn, 1985; McConnel and Servaes, 1990; Demsetz and Villalonga, 2001; Welch, 2003). Since we are also testing for a possible endogeneity determined relationship (Demsetz, 1983), we will in addition use a two-stage least square (2SLS) regression model. The 2SLS model is used in Demsetz and Villalonga's (2001) study as well as in Welch (2003) to determine if ownership is an endogeneity determined factor. The basic idea behind the two-stage least square model is to replace the explanatory variable that is correlated with the error term of the equation by a variable that is less correlated (Gujarati, 2006). Such a variable is called instrumental variable and these will be chosen and argued for in section 3.4.2 *Running the regression*.

Our regression model could be stated as follows:

$$LQ_{it} = \beta_0 + \beta_1 LRO_{it} + \beta_2 LAO_{it} + \beta_3 LSIZE_{it} + \beta_4 LDE_{it} + \beta_5 LMR_{it} + \beta_6 O_{it} + \varepsilon_{it}$$

Where:

$Q_{it}$  = Tobin's Q as a measure of firm performance

$\beta_0$  = Expected firm value if all factors  $i$  are equal to zero

RO = Relative ownership in company  $i$  in time  $t$

AO = Absolute ownership in company  $i$  in time  $t$

SIZE = Size in terms of market capitalization in company  $i$  in time  $t$

DE = Book debt-to-equity ratio in company  $i$  in time  $t$

MR = Market return in time  $t$

O = Dummy variable, 1=CEO holds options and 0=all other, in company  $i$  in time  $t$

$\varepsilon_{it}$  = a stochastic variable with mean of zero.

L = Natural logarithm, LN

How these variables are calculated will be further described in the next section.

### **3.3.1 Dependent Variable: Firm Performance**

In all previous studies, except for Demsetz and Lehn's (1985), examining the relationship between ownership and firm performance, the firm performance variable has been measured as Tobin's Q. Demsetz and Lehn used accounting profit rate as a measure and some other studies (Morck et al, 1988; Demsetz and Villalonga, 2001) have used both Tobin's Q and an accounting measure.

There are two aspects to consider when deciding on what performance measure to use. First of all between a forward-looking measure such as Tobin's Q or a backward-looking measure as an accounting profit rate. Secondly, the question is *who* is actually measuring performance. For the accounting profit rates it is the accountant constrained by her profession and laws, and for Tobin's Q it is the market actors which reflect the market conditions. However, we believe that since market valuation reflects both historical and future performance and the fact that high accounting profits often are accompanied by high market valuation, it is our belief, which is in line with Demsetz and Villalonga (2001), that these two measures should be correlated. Their result concludes a simple correlation of 0.60 between profit rate and Tobin's Q, which means the variables are fairly correlated. The strongest argument in favour of using the Tobin's Q as a performance measure is however that, all research in this area following Demsetz and Lehn (1985), has used Tobin's Q as the performance measure examining the ownership and firm performance relationship. Thus it will be easier when making comparisons with other studies.

The discussion mentioned above is the reason why we chose Tobin's Q as a proxy for firm performance. The measure is calculated as the market value of equity subtracted by the book value of equity plus the book value of assets, this is

divided by the book value of assets (Cronqvist and Nilsson, 2003). Tobin's Q, as all other variables except CEO option holding, will be in a natural logarithm form in the regression model.

### **3.3.2 Independent Variable: CEO Ownership**

CEO ownership is measured in two different ways, in absolute and relative terms. Jensen and Murphy (1990) argue that relative ownership is the only interesting variable when looking at ownership and that the absolute amount of money is without relevance. Owning only a fraction of a company can represent a significant amount of money, but the risk of the actions taken by the CEO is predominantly held by other shareholders. This view is shared by Hall and Liebman (1998), though they add that it is only true for a risk neutral CEO. Completely risk neutral CEOs are probably not very common. Hall and Liebman (1998) states that when a CEO owns a large part of the company, that is a high absolute amount, the CEO will not be risk neutral. Further, they suggest that since the absolute amount is substantial, the CEO will put more emphasis on her role as a shareholder, thus the absolute measure is of importance.

Since both these measures have been argued for in earlier research, they will both be included in our study on CEO ownership and its affect on firm performance. Annual reports are used when gathering the numbers for CEO ownership. The CEO ownership includes family ownership since all annual reports presented that instead of individual holdings.

#### ***Absolute ownership:***

The absolute amount (AO in regression model) of CEO holdings is measured as the natural logarithm of the amount of shares owned by CEO multiplied by the stock price in the beginning of year  $t$ . This means that for the year 2006, the CEO ownership in absolute term is calculated using the amount of CEO shares in the end of 2005. In cases with dual share systems, the absolute amount was calculated using separate stock prices for A- and B-shares respectively.

**Relative ownership:**

The relative amount (RO in regression model) of CEO holdings is measured as the natural logarithm of one plus the percentage of market capitalization of company  $i$  hold by CEO in the beginning of year  $t$ .<sup>2</sup> (Brooks, 2002)

**3.3.3 Independent Variables for Control**

In order to deal with the fact that a number of factors can jointly affect CEO ownership and Tobin's Q, thus induce a false correlation between them, additional independent factors will be used in the regression for control. The motivation for these variables in the regression model will be argued for below.

**Size:**

Measured as the natural logarithm of the company  $i$ 's market capitalization at the end of year  $t$ . This variable is included since its impact on firm performance has been concluded in earlier studies. Banz (1981) and Reinganum (1981) examined firm sizes and its impact on performance in terms of stock returns and concluded that the relationship was statistically significant, thus Tobin's Q will be affected. Furthermore, prior research regarding size and returns concludes that the relationship may be partially dependent on the market conditions, which means it is affected by if it is bullish or bearish market conditions (Kim and Burnie 2002; Guo 2004). Morck *et al.* (1988) means that size, in terms of market value, should be included since unobservable intangible assets of a firm might be correlated with size, and that it is more difficult to own a major stake of a larger firm. Through this reasoning the possibility is raised that a large part of board stake serves as a proxy for small firm sizes. Due to these earlier studies, size in terms of market value should be included in the regression model as a control variable.

**Leverage:**

Measured as the natural logarithm of one plus company  $i$ 's book debt-to-equity ratio at the end of year  $t$ . The existence of this variable in the regression model can be justified by different theories. First of all Agrawal *et al.* (1987) found that

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<sup>2</sup> When calculating the natural logarithm of a quotient, one is added to the quotient in order to get the elasticity.

CEOs that have stock holdings tend to increase leverage. Moreover, Koller *et al.* (2005) found in empirical research that increased leverage is typically met with positive market reactions, a positive signalling effect, thus market value will be positively affected and in turn Tobin's Q. Further on, the pecking order theory suggests that when firm profitability is high, companies tend to use its retained earnings instead of debt financing since it is considered to be a cheaper financing alternative (Mayer and Majluf 1984). Lastly, it is suggested that CEOs with large interest in their company will try to reduce the unsystematic risk through diversification, which gives the possibility to increase financial risk, hence increase debt financing (Walters, Kroll and Wright, 2008).

***Market return:***

The natural logarithm of one plus the rate of return on market portfolio measured as Nasdaq OMX Stockholm Benchmark during year  $t$ . This variable is included due to its obvious impact on market values, thus impacting Tobin's Q. The variable is also of interest since we want to examine the impact of CEO ownership in different market conditions.

***CEO option holding:***

Measured as a dummy variable of 1 if the CEO of company  $i$  hold stock options in the beginning of year  $t$ , and 0 in all other cases. According to studies by Smith and Stulz's (1985) managers with greater option holdings would be less risk averse since option provides convex payoffs. Option values are bred by increased volatility, which means that a CEO with option holdings earns from being less risk averse.

***Stochastic error term:***

A stochastic error term  $\varepsilon$  is taken into consideration since all forces that affect the dependent variable cannot be taken into account in the regression model (Gujarati 2006).

### ***3.4 Running the Regressions***

#### **3.4.1 OLS Regression**

As mentioned, an OLS regression is run covering the panel data during the whole period and the sub-periods, which is done in Eviews 6.0. The regression is initially run with neither fixed nor random cross sections as a start. Subsequently the regression is run with fixed cross-sections, where the F-statistics and the determination coefficient are based on the difference between the residuals sums of squares from the estimated model, and the sums of squares from a single-constant seldom specification, not from a fixed-effects only specification (Eviews 6.0 Guidebook). Hence, a test for redundant fixed effects is conducted where the resulting p value equals zero, implying that the regression should be run with fixed effects instead of no cross-sectional effects. However, we still do not know whether fixed or a random effects cross-section should be used in our final model. Therefore a model with random effects cross-sections is run, conducted with a correlated random effects test. This regression is using the data in a more efficient way and the standard errors will be less compared to a regression with fixed effects. The test is called the Hausman test and it evaluates the significance of an estimator versus an alternative estimator (Eviews 6.0 Guidebook). In the three different samples (total sample, bear market period and bull market period) the p value for this test differs from zero, which implies that random effect cross-sections should be used when running the regressions.

#### **3.4.2 Two-Stage Least Square Regression**

Studies that take the endogeneity problem into account treat the ownership structure as endogenous to determine if it will affect the firm performance. Himmelberg *et al.* (1999) used a fixed effects panel data and instrumental variables to examine the possibility of an endogeneity determined relation. This approach is conducted in our study as well, not only because of earlier studies but because the cross-sections with random effects gives no plausible results. As mentioned earlier, instrumental variables first need to be chosen before running the two-stage least square regression. The variables CEO absolute ownership and CEO relative ownership will be replaced with the instrumental variables, volatility

in stock price and S,G&A (Selling, General and Administration fees) to sales, when taking endogeneity into account.

***Volatility in stock price:***

Volatility in stock price is measured as the natural logarithm of one plus volatility. Volatility measures the degree of fluctuation in the share price during the previous twelve months based on the last 52 weekly values. Volatility is calculated on a standard deviation of the price and is a measure of its dispersion around the twelve month average (Datastream). Both Demsetz and Lehn (1985) and Loederer and Martin (1997) included this variable in their research. We argue that since the volatility in stock price might affect Tobin's Q but is less correlated than the ownership variables, this instrumental variable is suitable to replace one of the ownership variables. Furthermore, taking firm specific risk into account incorporates the fact that there are different levels of risk associated with investing in different companies. Demsetz and Villalonga concludes that higher level of firm-specific risk "*indicate better prospects to profit from inside information, and, therefore, a stronger causation effect that runs from variations in (expected) firm performance to variations in management shareholdings*" (2001:15).

***SG&A-to-Sales:***

SG&A-to-Sales is the sum of all direct and indirect selling expenses and all general and administrative expenses of a company reported in the annual report. SG&A is divided by sales. In the regression model, it is computed as the natural logarithm of one plus SG&A-to-sales. Earlier studies have included this variable in various forms. We believe however, that the most suitable for our regression is SG&A-to-Sales as it is taking the size of the firm into account in terms of sales. Furthermore, it includes both advertising, which is quite a discretionary expense, and more general expenses, all helping to refine our proxies for the scope for discretionary spending, which is crucial according to Himmelberg *et al.* (1999).

When the instrumental variables are chosen it is possible to run the Two-least square regression in Eviews. The regression is run with the same model as before, but the variables tested for endogeneity, are replaced in the second step of the model with the instrumental variables, which is done by Eviews automatically. As

mentioned, cross-section random effects are no longer used; it is replaced by cross-section fixed effects instead.

### 3.4.3 Econometrical Sources of Error

When analyzing a set of data through regressions it is necessary to examine whether there are statistical errors that impact the relationship. There are five assumptions underlying the OLS-method that should not be violated: (i) errors have zero mean; (ii) the variance of errors is constant and finite over all values of  $x$ ; (iii) the errors are statistically independent of one another; (iv) there is no relationship between the error and the corresponding  $x$  variate; (v) the error term is normally distributed. (Brooks, 2002)

The first assumption, that the errors have zero mean, is valid due to the fact that an intercept is included in the model (Brooks, 2002). The second assumption, which is the assumption of homoscedasticity, is not violated. When running panel regressions the effects of heteroscedasticity is reduced and cross sectional weights reduce standard errors for heteroscedasticity in the cross sectional data (Gujarati, 2006). In addition, to be completely sure, a White's test to detect heteroscedasticity is conducted and no sign of heteroscedasticity is noticed.

It is usually not necessary to test for autocorrelation when the length of data is as short as in this study; however we have tested for autocorrelation through a Durbin-Watson test without showing any sign of autocorrelation (Gujarati, 2006). Hence, assumption three is also fulfilled in our sample.

The fourth assumption, which concerns  $x$ -variables that are non-stochastic, means that the  $x$ -variables should be exogenous and thus be determined by factors outside the equation. Moreover, the relationship should be one-way, and this is tested for using absolute ownership as dependent variable and firm performance as the independent variable (Brooks, 2002). In order to correct for the econometrical errors found violating the fourth assumption, the 2SLS model is conducted.

The fifth assumption, that the residuals are normally distributed with zero as a mean, holds due to our large sample. This can further be concluded when studying the low values for skewness. Lower skewness values are received when five outliers with extreme deviations are removed. Removing outliers is, according to Brooks (2002), the best way to make sure the fifth assumption is not violated.

Implicitly, it is necessary to examine whether the regression models suffers from multicollinearity. However, there is no single measure of multicollinearity, thus we cannot be completely sure that multicollinearity does not exist. According to Gujarati (2006), a good way is to study the correlations between the different explanatory variables and if the correlation is 0.8 or above, the model probably suffers from multicollinearity. The correlation between the explanatory variables is low, except between absolute and relative ownership (Table 3.2). The high relationship between these two variables are in accordance with our expectations, 0.6 might even suggest some degree of multicollinearity. Most correlations are below 0.20 which means that the multiple-regression model should not suffer from multicollinearity.

<b>Table 3.2: Correlation Matrix</b>							
	<u>Tob_Q</u>	<u>Ab_own</u>	<u>Rel_own</u>	<u>Size</u>	<u>Lev</u>	<u>OMXS</u>	<u>Option</u>
<u>Tob_Q</u>	1	0.125698	-0.054352	0.120089	-0.270769	0.161154	0.042210
<u>Ab_own</u>	0.125698	1	0.606049	0.025761	0.069432	0.078023	-0.185501
<u>Rel_own</u>	-0.054352	0.606049	1	-0.214229	0.145548	-0.046472	-0.208850
<u>Size</u>	0.120089	0.025761	-0.214229	1	-0.164783	0.201271	-0.039243
<u>Lev</u>	-0.270769	0.069432	0.145548	-0.164783	1	-0.107178	-0.167621
<u>OMXS</u>	0.161154	0.078023	-0.046472	0.201271	-0.107178	1	-0.085868
<u>Option</u>	0.042210	-0.185501	-0.208850	-0.039243	-0.167621	-0.085868	1

To be completely certain a second method is used in addition, Klein’s rule of thumb (Table 3.3)

<b>Table 3.3 Klein's Rule of Thumb on Multicollinearity</b>				
<b>Regression model</b>	<b>Dependent variable</b>	<b>R<sup>2</sup></b>	<b>R<sup>2</sup> adj.</b>	<b>Comparison</b>
Regular model	Tob Q	0.342	0.333	
Auxiliary regression 1	Absolute ownership	0.316	0.309	R <sup>2</sup> >R <sup>2</sup> *

Auxiliary regression 2	Relative ownership	0.241	0.233	$R^2 > R^{2*}$
Auxiliary regression 3	Leverage	0.113	0.103	$R^2 > R^{2*}$
Auxiliary regression 4	Size	0.281	0.275	$R^2 > R^{2*}$
Auxiliary regression 5	OMX_bench	0.063	0.053	$R^2 > R^{2*}$
Auxiliary regression 6	CEO option	0.033	0.0229	$R^2 > R^{2*}$

Auxiliary regressions are created by using the different independent variables as the dependent variables, for example auxiliary regression 1 represents the model:

$$\text{Absolute ownership} = c + \text{relative ownership} + \text{leverage} + \text{size} + \text{omxs\_bench} + \text{ceo opt.}$$

Auxiliary regression 2 is the same model but relative ownership is the dependent variable instead, and so on. The determination coefficients ( $R^2$ ) for the auxiliary regressions are compared with the determination coefficient for the regular model. As can be seen, all determination coefficients for the auxiliary regressions are lower than that of the regular model, which means that our model does not suffer from multicollinearity. (Brooks, 2002)

### 3.5 Criticism on the Methodology

When the regression model was conducted, cross-section with random effects was used when running the OLS regressions due to different reasons. However, when the Two-stage least square model was used, cross-sections with fixed effects were used due to the implausible results and the lacking possibility of conducting statistical tests with the random effects model. The cross-sections fixed effects model uses the data less effective and standard errors are higher. (Gujarati, 2006)

Further criticism is that only one performance measure is used, the forward-looking Tobin's Q. In some studies a backward-looking measure such as accounting profit rate is also included. The reason for that is to test the robustness of the reported results. However, a second measure is neglected since we choose to follow Hermalin *et al.* (1991), Cho (1998) and Himmelberg *et al.* (1999) that only use Tobin's Q as performance measure.

Lastly, the methodologies used in previous studies of this topic have been differing from case to case, which makes comparisons with other studies limited since different and opposing results are characterising the research area.

### ***3.6 Validity and Reliability***

High reliability means that different and independent measures of the same phenomenon generate the same or practically the same results. A research paper should if it has a high degree of reliability generate the same result if performed again. (Bryman and Bell, 2003) As mentioned earlier, sources for data gathering have been chosen carefully. Datastream is deemed to be reliable due to its size and due to the fact that information is collected from external annual reports controlled by Swedish corporate law. Moreover, CEO ownership has been collected manually from annual reports which are bound to accounting laws and restrictions further securing reliability.

Only having reliable information is not enough. The methodology must also have a high validity, which means that we examine what we believe we examine (Bryman and Bell, 2003). Getting high validity is difficult if the used information has been collected for other purposes. Hence, all information has been collected by the authors (Halvorsen 1992). Our chosen method is in many aspects the same as for previous, similar studies. Tobin's Q is the general choice of performance measure when examining ownership and its relation to firm performance. Control variables included are in large part the same as in similar studies. Because of this, the chosen method should be valid.

#### **3.6.1 Analysis of excluded observations**

Before outliers are removed, 67 companies have been excluded from our sample which gives us a total sample of 69 companies (Appendix 1) and 461 observations. This means that our study only covers approximately 50% of the total sample. Some of them are excluded since they are financial companies and others because they are not founded in Sweden. However, some companies are excluded since they are not listed during the whole period which may induce

some bias problems. For example, survivorship bias may exist in the sample meaning that firms excluded may be performing worse than the firms included, because of bankruptcies and downgrades to Small Cap etc. This implies that overall performance may be overestimated (Brown *et al.*, 1992). However, quite many of the excluded companies in the sample have been listed at OMX Nasdaq Large and Mid Cap after the year 2000, thus these observations will not give us a survivorship bias. It is reasonable to believe that these companies had positive abnormal returns initially since public offerings and change of listings increase liquidity and availability for investors, which is supported by studies by Eubank and Markese (1983). They found that when companies are listed on more liquid equity markets, where average market values are significantly higher, the value of the newly listed companies tend to increase. This will outweigh the survivorship bias problem to some extent.

## 4. Empirical Findings and Analysis

*In this section the empirical findings will firstly be analyzed with the help of descriptive statistics and then with an ordinary least square regression. Finally, a two-stage least square regression will be used in order to examine the possibility that the ownership is endogeneity determined. The analysis will be based on theories outlined in the theoretical section.*

### 4.1 Descriptive Statistics of Sample

Descriptive statistics are used to describe the main features of the collection of data. This is done in order to give the reader a better overview and understanding of the sample and results in general. Furthermore, through the descriptive statistics, some interesting conclusions can be drawn. The results will first be presented in total, secondly in a review divided by years and last of all will the sample be presented in a table divided into quartiles for the dependent as well as the most important independent variables.

<b>Table 4.1: Descriptive Statistics</b>							
	<b><u>N</u></b>	<b><u>Minimum</u></b>	<b><u>Maximum</u></b>	<b><u>Mean</u></b>	<b><u>Std. Deviation</u></b>	<b><u>Skewness</u></b>	<b><u>Kurtosis</u></b>
<b><u>Tob_Q</u></b>	483	0.54	9.60	1.71	1.31	3.31	12.64
<b><u>Ab_own</u></b>	483	0.000	14.319	0.197	1.086	9.104	94.04
<b><u>Rel_own</u></b>	483	0.000	0.850	0.050	0.153	3.753	13.611
<b><u>Size</u></b>	483	0.25	779.80	23.41	59.33	6.977	67.37
<b><u>Lev</u></b>	483	0.0000	9.3000	0.8434	1.0460	3.711	20.726
<b><u>OMXS</u></b>	483	-0.380	0.340	0.069	0.244	-0.606	-0.950
<b><u>Valid N (listwise)</u></b>	483						

*Absolute ownership and size (market value) is denominated in million SEK*

Studying the different variables we can see that skewness is positive for all variables except OMX Benchmark index (Table 4.1). When skewness is positive the mass of the distribution is concentrated on the right of the distribution figure, which means that there are many observations below the mean. Worth to notice is that skewness is very high for absolute ownership, which indicates that the average CEO holds much lower ownership level than the mean, thus a few CEOs with large ownership stakes influence the sample heavily. In fact looking at the mean, the average CEO would have approximately SEK 197M in stock holdings in her firm, while the median holding is only SEK 1.9M. In relative terms the CEO in average holds 5% of the company she works for. Moreover, the kurtosis, which is a measure of the peakedness of the probability distribution, is positive for all variables except market return. Higher kurtosis means that the distribution has a sharper peak and longer tails and that more of the variance is due to infrequent extreme deviations.

<b>Table 4.2: Descriptive Statistics - Variable Summary</b>								
<b>YEAR</b>		<b>Tob Q</b>	<b>Ab own</b>	<b>Rel own</b>	<b>Size</b>	<b>Lev</b>	<b>OMXS</b>	<b>Option</b>
<b>2000</b>	Mean	1.81	154.55	0.0567	25655.07	1.00	-0.05	0.67
	Std. Error of Mean	0.22	77.07	0.0190	11520.11	0.16		0.06
	Median	1.20	2.00	0.0010	4250.00	0.60		1.00
<b>2001</b>	Mean	1.64	121.27	0.0552	21305.20	1.03	-0.13	0.70
	Std. Error of Mean	0.17	74.08	0.0185	6850.38	0.15		0.06
	Median	1.16	1.61	0.0005	3265.01	0.71		1.00
<b>2002</b>	Mean	1.35	125.16	0.0601	13955.20	0.96	-0.38	0.70
	Std. Error of Mean	0.10	91.22	0.0201	3286.61	0.13		0.06
	Median	1.08	1.00	0.0004	3041.91	0.67		1.00
<b>2003</b>	Mean	1.58	145.11	0.0508	17959.35	0.90	0.30	0.70
	Std. Error of Mean	0.12	108.71	0.0192	4355.48	0.13		0.06
	Median	1.26	1.33	0.0004	4230.79	0.60		1.00
<b>2004</b>	Mean	1.68	202.39	0.0451	22093.77	0.75	0.17	0.58
	Std. Error of Mean	0.11	134.81	0.0176	5833.10	0.10		0.06
	Median	1.36	1.49	0.0004	5578.39	0.51		1.00
<b>2005</b>	Mean	1.84	264.66	0.0424	28477.97	0.61	0.34	0.55
	Std. Error of Mean	0.16	160.26	0.0175	7149.52	0.07		0.06
	Median	1.43	3.00	0.0004	10555.79	0.41		1.00
<b>2006</b>	Mean	2.04	365.57	0.0401	34454.27	0.65	0.23	0.49
	Std. Error of Mean	0.19	212.08	0.0174	7938.16	0.10		0.06
	Median	1.57	4.22	0.0004	14332.71	0.38		0.00
<b>Total</b>	Mean	1.71	196.96	0.0500	23414.40	0.84	0.07	0.63
	Std. Error of Mean	0.06	49.41	0.0070	2699.79	0.05		0.02
	Median	1.26	1.92	0.0005	5374.52	0.58		1.00

*Absolute ownership and size (market value) is denominated in million SEK*

When dividing the sample by years (table 4.2) we can see that the average Tobin's Q and its development over time follows the OMX Benchmark index. During our bear market period the average Tobin's Q is declining while it increases during the bull market period. Further on, the CEO ownership in relative terms is somewhat constant around 5% while in absolute terms it follows the OMX Benchmark index, which is logical. An interesting observation is that the average leverage of the sample also seems to follow the OMX Benchmark index. In our bull market period the average leverage declines which means that during good market conditions, companies in our sample seems to pay down debt. Logically, the median market value also follows the OMX Benchmark index with declines in market value during our bear market period and increase during our bull market period. Option holdings by CEOs seem to have declined in popularity during the total period, from 70% in 2003 to 50% in 2006. Whether this depends on the market conditions or the discussions in media about CEO option holdings is left unsaid.

When analyzing our data further, trying to see relationships between well-performing and mal-performing companies, the data is divided into quartiles. Describing the data using quartiles means that when, for example, Tobin's Q is used as the base for sorting out the quartiles, Q1 includes the 25 % of the observations with the lowest Tobin's Q values. Similarly, Q4 includes the 25 % with the highest Tobin's Q values.

#### **4.1.1 Tobin's Q**

When using Tobin's Q as the separator for quartiles, we can see that the average relative ownership is significantly higher in Q1 where Tobin's Q is low (Table 4.3). This is contradictive to agency theory which suggests that when the CEO's interest is in line with the owners, the performance of the company will improve (Jensen and Meckling, 1976). In other words, previous research is not supported by our findings. However, this result has been heavily impacted by five companies (Appendix 1), where each company's CEO is the principal owner and where Tobin's Q is relatively low. The low Q-values could be described by the

company's businesses and do probably not depend on the level of CEO ownership. Studying the median values instead, both in relative and absolute terms, the result is opposing and our study seems to fit with the agency theory suggesting that higher CEO ownership should imply better firm performance since the CEO interest will be in line with other shareholders (Jensen and Meckling, 1976). Our results show that the highest CEO ownership can be found in Q4 where Tobin's Q is the highest, this result support e.g. Morck *et al.* (1983)

<b>Table 4.3: Quartile Separator – Tobin's Q</b>							
<b>Quartile</b>		<b>Tob_Q</b>	<b>Ab_own</b>	<b>Rel_own</b>	<b>Size</b>	<b>Lev</b>	<b>Option</b>
<b>Q1</b>	Mean	0.91	525.36	0.0853	11914.88	1.096	0.628
	Median	0.93	1.15	0.0004	5718.04	0.691	1.000
	Std. Deviation	0.11	2078.33	0.2232	16449.70	1.198	0.485
<b>Q2</b>	Mean	1.14	63.44	0.0547	15537.03	1.086	0.554
	Median	1.12	2.24	0.0005	5338.79	0.800	1.000
	Std. Deviation	0.07	213.45	0.1533	25383.15	1.330	0.499
<b>Q3</b>	Mean	1.50	51.73	0.0243	22815.85	0.653	0.661
	Median	1.46	1.37	0.0004	5520.22	0.496	1.000
	Std. Deviation	0.17	196.68	0.0903	41566.80	0.545	0.475
<b>Q4</b>	Mean	3.29	146.89	0.0358	43556.31	0.536	0.658
	Median	2.48	3.78	0.0009	4865.58	0.243	1.000
	Std. Deviation	1.83	427.54	0.1023	104821.90	0.802	0.476
<b>Total</b>	Mean	1.71	196.96	0.0500	23414.40	0.843	0.625
	Median	1.26	1.92	0.0005	5374.52	0.582	1.000
	Std. Deviation	1.31	1085.80	0.1530	59333.92	1.046	0.485

*Absolute ownership and size (market value) is denominated in million SEK*

In our sample, CEOs hold options on their company's stock in around 65% of the cases. The CEO option holdings seem to be uncorrelated to firm performance. Furthermore, size seems to be positively correlated to firm performance, where the highest market values can be found where firm performance is highest. Lowest market values are found where firm performance is lowest.

When studying Q3 and Q4 compared to Q1 and Q2, leverage seems to be significantly lower when Tobin's Q is higher. Corporate finance theory explains this behaviour with the pecking order theory which suggests that when firm

performance is high, companies can use retained earnings to finance its operations instead of taking up new debt which is more expensive (Mayer and Majluf, 1984).

#### 4.1.2 Absolute Ownership

When CEO's absolute ownership is used as the base when dividing the quartiles, it means Q4 is the quartile with the 25% highest ownership stakes in absolute terms. Using the mean of Tobin's Q we can see that this value is the highest in Q3 (Table 4.4). The firm performance increases with higher absolute CEO ownership up to a certain limit where it declines. This is in line with e.g. Morck *et al.* (1988), stating that after a certain ownership level the alignment of interest loses its value and the CEO starts to entrench herself. Thus, this result empirically supports earlier studies (McConnel and Servaes, 1990; Hermalin and Weisbach, 1991; Holderness, Kroszner and Sheehan, 1999) which implies that both the incentive alignment theory as well as the entrenchment theory co-exists.

Table 4.4: Quartile Separator - Absolute Ownership							
Quartile		Tob_Q	Ab_own	Rel_own	Size	Lev	Option
Q1	Mean	1.413	0.1914	0.0002	13214.34	0.784	0.694
	Median	1.216	0.1598	0.0000	4568.96	0.603	1.000
	Std. Deviation	0.679	0.1643	0.0004	22359.88	0.911	0.462
Q2	Mean	1.643	1.3329	0.0007	31431.56	0.696	0.661
	Median	1.233	1.1963	0.0003	8862.63	0.465	1.000
	Std. Deviation	1.276	0.5977	0.0011	80475.33	0.804	0.475
Q3	Mean	1.947	11.6434	0.0134	29024.75	0.977	0.603
	Median	1.383	7.0608	0.0014	5208.68	0.730	1.000
	Std. Deviation	1.616	10.6775	0.0444	57946.23	1.322	0.491
Q4	Mean	1.917	964.2622	0.2314	21557.50	0.947	0.505
	Median	1.233	221.4192	0.0980	4056.04	0.634	1.000
	Std. Deviation	1.539	2274.8032	0.2707	66018.09	1.094	0.503
Total	Mean	1.705	196.9589	0.0500	23414.40	0.843	0.625
	Median	1.257	1.9163	0.0005	5374.52	0.582	1.000
	Std. Deviation	1.309	1085.7988	0.1530	59333.92	1.046	0.485

*Absolute ownership and size (market value) is denominated in million SEK*

Market value and absolute CEO ownership seems to be uncorrelated. Leverage seems to be higher for the firms in Q3 and Q4 compared to companies in Q1 and Q2. This is in line with research by Agrawal *et al.* (1987) concluding that there is a positive relationship between CEO ownership level and financial leverage.

Moreover, it is noteworthy that CEO option holdings decrease with higher absolute ownership level. The cause of this might be that the higher ownership level, the more risk averse the CEO will be and the less she will earn from a volatile stock. This is in line with theory by Smith and Stulz's (1985).

#### 4.1.3 Relative Ownership

Our results from studying the quartiles for median relative ownership do also support the incentive alignment theory and the entrenchment theory (e.g. Morck *et al.*, 1988). The findings (table 4.5) suggest that when relative ownership increases, the firm performance increases until Q4 where the firm performance declines.

Regarding the independent variable leverage, our findings suggest the same result as with ownership in absolute terms. The level of debt on companies' balance sheets increases with higher relative ownership, which is supported by the findings by Agrawal *et al.* (1987).

As with absolute ownership the companies in Q4 less often use CEO option holdings as a way to remunerate CEOs. Whether this is because these companies' CEOs already are major shareholders and thus do not need further remuneration to become motivated, is just pure speculation.

Table 4.5: Quartile Separator - Relative Ownership							
Quartile		Tob_Q	Ab_own	Rel_own	Size	Lev	Option
Q1	Mean	1.6109	0.84	0.0000	45071.6	0.7064	0.6369
	Median	1.2466	0.25	0.0000	16247.0	0.5063	1
	Std. Deviation	1.2223	1.58	0.0000	83898.2	0.84562	0.48242
Q2	Mean	1.7318	40.52	0.0006	19011.3	0.6898	0.7178
	Median	1.3198	1.61	0.0005	5246.2	0.4976	1
	Std. Deviation	1.2423	268.37	0.0004	52936.1	0.73434	0.45146
Q3	Mean	1.8147	135.13	0.0501	7484.9	1.1164	0.5735
	Median	1.2824	39.84	0.0155	2678.2	0.7315	1
	Std. Deviation	1.5168	239.34	0.0679	13110.0	1.43911	0.49639
Q4	Mean	1.5455	2593.24	0.6391	4301.0	1.1918	0.2593
	Median	1.0971	670.71	0.6331	2320.1	0.8314	0
	Std. Deviation	1.0451	3839.43	0.1378	4308.0	1.05015	0.44658
Total	Mean	1.7054	196.96	0.0500	23414.4	0.8434	0.6253
	Median	1.2569	1.92	0.0005	5374.5	0.5821	1
	Std. Deviation	1.309	1085.80	0.1530	59333.9	1.04602	0.48456

Absolute ownership and size (market value) is denominated in million SEK

#### **4.1.4 Concluding Comments on Descriptive Statistics**

When the descriptive statistics have been studied there are some conclusions that can be drawn. Earlier studies suggesting a relationship between insider ownership and firm performance have been supported by our study of the relationship between Swedish CEO ownership and firm performance. Tobin's Q, i.e. firm performance, increases until the fourth quartile where it starts to decline. (Morck *et al.*, 1988) Our results also suggest that leverage increase along the degree of CEO ownership, which is in accordance with earlier studies by e.g. Agrawal *et al.* (1987). The usage of CEO options seems to decline with increased ownership.

Moreover, after the descriptive statistics have been studied it can be concluded that outliers affect the overall results. Therefore we determine to exclude the five companies with the most extreme values (Appendix 1) when conducting the regressions.

### ***4.2 OLS Regression Analysis***

The regressions are run for the three different periods; total sample, bear market period and bull market period. Regressions will be run for the three periods using both Tobin's Q and Ownership separately as the dependent variables.

#### **4.2.1 Tobin's Q as Dependent Variable**

##### ***4.2.1.1 Total Sample***

The OLS regression covering the total sample is conducted in order, not only to be a good tool for evaluating the two different periods, but to evaluate the relationship covering all of the panel data. The regression is a cross-section regression with random effects, which has been concluded through different tests in the methodology section. The regression explains approximately 33.3 % of fluctuations in firm performance and the regression is significant at a 1 % level when studying the F-statistics (Table 4.6). The determination coefficient ( $R^2$  adjusted) is somewhere in between recent studies on other national markets. Welch (2003) received an adjusted  $R^2$ -value of 18 % in her study on the

Australian market and Demsetz and Villalonga (2001) received a value of 44 % when they studied the American market.

<b>Table 4.6 OLS Regression - Total Sample</b>				
	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
<b>C</b>	-3.292346	0.289961	-11.35443	0.0000
<b>Ab_own</b>	0.016280	0.007747	2.101408	0.0362
<b>Rel_own</b>	0.103754	0.218858	0.474068	0.6357
<b>Lev</b>	0.213428	0.041235	5.175910	0.0000
<b>Size</b>	0.219193	0.018920	11.58494	0.0000
<b>OMXS</b>	0.084666	0.040595	2.085639	0.0376
<b>Option</b>	-0.032391	0.028576	-1.133519	0.2576
<b>R-squared</b>	0.342068		S.E. of regres	0.207606
<b>Adj R-squared</b>	0.333373		F-stat	39.34020
			Prob (F-stat)	0.000000

The CEO ownership in absolute terms has an impact on firm performance, which can be statistically supported on a 5 % level. Relative ownership, however, is not statistical significant when the total sample is covered. The impact of absolute ownership is not that vast; 1 % change in absolute ownership increases firm performance in terms of Tobin’s Q with 0.016 %. The results support Morck *et al.* (1988) and subsequent empirical evidence (McConnel and Servaes, 1990; Hermalin and Weisbach, 1991; Holderness, Kroszner and Sheehan, 1999). The fact that relative ownership is not significant while the absolute ownership is could have several explanations. Hall and Liebman (1998) suggest that when the CEO has a large absolute ownership she will not be risk neutral meaning that she will act more in line with shareholders. In this way will the firm perform on a higher level and thus support agency theory (Jensen and Meckling, 1976). Also, when taking the control variable size into consideration, Morck *et al.* (1988) suggest that it is more difficult to own a larger stake of a bigger firm and thus, make the relative ownership less important.

The variables leverage and size are significant on a 1 % level, meaning that with more than 99 % probability do these variables have an impact on firm performance. When leverage increases 1 %, Tobin’s Q increases 0.22 % and size has almost an identical impact on firm performance. The OMXS benchmark is

also significant on a 5% level. Moreover, the impact of CEO option holding on firm performance cannot be statistically supported.

#### 4.2.1.2 Bear Market and Bull Market Comparison

When dividing our total sample into the two different sub-groups, we will be able to see if there are any obvious differences between the two different market conditions.

**Table 4.7: Bear and Bull market**

Bear market					Bull market				
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.	
<b>C</b>	-3.333000	0.407912	-8.170882	0.0000	-2.803615	0.347367	-8.071056	0.0000	
<b>Ab_own</b>	0.062062	0.012602	4.924644	0.0000	0.008949	0.008554	1.046215	0.2964	
<b>Rel_own</b>	-0.228737	0.297178	-0.769697	0.4424	-0.525225	0.309076	-1.699340	0.0905	
<b>Lev</b>	-0.057064	0.066814	-0.854063	0.3942	0.186575	0.046785	3.987912	0.0001	
<b>Size</b>	0.207033	0.026797	7.725969	0.0000	0.199668	0.022498	8.875085	0.0000	
<b>OMXS</b>	0.218800	0.057987	3.773272	0.0002	-0.254033	0.161315	-1.574762	0.1165	
<b>Option</b>	0.079732	0.044587	1.788231	0.0753	-0.047026	0.029615	-1.587917	0.1135	
	<b>R-squared</b>	0.472308	<b>S.E. of regres</b>	0.156011	<b>R-squared</b>	0.305172	<b>S.E. of regres</b>	0.151117	
	<b>Adj R-squared</b>	0.455556	<b>F-stat</b>	28.19392	<b>Adj R-squared</b>	0.289013	<b>F-stat</b>	18.88578	
			<b>Prob (F-stat)</b>	0.000000			<b>Prob (F-stat)</b>	0.000000	

The estimated equation for the bear market period describes 46 % of the changes in firm performance. The significant variables in this model are absolute ownership, size and OMXS Benchmark index. Absolute ownership and size are significant on 1 % level while OMXS Benchmark index is significant on a 5 % level. The regression for our bull market period does only describe approximately 30 % of the changes in firm performance and the significant variables are size and leverage. Size is significant on a 5% level while leverage is significant on a 1 % level. Both variables have a positive effect on firm performance.

Our result indicates a relationship between a CEO’s ownership and firm performance during our bear market period, but not during our bull market period. One suggestion is that during a bull market period, almost all stocks will increase and the CEO’s alignment is not as important as during a bear market period. It can

also be concluded that our model explains the development in Tobin's Q and other variables better during the bear market period than during the bull market period.

During our bear market period, the impact of leverage on firm performance is not significant, while it is significant in our bull market period. If a company in our sample increases its leverage during a bull market period it will have a positive effect on firm performance. The explanation for this could be that during a bull market period a company might have more investment possibilities, which means that increased debt probably will increase firm performance. (Koller *et al*, 2005).

Prior research in the US stock markets suggests that the relationship between size and firm performance may be partially dependent on the general direction of the market (Kim and Burnie 2002; Guo 2004). However, our results indicate that the impact of size is almost identical between the two different market conditions (Table 4.7), which means that size and its impact on firm performance in our sample is independent of current market conditions.

Lastly, CEO option holding seems to have a negative impact on firm performance; however, the relationship cannot be statistically supported on a 5% level.

#### **4.2.2 Absolute Ownership as Dependent Variable**

Our regression models indicate that absolute ownership has an impact on firm performance in the total sample and also during our bear market period. Since studies by Kole (1996) and Cho (1998) show that firm performance has an impact on ownership level and not the vice versa. This means that reversed causality may exist in the regression model and it is meaningful to run a regression with the absolute ownership as the dependent variable. A regression model is run in order to examine Tobin Q's impact on ownership and we use the firm performance (Tobin's Q) as an explanatory variable (see table 4.8).

**Table 4.8 OLS Regression - Absolute Ownership as Dependent Variable**

	Coefficient	Std. Error	t-Statistic	Prob.
<b>C</b>	-1.501053	2.009515	-0.746973	0.4555
<b>Tob_Q</b>	0.751640	0.281441	2.670685	0.0078
<b>Size</b>	0.618899	0.126695	4.884967	0.0000
<b>Lev</b>	-0.644665	0.275574	-2.339357	0.0197
<b>OMXS</b>	-0.151891	0.272404	-0.557595	0.5774
<b>Option</b>	-0.024165	0.190196	-0.127051	0.8990
<b>R-squared</b>	0.152575		<b>S.E. of regres</b>	1.332830
<b>Adj R-squared</b>	0.143262		<b>F-stat</b>	16.38410
			<b>Prob (F-stat)</b>	0.000000

In the regression, firm performance is significant for absolute ownership on a 1% level. This means that absolute ownership and its dependence of Tobin's Q is significantly stronger than vice versa. This may imply that when firm performance is improving, CEOs seem to prefer more equity compensation when they expect their firm to perform well. Our result is close to the study by Kole (1996) and Cho (1998). Reversed causality may exist in the regression model and we should, according to Demsetz (1983) calculate if the ownership structure is endogeneity determined by exogenous factors such as market forces. As mentioned, this result is for the total sample; however the same results are generated when testing for the bull as well as for the bear market sample (Appendix 2).

### ***4.3 Two-Stage Least Square Regression***

#### **4.3.1 Results**

After examining the impact of ownership by Swedish CEOs on firm performance, a regression model is run to examine the possibility that the observed relation is endogeneity determined. This regression is performed with a Two-stage least square (S2LS) model, with fixed cross-sections.

<b>Table 4.10 Two-Stage Least Square - Total sample</b>				
	<b>Coefficient</b>	<b>Std. Error</b>	<b>t-Statistic</b>	<b>Prob.</b>
<b>C</b>	-10.36250	11.61404	-0.892239	0.3731
<b>Ab_own</b>	-0.984994	0.947339	-1.039748	0.2994
<b>Rel_own</b>	-52.92880	48.33504	-1.095040	0.2745
<b>Size</b>	1.274883	1.171447	1.088297	0.2775
<b>Lev</b>	-0.662815	0.857900	-0.772602	0.4405
<b>OMXS</b>	-0.634806	0.750575	-0.845759	0.3985
<b>Option</b>	0.257447	0.536299	0.480043	0.6316
<b>R-squared</b>	-9.213136		<b>S.E. of regres</b>	1.704282
<b>Adj R-squared</b>	-11.686630		<b>F-stat</b>	2867.202
<b>Instrument rank</b>	64.000000		<b>Prob (F-stat)</b>	0.000000

Our results (Table 4.10) indicate that ownership structure is not significant when taking the endogeneity possibility into account. This means that our findings from the Two-stage least square model suggest that the result from our OLS regression, indicating a relationship between CEO ownership and firm performance, does not hold when taking endogeneity into consideration. Moreover it contradicts with Hermalin and Weisbach (1991) study that calculated for endogeneity but still found a significant relation between CEO ownership and firm performance. Ownership in both relative and absolute terms can be rejected with high probability due to high p-values for all of the three periods (Table 4.10-11). The result support Demsetz' (1983) theory and Himmelberg *et al.*'s (1999) empirical evidence, stating that insider ownership is endogeneity determined. Our study indicates that the relationship between CEO ownership and firm performance on the Swedish market is not relevant. This conclusion on the Swedish market is consistent with the findings of Demsetz and Villalonga (2001) on the American market as well as Welch (2003) on the Australian market.

**Table 4.11 Two-Stage Least Square – Bear and Bull Market Period**

Bear market					Bull market				
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.	
<b>C</b>	12.08262	150.6183	0.080220	0.9362	<b>-3.685068</b>	6.897104	-0.534292	0.5940	
<b>Ab_own</b>	1.130104	8.638392	0.130823	0.8962	<b>-0.195119</b>	0.417808	-0.467005	0.6412	
<b>Rel_own</b>	56.98228	676.9143	0.084179	0.9331	<b>-29.10894</b>	15.64239	-1.860901	0.0648	
<b>Size</b>	-1.366683	14.74713	-0.092675	0.9264	<b>0.410158</b>	0.627825	0.653300	0.5146	
<b>Lev</b>	-2.933392	28.43995	-0.103143	0.9181	<b>-0.043466</b>	0.394864	-0.110078	0.9125	
<b>OMXS</b>	2.874692	30.28287	0.094928	0.9246	<b>-0.682949</b>	0.996427	-0.685398	0.4942	
<b>Option</b>	2.886224	30.97938	0.093166	0.9260	<b>0.327160</b>	0.297280	1.100512	0.2730	
<b>R-squared</b>	-20.042955	<b>S.E. of regres</b>	2.995104		<b>R-squared</b>	-0.529784	<b>S.E. of regres</b>	0.715680	
<b>Adj R-squared</b>	-33.673051	<b>F-stat</b>	9.83E+14		<b>Adj R-squared</b>	-1.193046	<b>F-stat</b>	2734.348	
<b>Instrument rank</b>	58.000000	<b>Prob (F-stat)</b>	0.000000		<b>Instrument rank</b>	64.000000	<b>Prob (F-stat)</b>	0.000000	

#### 4.4 Concluding Analysis

After examining the OLS-regressions, during the different market conditions, we can conclude that there are some differences. For the total sample we find a significant relation between Swedish CEO ownership and firm performance, which supports Morck *et al.* (1988) and others. The relation is positive with increasing firm performance at greater CEO ownership levels and then a negative relation beyond a specific limit, according to our descriptive statistics. This result confirms the agency theory (Jensen and Meckling, 1976) as well as the entrenchment theory (Demsetz, 1983), and it also confirms that the relation is shaped as an invers-U (McConnel and Servaes, 1990). Since it is the absolute ownership and not the relative ownership variable that is significant, it means that it is the amount of money owned by the CEO and not the ownership fraction of the company that is important. This conclusion is supported by Hall and Liebman (1998).

During our bear market period our model can explain fluctuations in the variables better than during our bull market period. This could be explained by the market conditions, where the bull market induce increasing stock prices in general which

might make the CEO stock holding less important, thus suggesting that her alignment of interest is less important during a bull market period. Moreover, the lack of significance during bull market period further breath the opportunity that the relationship is endogeneity determined since the relationship seems to depend on an exogenous force, whether it is bull or bear market.

The variable size has a positive correlation with increased Tobin's Q. The relationship seems to be independent of the current market conditions; hence our result on the Swedish market cannot support studies by Kim and Burnie (2002) and Guo (2004). Leverage seems to increase with the level of CEO ownership and its impact on firm performance is positive during bull market, but the relationship cannot be statistically supported for the bear market period. The last control variable, CEO option holding, whose usage has declined during the studied period, seems to have a negative impact on firm performance. However, the relationship cannot be statistically supported.

When studying the opposite relationship instead, using absolute ownership as dependent variable and Tobin's Q as independent, we receive a stronger significance between the variables. This may imply that CEOs increase their stock positions when firm performance is increasing. Our results confirm Kole (1996) and Cho (1998) suggesting that reversal causality exists in the relationship between firm performance and CEO ownership. This means that the level of CEO ownership does not affect firm performance but vice versa. Moreover, Kole (1994) concluded that managers tend to prefer equity compensation when they expect their firm to perform well and, consequently, the value of the firm to increase. Therefore a Two-stage least square model was run to examine a potential endogeneity determined relation. The result from the 2SLS model implies that that our proposition about an endogeneity determined relationship can be confirmed. In the three examined regression models it can be concluded that none of the two ownership variables are significant in any period. This suggests that firm performance does not depend on either absolute ownership or relative ownership, but on exogenous factors such as market forces.

## 5. Conclusion

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*In this final chapter the conclusion from our performed study will be presented. The conclusion is based on our empirical findings and with the theoretical framework as foundation. Furthermore, we will also give suggestions for future research.*

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The aim of this study was to examine if and how the level of CEO ownership affect firm performance and if there is a difference whether or not it is a bull or a bear market, the question was also if our results would hold when taking endogeneity into consideration.

The question concerning the relation insider ownership and firm performance has been diligently studied during the last decades. However, this research area is lacking consensus regarding the empirical and theoretical conclusions. Demsetz and Villalonga (2001) points out the cause of this by stating that different studies use different methods and measures, whereas the results will differ. With this as a foundation and the fact that the only study on the Swedish market (Olson and Öhlén, 2007) has shortcomings and, in our opinion, is lacking academic strength and verification we legitimate our study on the Swedish market. Also the fact that no other study has taken the market conditions into consideration makes this study important.

The result from our analysis indicates that there is a positive relation between Swedish CEO ownership and firm performance. The positive relation concerns absolute ownership and not relative ownership and this represents the importance of high ownership in amount of money (SEK) and not ownership as a percentage of the company. The positive relation between ownership and firm performance

that is concluded on the Swedish market supports Morck *et al.* (1988) as well as subsequent studies (McConnel and Servaes, 1990; Hermalin and Weisbach, 1991; Holderness, Kroszner and Sheehan, 1999), thus confirming both the agency theory and the entrenchment theory.

Since a positive relation between CEO ownership and firm performance is detected during our bear market period but not during the bull market period, we suggest that the relation is influenced by the market conditions. Moreover, when the reversed relationship was examined we found a stronger significance, implying firm performance affect absolute CEO ownership in a higher degree than vice versa. Hence, the model is characterized by reversed causality.

These results could have interesting implications for the Swedish business community. First of all, from an investor's point of view, we believe that our results indicate that when a company's CEO buys or have a large absolute ownership in the company, investors could buy the stock and expect the company to have increasing firm performance. Hence, if investors are rational they will buy stocks in a company where the CEO is increasing his ownership stake in absolute terms. Moreover, this implication should drive the CEOs to buy stocks and increase their absolute ownership in the company in order to attract more investors, thus it will be a self-fulfilling prophecy when the increased demand will drive up the stock prices and in turn increase Tobin's Q.

The evidence of reversed causality implicated that the relationship is determined by exogenous factors. Demsetz and Villalonga (2001) stated with Demsetz (1983) theory as foundation, that the relation between CEO ownership and firm performance could be influenced by the market forces. Following Demsetz and Villalonga (2001) and Welch (2003) methods calculating for a possibility of an endogeneity determined ownership structure, our results support what they say: the relation is determined endogenously by exogenous factors and thus the relation between CEO ownership and firm performance on the Swedish market is determined by factors outside the regression.

Even though the relationship cannot be statistically supported when taking endogeneity into consideration, the initially found relationship cannot be neglected. Still, the relationship has implications for investors and CEOs as it is a self-fulfilling prophecy saying more about market efficiency and the degree of rationality among investors than it says about the actual impact of CEO ownership on firm performance.

### ***5.1 Future Research***

Even though the area of interest alignment and firm performance has been frequently studied during the last decades, there are still some gaps to fill. When conducting this analysis an early choice was made, Tobin's Q was chosen as the proxy for firm performance. Through the use of a second measure, the accounting profit rate, conclusions can be drawn regarding the robustness of the results. Using this measure in combination with Tobin's Q, is a suggestion for future research on the Swedish market further elaborating on bullish and bearish market conditions.

Furthermore, it would be very interesting to get more of a behavioral finance aspect on the CEO ownership and its impact on firm performance. In the introductory section Carl-Henric Svanberg and Ericsson was mentioned as an example of the Pilot School, however we did no further studies on how his action, investing a large amount of money in the company when appointed as CEO, affected investors. Further on, since our result indicates that the relationship is endogeneity determined and thus suggesting that the ownership structure is endogeneity determined by exogenous factors we believe it is an even stronger motive for researcher to further examine the relationship insider ownership and firm performance and to take into account a behavioral finance aspect.

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# Appendix

## Appendix 1

Included firms from Large and Mid Cap – Nasdaq OMX Stockholm		
ACTIVE BIOTECH	HALDEX	RATOS
ANOTO GROUP	HEBA	SAAB
ASSA ABLOY	HENNES & MAURITZ	SANDVIK
ATLAS COPCO	HEXAGON	SAS
AXFOOD	HOLMEN	SCA
AXIS	HUFVUDSTADEN	SCANIA
BEIJER ALMA	IBS	SECTRA
BILIA	INDL.& FINL.SYS.	SECURITAS
B&B TOOLS	INDUSTRIVARDEN	SKANDITEK
BOLIDEN	INVESTOR	SKANSKA
BROSTROM	JM	SKF
BURE EQUITY	<b>KINNEVIK</b>	SKISTAR
CARDO	KUNGSLEDEN	SSAB
CASTELLUM	<b>LUNDBERGFÖRETAGEN</b>	SWECO
CONCORDIA MARITIME	MUNTERS	SWEDISH MATCH
ELECTROLUX	NCC	TELE2
ELEKTA	<b>NEW WAVE GROUP</b>	TELECA
ERICSSON	NIBE INDUSTRIER	TELIASONERA
FABEGE	NOLATO	TRELLEBORG
FAGERHULT	OMX	VOLVO
<b>FAST PARTNER</b>	PARTNERTECH	VOSTOK GAS
GETINGE	PEAB	WALLENSTAM
GUNNEBO	<b>Q-MED</b>	ÖRESUND

*Companies in **bold** were excluded after descriptive statistics analysis*

## Appendix 2

### Dependent variable absolute ownership, Bear and Bull Market period

Bear market					Bull market				
	Coefficient	Std. Error	t-Statistic	Prob.	Coefficient	Std. Error	t-Statistic	Prob.	
<b>C</b>	3.497360	2.834369	1.233911	0.2188	<b>-3.988527</b>	2.448143	-1.629205	0.1045	
<b>Tob_Q</b>	1.979921	0.398317	4.970723	0.0000	<b>0.468084</b>	0.383992	1.218996	0.2240	
<b>Lev</b>	0.696795	0.442325	1.575300	0.1169	<b>-1.125859</b>	0.348162	-3.233718	0.0014	
<b>Size</b>	0.250482	0.181048	1.383512	0.1681	<b>0.791773</b>	0.152102	5.205548	0.0000	
<b>OMXS</b>	-0.049165	0.414623	-0.118577	0.9057	<b>0.245921</b>	1.269477	0.193719	0.8465	
<b>Option</b>	-0.573215	0.301805	-1.899292	0.0590	<b>-0.125461</b>	0.227342	-0.551859	0.5815	
	<b>R-squared</b>	0.209919	<b>S.E. of regres</b>	0.982093	<b>R-squared</b>	0.189433	<b>S.E. of regres</b>	1.160220	
	<b>Adj R-squared</b>	0.189127	<b>F-stat</b>	10.09631	<b>Adj R-squared</b>	0.173785	<b>F-stat</b>	12.10590	
			<b>Prob (F-stat)</b>	0.000000			<b>Prob (F-stat)</b>	0.000000	