How Does Board Structure Influence CEO Compensation?
– Evidence from Sweden

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Abstract

Title: How Does Board Structure Influence CEO Compensation?
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Five key words: Board Structure, CEO Compensation, Corporate Governance,
Cross-sectional Regression, Swedish Code of Corporate Governance

Purpose: The purpose of the study is to investigate how board structure
influences CEO compensation for companies listed on the

Methodology: Cross-sectional regression analysis, OLS, significance test, control
variables

Theoretical perspectives: The theoretical frame of reference is based upon the corporate
governance theory, the principal-agent theory and previous
empirical research in the area.

Empirical foundation: The study is based on information regarding CEO compensation,
and possible factors affecting the compensation, from 267
companies listed on the Stockholm Stock Exchange A- and O-list
in the year 2004.

Conclusions: We find that the board structure has no significant effect on the
CEO compensation. Instead, the firm size, as measured by the
firm’s total assets, number of employees and whether any CEO
stock options exist are strongly significant determinants for CEO
compensation.
Sammanfattning

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Fem nyckelord: Styrelsesammansättning, Vd lön, Corporate Governance,
Tvärnittsregression, Svensk Kod för Bolagsstyrning


Metod: Tvärnittsregression, OLS, signifikanstest, kontroll variabler

Teoretiskt perspektiv: Grunden till den teoretiska referensramen utgöras av corporate governance teorin, principal-agent teorin samt tidigare forskning inom området


Slutsatser: Styrelsesammansättningen har inte någon signifikant effekt på Vd lönen. Däremot finner vi att företagets storlek, mätt i totala tillgångar, antal anställda samt huruvida VD:n har tilldelats några optioner är starkt signifikanta faktorer för VD lönen.
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1. Introduction

This chapter begins with the background of the subject area, followed by problem discussion, which leads to a definition of the purpose of the study. The chapter ends with the delimitations and the disposition of the study.

1.1 Background

Corporate governance, which is the basis for accountability in companies, is today a well discussed and well-known topic, and a proper governance framework is of fundamental importance in strengthening the performance of economies and discouraging fraud and mismanagement (European Corporate Governance Institute (ECGI), 2005). The purpose of corporate governance is to create confidence and trust in both companies and markets. However, corporate governance is an integrated and complicated system, with intertwined potential incentives for executives, auditors, boards, banks and so on to misbehave. Large corporate scandals, such as the Enron case in the U.S. and the Skandia case in Sweden where many shareholders lost their personal wealth, also lead to mistrust against the corporate governance system. (Kim & Nofsinger, 2004, p xi)

The general public has started to pay more attention to corporate governance and its oversight role, mainly as a result of the recent corporate scandals and the increasing merger & acquisition activity (Kim & Nofsinger, 2004, p 31-32). However, it is not only the general public that is concerned about corporate governance, also governments have started to pay more attention, and as a result many countries have developed codes for corporate governance. One of the main purposes with these codes is to enhance corporate governance and thus, hopefully, re-create the public confidence and trust in the business industry (Swedish Code of Corporate Governance, 2004)\(^1\).

One part of the corporate governance system is the board of directors, whose main objective is to represent the interests of the shareholders, with the functions of hire, evaluate and fire top management; vote on major operating proposals; vote on major financial decisions; and offer expert advice to management (Ogden, Jen & O’Connor, 2003, p 238). However, sometimes the oversight role of the board of directors face potentially problems, such as lack of board interdependence from the CEO, directors that are too busy too fulfil their roles and lack of vested interest in the firm (Kim & Nofsinger, 2004, p 31-32).

1.2 Problem Discussion

When managers have different incentives than shareholders, such as a higher and more secure income, a principal-agent conflict\(^2\) arise (Ogden et al, 2003, p 139). According to theory it is the firm’s board of directors who should mitigate such conflicts of interest by monitoring management decision (ibid). However, in recent years CEO compensation, in some firms, has sky-rocketed and thus become the subject of both media commentators and academic researchers (e.g. Core, Holthausen & Larcker, 1999; Cahan, Chua & Nyamori, 2005; Dagens Industri, 2005; among others). A high CEO compensation can bee seen as a result of weak

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\(^1\) See 3.3 Swedish Code of Corporate Governance.

\(^2\) See 3.4 Principal-agent theory.
oversight by the board of directors, and has thus led to renewed criticism of the corporate model for public sector entities (Cahan et al, 2005).

The effectiveness of the board of directors has been the subject of numerous studies. Some of the earlier studies, such as Crystal (1991) and Jensen (1993), argued that the board of directors are ineffective, partly due too the size of the board and the fact that outside directors are hired by the CEO, respectively. Later studies, such as Yermack, 1996; Oxelheim & Randøy, 2003; Ho & Williams, 2003; among others, have focused on board effectiveness from various perspectives, such as the impact of foreign board membership on firm value and the relation between board features and performance.

It could easily be argued that the board of directors should play a critical role in monitoring the CEO performance, since one of the board’s fundamental role is: “hiring, compensating, and if necessary, firing senior management” (Ogden et al, 2003, p 238). The relation between board effectiveness and CEO compensation have been examined in several studies (e.g. Cyert, Kang, Kumar & Shah, 1997; Core et al, 1999; Talmor & Wallace, 2000; Cahan et al, 2005;), where for example Core et al (1999) believe that an ineffective board will pay higher CEO compensation than an effective board.

The literature regarding the board of director’s influence on a firm is rather extensive, however there are quite few studies done in Sweden. Becker, Bjerke, Waldenström & Wallmark (2005) investigated whether diversification within the board composition in Swedish firms is a success factor, Durante, Faasth & Omeragic (2005) studied the effect women directors have on firm value in Swedish firms and Levin (2005) examined the composition and function of boards of social enterprises in Sweden. Oxelheim & Randøy (2003) and Ho & Williams (2003) looked at the board composition and its effect on firm value for Swedish firms.

Most of the relevant studies are performed in the U.S., where the Anglo-American corporate governance system is dominating. As far as we know, no one has studied the relationship between the board structure and CEO compensation within companies listed on the Stockholm Stock Exchange. Since companies listed in Sweden mainly are characterized by the Germanic system with a two-tier board, as opposite to the one-tier board employed by the Anglo-American corporations, it could be argued that there would be differences in the oversight role by the board of directors, and thus also in the CEO compensation, between companies with different corporate governance system.

Based on the problem discussion above, we consider the board structure’s influence on CEO compensation in companies listed on the Stockholm Stock Exchange, to be unclear. This, together with the lack of previous research within the subject area, leads us to the following issue:

- How does board structure influence CEO compensation?

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3 See 3.5 Previous research.
4 See 3.2 Different corporate governance systems.
5 In the one-tier board, executive and supervisory responsibilities of the board are condensed in one legal entity (Weimer & Pape, 1999).
1.3 Purpose

The purpose of the study is to investigate how the board structure, for companies listed on the Stockholm Stock Exchange in 2004, influences CEO compensation.

1.4 Delimitations

The study includes companies listed on the A- and O-list on the Stockholm Stock Exchange, as of December the 31st 2004. The study encompasses the relationship between board structure and CEO compensation for the year 2004. Included in the CEO compensation is base salary, annual bonus and other remunerations, but not the value of any stock options aimed at the CEO6.

1.5 Outline

1. Introduction
This chapter begins with the background of the subject area, followed by problem discussion, which leads to a definition of the purpose of the study. The chapter ends with the delimitations and the disposition of the study.

2. Methodology and Data Description
An outline of the methodology and a description of the data, as well as the selection process, are presented in order to facilitate the following analysis of the results from the study.

3. Theoretical Framework
In this chapter we present the theoretical frame of reference, which underlie our analysis. We begin with a discussion about the concept of corporate governance, which is followed by relevant theory and previous research within the subject area.

4. Development of Hypotheses and Descriptive Statistics
The variables of the cross-sectional regression are presented, hypotheses for each independent variable are developed and a summary of the statistics for CEO compensation and all independent variables is presented.

5. Results and Analysis
In this chapter the results from our study are presented and analysed, based on the theoretical framework.

6. Conclusions
In this chapter the conclusions from our study and proposals about additional research are presented.

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6 See 4.1 Dependent variable
2. Methodology and Data Description

An outline of the methodology and a description of the data, as well as the selection process, are presented in order to facilitate the following analysis of the results from the study.

2.1 Background

In order to achieve the purpose of our study, i.e. how board composition influence CEO compensation, we use a multiple cross-sectional regression analysis. With a regression analysis it is possible to describe and evaluate the “relationship between a given variable and one or more other variables” (Brooks, 2003, p 42). Since our study includes several independent variables, a multiple regression, which relates a given dependent variable to several independent variables (Ramanathan, 1998, p 157), is used. Further on, our data represent observations collected “at a given point in time” and is thus cross-sectional data (ibid, p 13).

Our choice of a multiple cross-sectional regression analysis is supported by the fact that it is a commonly used approach in financial research. The fact that previous researches, focusing on how board composition affects CEO compensation, have used a multiple cross-sectional regression analysis (Cyert et al, 1997; Core et al, 1999; Talmor & Wallace, 2000; Cahan et al, 2005) further support our choice of regression model.

2.2 Implementation of the Model

To enhance the understanding of the methodology, we will below give an account of the procedure used in the study.

2.2.1 Formulating the Model

The general specification of the dependent and independent variables in a multiple regression model may come from economic theory, past experience, other studies or intuition (Ramanathan, 1998, p 157). The dependent variable is the variable whose behaviour the researcher is interested in explaining, while the independent variables are those that influence the dependent variable (ibid, p 6).

The dependent variable in our multiple regression model is CEO compensation, since the purpose is to study how CEO compensation is influenced by board composition. Based on theory and previous research in the area, we include a number of independent board composition variables as well as independent control variables. Altogether, we choose to

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7 See 4.1 Dependent variable and 4.2 Independent variables.
8 See 3. Theoretical framework.
include five board composition variables and five control variables\textsuperscript{9}, which leads us to the following formula, based on Ramanathan (1998, p 157)\textsuperscript{10}:

\textit{Formula (2.1)}

\[ Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3 + \beta_4 X_4 + \beta_5 X_5 + \beta_6 X_6 + \beta_7 X_7 + \beta_8 X_8 + \beta_9 X_9 + \beta_{10} X_{10} + \epsilon \]

\textbf{2.2.2 Selection Criteria}

Our original sample consists of all companies listed on the Stockholm Stock Exchange’s A- and O-list as of December the 31st 2004, a total of 274 companies. In order to collect the data for the dependent and independent variables we downloaded each company’s annual report for the year 2004\textsuperscript{11}.

Three of the variables in our study are based on the companies cost and revenues. Most companies included in the study report this information in SEK, but for the companies who do not, an exchange rate is used to convert the currency into SEK\textsuperscript{12}. For the CEO compensation and operating profit we use the average currency rate for 2004, while total assets is converted using the currency rate as of December the 31:th 2004\textsuperscript{13}.

Out of our original sample of 274 companies, seven companies were eliminated, which left us with a total of 267\textsuperscript{14} companies to include in the study. As can be seen in Table 2.1, four companies were eliminated because we were not able to find their annual report for 2004. Another three companies were eliminated due to lack of information in their annual report.

\textbf{Table 2.1 Eliminated Companies*}

<table>
<thead>
<tr>
<th>Company</th>
<th>Reason for elimination</th>
</tr>
</thead>
<tbody>
<tr>
<td>B&amp;N Nordsjöfrakt</td>
<td>No annual report available (Delisted 2005)</td>
</tr>
<tr>
<td>Song Networks Holding</td>
<td>No annual report available (Delisted 2005)</td>
</tr>
<tr>
<td>TurnIT</td>
<td>No annual report available (Delisted 2005)</td>
</tr>
<tr>
<td>Tivox</td>
<td>No annual report available (Bankruptcy)</td>
</tr>
<tr>
<td>Lundin Mining</td>
<td>Information about number of employees missing</td>
</tr>
<tr>
<td>Maxim</td>
<td>Information about number of employees missing</td>
</tr>
<tr>
<td>Oxigene</td>
<td>Information about board of directors missing</td>
</tr>
</tbody>
</table>

\textsuperscript{*} We tried to collect the annual reports and missing data by e-mail, with no response

\textsuperscript{9} A common approach, when conducting a multiple regression analysis, is to classify the independent variables into different categories, see 4.2 Independent variables.

\textsuperscript{10} $\beta_0$ is the intercept and $\epsilon$ is the error term, which is the difference between the actual value of $Y$ and the value fitted by the model (Brooks, 2003, p 47).

\textsuperscript{11} For U.S. companies, listed on the Stockholm Stock Exchange, also the proxy statement was collected, since information about CEO compensation is not presented in the annual report.

\textsuperscript{12} See Appendix A for the exchange rates used in the study.

\textsuperscript{13} One company had broken financial year, thus we used a different conversion rate for that company.

\textsuperscript{14} See Appendix B for a complete list of all 267 companies included in the study.
To be able to generalize the results from the study, it is important that the final sample is representative (Bryman & Bell, 2003, p 81). The fact that the original sample consists of all companies listed on the A- and O-list in 2004, and only seven companies were eliminated, makes us believe that our final sample is unbiased due to the low reduction of companies.

The reliability of the study may have been negatively affected by the fact that companies present the information about the CEO compensation differently, e.g. sometimes benefits such as free car is included in the CEO compensation, and sometimes it is not. Furthermore, it is not always clearly stated in the annual report whether the CEO has been compensated with stock options. In the cases where no information about such options has been found, we assume that no CEO stock options exist. However, the fact that the annual reports have been submitted by authorized public accountants should strengthen the reliability of our data.

In order to get as recent data as possible, we choose 2004 to be the year for our study. The fact that only one year is studied, due to the time perspective, may have limited the ability to generalize our results.

2.2.3 Estimating the Model and Interpreting the Result

After gathering the necessary data for the dependent and independent variables, the next step is to estimate the model. The most frequently used estimation procedure, in order to fit a line to the data, is the method of least squares, more commonly known as OLS. By using OLS it is possible to determine the appropriate value of the intercept, \( \beta_0 \), and the value of each independent variables slope coefficient, \( \beta_1, \beta_2, \ldots, \beta_{10} \). (Ramanathan, 1998, p 88; Brooks, 2003, p 46) In order to estimate the intercept and the slope coefficient from the multiple cross-sectional regression analysis the econometric software program EViews is used. The value of the intercept and the slope coefficient is used to interpret and analyse each independent variables influence on CEO compensation.

To make sure that the results does not occur just by chance, a significance test is conducted, in which a null hypothesis (\( H_0 \)) and an alternative hypothesis (\( H_A \)) are formulated for each independent variables. We tested the null hypothesis with a 99-percent significance level, in order to see how strong the evidence is against the null hypothesis, with the purpose of finding evidence that support the alternative hypothesis. The smaller the P-value, i.e. the probability that the null hypothesis is true, the stronger is the evidence against the null hypothesis. (Moore, 2000, p 320) Since hypotheses are developed, based on theory and previous research in the area, the study is characterized by a hypothetic-deductive study (Bryman & Bell, 2003, p 9).

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15 OLS stands for Ordinary Least Squares and the OLS procedure finds the straight line which is closest to the data (Ramanathan, 1998, p 88).
16 See Table 5.1 Regression of CEO compensation.
17 With the use of statistical significance tests, it is possible to increase the credibility of the results (Denscombe, 2000, p 240).
18 The results from the significance test, indicated by the t-value and the probability, are presented in Table 5.1 Regression of CEO compensation.
19 In a hypothetic-deductive study hypotheses are developed, a deductive inference is made and a test whether the premises is consistent with reality is made (Thurén, 2002, p 25).
2.2.4 Assumptions Underlying OLS

Before any interpretation of the results from the regression can be made, it is important to determine how “good” the model is. Below, we will thus discuss nine assumptions underlying the multiple linear regression model, as proposed by Ramanathan (1998, p 84).

Assumption 1 – Linearity

A fundamental assumption underlying the linear regression model is that the appropriate “functional form” is linear, i.e. that the relationship between y and x can be represented by a straight line (Ramanathan, 1998, p 84). One way of testing the linearity is by using Ramsey’s RESET test20, which is a general test for misspecification of the functional form (Brooks, 2003, p 194). In order to be sure that the data are linear, Whites heteroscedasticity test21 including cross terms, can be run as a complementary test, since a strong significance could indicate that the model is non-linear. A model that is non-linear in the parameters exclude the use of OLS, and require the use of a non-linear estimation technique (Brooks, 2003, p 195).

Assumption 2 – Variation in x

The second assumption is that at least one of the values of x is different from the others, i.e. that the sample variance is not serial. If this assumption is not fulfilled the model cannot be estimated, because if x does not vary we cannot explain why y varies. (Ramanathan, 1998, p 92)

Assumption 3 – Errors Average to Zero

The line in the linear regression model represents the average line, why it is reasonable to assume that the random errors cancel out on average, and therefore the assumption that the error term is a random variable with the expected value of zero is realistic. (Ramanathan, 1998, p 94) According to Brooks (2003, p 146) the assumption that the average value of the errors is zero is never violated as long as there is a constant term included in the regression equation.

Assumption 4 – Xs are Given and Non-random

The fourth assumption is that the x variate and the error term are independent of each other. If x and the error term are correlated, a change in x will lead to a change in the error term and y will not be an average line. However, if x is non-random, the conditional expectation of y for a given x will be the average line. (Ramanathan, 1998, p 94)

If assumption three and four holds the least square estimators are considered to be unbiased, i.e. that the estimated values of $\beta_0$ and $\beta_1$, $\beta_2...\beta_{10}$ on average equals their true values (Ramanathan, 1998, p 95). Although an unbiased model is desirable, it does not necessarily make an estimator “good”. Thus, a second criterion, consistency, is needed in order to decide whether an estimator is “good”. The consistency property means that the estimate converges to its true value as the sample size increases to infinity. If assumption two also holds, in addition to assumption three and four, the estimator is considered to be consistent. (ibid, p 97)

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20 Ramsey RESET test is only applicable to an equation estimated by least squares (EViews, 2005).
21 See assumption five for discussion about heteroscedasticity.
Assumption 5 – Homoscedasticity

The fifth assumption, that the variance of the errors is constants, is called the assumption of homoscedasticity, i.e. that all of the error terms are identically distributed with the same variance (Ramanathan, 1998, p 97). If the errors are not constant, they are said to be heteroscedastic, which means that the variance is increasing with x (ibid, p 98). If OLS is still used in the presence of heteroscedasticity, the standard errors could be wrong and any inferences made could be misleading. To test whether the variance of the errors is constant or not, White’s test for heteroscedasticity\(^2\) can be used. If there is a problem with heteroscedasticity, the regression can be run once again, but now including White’s heteroscedasticity-consistent standard error estimates\(^3\), which solves the heteroscedasticity problem. (Brooks, 2003, p 152)

Assumption 6 – Autocorrelation

If the errors are correlated with one another, there is a problem with the sixth assumption, which is the assumption of autocorrelation. The consequences of ignoring autocorrelation is similar to those of ignoring heteroscedasticity, and could lead to wrong inferences about whether a variable is an important determinant of variations in \(y\). However, the possibility of autocorrelation is very high in the context of a time series regression, but less likely in a cross-sectional regression. (Brooks, 2003, p 155,177)

If assumptions two to six holds, the ordinary least squares estimators are considered to be most efficient among the unbiased linear estimators. Thus, the OLS procedure gives the best linear unbiased estimates (BLUE).

Assumption 7 – Number of Regression Coefficients

The number of regression coefficients must be less than the number of observations, otherwise the estimated variance can be undefined or negative (Ramanathan, 1998, p 100).

Assumption 8 – Normality of Errors

The normality assumption is fundamental to hypothesis testing. To test for this assumption, Jarque-Bera’s test for normality, which is one of the most commonly applied tests, could be used. (Brooks, 2003, p 178) A normal distribution should be symmetric about its mean, i.e. not skewed, and have a coefficient of kurtosis of three (ibid). Despite the fact that most econometric techniques assume that the data is normally distributed, most of the financial data is not (ibid, p 3). However, sample sizes that are sufficiently large will follow the appropriate distributions anyway, even in the absence of error normality (ibid, p 182).

If assumption two to eight holds, the error terms are referred to as well-behaved or white noise errors (Ramanathan, 1998, p 104).

\(^2\) According to Westerlund (2005, p 181) White’s test is a more general test and can be used to find all sorts of heteroscedasticity, compared to Goldfeld-Quant’s test which can only be used to find proportional heteroscedasticity.

\(^3\) Most standard econometrics packages have an option that allows the user to employ standard error estimates, which have been modified to account for the heteroscedasticity (Brooks, 2003, p 152).
Assumption 9 – Multicollinearity

Sometimes it is difficult to distinguish between each individual variable’s contributions to the overall fit of the regression, with the result that the regression has a very high $R^2$ even if the individual variables are not significant. This is called multicollinearity and occurs when the independent variables are very highly correlated with each other. Another problem when multicollinearity is present is that adding or removing independent variables leads to large changes in the coefficient values or significances of the other variables. One method to detect the presence of multicollinearity in a regression is simply to look at the matrix of correlations between the variables, where a high correlation between two variables indicate multicollinearity. (Brooks, 2003, p 190-192)

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24 $R^2$ measures how well the independent variables explain variations in the dependent variable (Brooks, 2003, p 133).

25 According to Brooks (2003, p 191) a correlation of 0.8, or higher, indicates that multicollinearity is present in the data.
3. Theoretical Framework

In this chapter we present the theoretical frame of reference, which underlie our analysis. We begin with a discussion about the concept of corporate governance, which is followed by relevant theory and previous research within the subject area.

3.1 Corporate Governance and Legislations

Corporate governance is about govern companies in such a way that they fulfil owners demand for return on invested capital, and by that contributes to the efficiency and growth in society (Swedish Code of Corporate Governance, 2004). A proper governance framework is of fundamental importance in strengthening the performance of economies and to discourage mismanagement and fraud (ECGI, 2005).

“Corporate governance is the basis of accountability in companies, institutions and enterprises, balancing corporate economic and social goals on the one hand with community and individual aspirations on the other”

(ECGI, 2005)

Today’s concept of corporate governance emerged in the United States in the mid-1980s as a reaction by some institutional owners to self-serving company managers. It took until the early 1990s, when a number of high profile scandals become public, for the concept to gain widespread attention in Europe. Since then the concept has developed rapidly and today the term corporate governance is familiar to most people. (Swedish Code of Corporate Governance, 2004) According to an article in CA Magazine (2005) the main reasons for the increasing importance regarding corporate governance is that governments and regulatory bodies have introduced new rules, and that corporate governance is a main criterion when financial analyst evaluates companies. It is thus common that media rank companies according to governance quality (ibid).

The rules, or so called codes for corporate governance, embody what good governance is about and today about 50 countries have their own codes, with varying degrees of freedom (Coombes & Wong, 2004; Swedish Code of Corporate Governance, 2004). Some countries, such as the U.K., have had a quite fast acceptance and improvement of the code for corporate governance. However, even in countries with rather slow progress, the existence of such codes has at least put corporate governance in the public domain and increased managers and director’s awareness regarding what is expected of them. (Coombes & Wong, 2004) International bodies such as the European Union has drawn up guidelines for corporate governance and in 2002 the European Corporate Governance Institute (ECGI) was founded to improve corporate governance by encourage independent scientific research and related activities (Swedish Code of Corporate Governance, 2004; ECGI, 2005).
3.2 Different Corporate Governance Systems

Scott (1985), De Jong (1989) and Weimer & Pape (1999), among others, have classified the relatively rich and industrialized countries, for which a corporate governance system can be identified, into four different types of corporate governance systems; the Anglo-Saxon system (e.g. U.S., U.K., Canada, Australia), the Germanic system (e.g. Germany, the Netherlands, Austria, Denmark, Norway, Sweden, Switzerland), the Latin system (e.g. Italy, France, Spain, Belgium) and the Japanese system (which is considered an isolate). According to Weimer & Pape (1999) the corporate governance system differs between the four groups by the means of board system, ownership structure, concept of the firm, importance of stock market, among other factors. As mentioned above, Sweden belongs to the Germanic system and in contrast to the Anglo-Saxon model, that has come to dominate international developments within corporate governance, it is common for one or a few major owners to dominate ownership in Swedish companies. In Sweden, the same person cannot be the managing director and the chair of the board, why Swedish companies normally are composed exclusively of non-executive directors. (Swedish Code of Corporate Governance, 2004) Corporations in the Germanic system are also considered as autonomous economic entities, striving for the continuity of the firm as a whole, rather than as a device to create shareholder value, as is the case in Anglo-Saxon countries (Moerland, 1995a). Furthermore, stock markets play a less important role in the economy of the Germanic countries and an active external market for corporate control is almost non-existent (Weimer et al, 1999).

Due to the differences between the corporate governance systems, no unified corporate governance code, directed to all countries, exist. Instead, many countries have developed different individual corporate governance recommendations, with the purpose of improving each country's unique corporate governance system, such as the Securities Act (USA, 1933), the Securities Exchange Act (USA, 1934), the Council of Competitiveness' Report (USA, 1992), the Cadbury Report (U.K., 1993), the Japanese Commercial Code (Japan, 1993), the Viénot Report (France, 1996), the Peters Report (the Netherlands, 1998), the Sarbanes-Oxley Act (USA, 2002) (Weimer et al, 1999; Toda & McCarty, 2005; Ogden et al, 2003, p 125). In Sweden, the Swedish Code of Corporate Governance was developed in 2004.

3.3 Swedish Code of Corporate Governance

Public confidence in the business community is of fundamental importance to both the economy and the willingness to invest, because it affects company’s ability to attract capital. In the long run it also affects people’s employment opportunities, savings and pensions. A majority of the Swedish inhabitants are shareholders, direct or indirect, and are hence influenced by the way stock market companies are managed. In recent years, Sweden, as many other countries, has been affected by a number of corporate scandals (e.g. Skandia), which has attracted great attention and caused much criticism. (Swedish Code of Corporate Governance, 2004)

The first collected code for corporate governance, aimed at stock market companies, with a chance of gaining wide support in the Swedish industry was presented in year 2004. The code is called the Swedish Code of Corporate Governance and is based on the Swedish Companies Act (Aktiebolagslagen, 1975:1385), listing requirements on the Stockholm Stock Exchange, recommendations from the Swedish Industry and Commerce Stock Exchange Committee, and the Swedish tradition of self regulation. The mandate of this code does not allow it to
prescribe which companies that should apply to the code and as a result the code is drawn up so that it is broadly applicable to different types of companies. According to the Code Group, the group responsible for the development of the code, corporate governance is most needed for companies with a diverse group of shareholders, who cannot be expected to possess the same expertise and resources that major shareholders have. (Swedish Code of Corporate Governance, 2004)

The overall aim of the Swedish Code of Corporate Governance is to improve the management of Swedish corporations, and hopefully it will lead to increased effectiveness, competitiveness and facilitate confidence in the Swedish capital market. The code is based on the principle “comply or complain”, introduced by the Cadbury Committee in the U.K. in 1992, which is commonly used in corporate governance codes. This means that it is possible for companies to diverge from individual rules, as long as a reason for the divergence is stated. The rules in the code are designed to provide guidance to companies, and for publicly listed companies it is up to the board of directors to decide when a justification of a divergence is needed. However, in the end it is the market who decides whether the declaration is needed and if it is acceptable. (Swedish Code of Corporate Governance, 2004)

The Swedish Association of Exchange Listed Companies and the Stockholm Stock Exchange have agreed to incorporate the Swedish Code of Corporate Governance into the Stockholm Stock Exchange's rules. The code will thus apply to all Swedish companies on the A-, as well as the O-list, with a market capitalization exceeding three billion Swedish kronor, measured annually in May 31. In the future, the code will cover all listed companies, but the smaller companies are being given time to adapt. (OMX, 2005)

### 3.3.1 Board Composition According to the Swedish Code of Corporate Governance

According to the Swedish Code of Corporate Governance (2004) the board of directors should manage the company in such a way that the owner’s interest is being met in the best possible way. The board is also responsible for deciding the managing director’s compensation and other terms of employment and for evaluating the work of the managing director on regular basis. Thus, the composition of the board should enable it to take advantage of the qualifications and experience that is needed to meet the independence criteria required to manage the company effectively and independent, and when the board is renewed the development of the companies operations as well as the need for continuity should be taken into considerations (ibid). The recommendations in the Swedish Code of Corporate Governance should serve as guidelines for companies, the nomination committee and the shareholders in the process of appointing the board of directors.

For example, the board should have an equal gender distribution as well as exhibiting diversity and breadth in the director’s qualifications, experience and background. The directors are also obligated to devote the time and care required to handle the interest of the company and the owners in the best possible way and they should therefore not have too many other duties at the same time. (Swedish Code of Corporate Governance, 2004)

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26 The nomination committee make recommendations for the chair and other members of the board, as well as recommendations for the division of board fees and on remuneration for committee work (Swedish Code of Corporate Governance, 2004).
Also, the board should not exceed the size that allows it to use simple and effective working methods, nor should the board members be appointed for more than one year at a time and maximum one member from the senior management team should be a board member. The majority of the directors elected by the shareholders meeting should be independent of the company and its management. (Swedish Code of Corporate Governance, 2004)

3.4 Principal-Agent Theory

According to theory it is the shareholders, being the owner of the firm, that have the control over the firm’s activities. In practice, large modern firms have a diffuse and fragmented group of shareholders, why it is almost impossible for the shareholders to collectively make the daily decisions needed to operate the business, and it is common that the control of the firm lies in the hand of the directors. (Arnold, 2002, p 16; Kim & Nofsinger, 2004, p 4) The change in ownership structure has hence lead to a separation of corporate ownership and control, with ownership concentrated in one group, the shareholders, whereas the control of the firm is concentrated to a separate group, the management team (Ogden et al, 2003, p 75).

According to Jensen & Meckling (1976) the relationship between the stockholders and the management represent a pure agency relationship, where the stockholders are the principals and the managers, that the principals hire to run the company, are the agents. The agency relationship can be described as a contract where one or more persons, the principals, engage another person, the agent, to perform some services on their behalf, which involves delegating decision making power to the agent (Jensen & Meckling, 1976).

If both parties, the principal and the agent, are utility maximizers there is a risk that the agent will not act in the best interest of the principal. The problem of securing that an agent behave in a way that maximize the principals welfare is quite general and exists in all organizations and at every level of management. (Jensen & Meckling, 1976) The principal-agent problem is not a new phenomenon, but was discussed already in 1932 by Berle and Means. Over the years the principal-agent theory has gained increased attention, and studies by Jensen & Meckling (1976) among others, has contributed with more profound knowledge about the problem.

When the principal and the agent have goals that differ from each other it leads to a conflict. It is possible for the principal to limit divergences from his interest by monitoring and controlling the activities of the agent. This can be done by using formal control systems, budget restrictions or by introducing special contract clauses. (Jensen & Meckling, 1976) It is generally impossible for the principal, at zero cost, to ensure that the agent will make optimal decisions, from the principal’s viewpoint, and in most agency relationships the principal and the agent will incur bonding and monitoring costs. (Jensen & Meckling, 1976) However, these costs are in some cases so high that it is not profitable to monitor and control the agent (Eisenhardt, 1989; Arnold, 2002, p 826).

Another problem occurs when the principal and the agent differs in their willingness to accept project because of different opinions regarding risk taking (Eisenhardt, 1989). It is thus common to try to solve the problem by establishing appropriate incentives for the agent

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27 Se Appendix C for Size and composition of the board according to the Swedish Code of Corporate Governance.
In the incentive solution the wealth of the executive is tied to the wealth of the shareholders in order to align the executive’s interest with shareholders desires. Aligning interest in this way is commonly done by giving executives stock, stock options, or both as an essential part of their compensation. (Barnea, Haugen & Senbet, 1980; Haugen & Senbet 1981; Kim & Nofsinger, 2004). According to Hörnberg & Rapp (2002, p 58) a disadvantage with stock options is that they do not always measure performance. However this problem can, at least partly, be solved by designing the stock option program in such a way that they only pay of when the firm’s stock beat an industry index (ibid).

3.5 Previous Research

Most of the research, that examines the board of directors effectiveness, have focused on firm value or firm performance as a measure of effectiveness (e.g. Fama & Jensen, 1983; Jensen, 1993; Yermack, 1996; Oxelheim & Randøy 2003; Ho & Williams, 2003; Carter, Simkins & Simpson, 2003; among others). Especially the existence of inside versus outside directors have been extensively studied, where evidence suggests that outside directors provide a more objective view than inside directors (e.g. Fama, 1980; Pfeffer, 1981; Fama & Jensen, 1983), outside directors benefit shareholders in decisions related to tender offers and management buyouts (Byrd & Hickman, 1992; Lee, Rosenstein, Rangan & Davidson, 1999, respectively) and that the incidence of fraud is less when there are more outside directors (Beasley, 1996). However, alternative evidence suggest that number of outside directors is not related to the firm’s long-term performance (Hermalin & Weisbach, 1991; Klein, 1998; Bhagat & Black, 1997;1999) or firm value (Agrawal & Knoeber, 1996).

Board size and effectiveness has also been the subject of numerous studies, where Steiner (1972) and Hackman (1990) found that large groups are more difficult to coordinate, Yermack (1996) and Huther (1996) provides evidence that firm value and board size are inversely related, and Jensen (1993) suggests that boards with more than eight members are too big. On the opposite, Baysinger & Butler (1985) suggests that large boards have more diverse skills, which are useful in the dealings of the various functions that a board must fulfil. Zahra & Pearce (1989) also suggest that a larger board enhances information-processing capabilities and the quality of advice given to corporate management.

A subject of less extensive research is multiple directorships and CEO duality. However, Fama & Jensen (1983) argue that multiple directorships can be valuable because they add to the director’s experience and knowledge base. Both Shivdasani (1993) and Talmor & Wallace (2000) provide empirical support for a relationship between number of directorships and CEO compensation, while Core et al (1999) found the opposite. Jensen (1993) suggests that board monitoring decreases if the CEO is also the chair of the board, which is supported by Beatty & Zajak (1994). On the other hand, Kesner, Victor & Lamont (1986) found no evidence of a CEO duality effect.

Whether board effectiveness is related to board diversity has also been the subject of numerous studies. Carter et al (2003) found a positive relationship between the fraction of both women and minorities on the board and firm value. Another study on board diversity, performed by Erhardt, Werbel & Shrader (2003), presented evidence of a positive relationship between demographic board diversity and a firm’s financial performance, while Biggins (1999) suggest that board diversity and shareholder return is positively related. Singh, Vinnicombe & Johnson (2001) found that many of the largest and most profitable firms on the
“U.K. FTSE 100” had female directors on their boards. However, Shrader Blackburn & Iles (1997) and Durante et al (2005) found no relationship between the number of female directors and firm performance, measured by return on equity and return on assets, and firm value, respectively. Consistent with those findings, Becker et al (2005), who studied board diversity and its connection to the company’s stock price, did not find that diversified boards contribute to firm performance.

Few studies have focused on the relationship between CEO compensation and ownership structure. However, Allen (1981) found that CEO compensation and the amount of equity held by the CEO are negatively related, while Holderness & Sheehan (1988) provide evidence that those managers who are majority shareholders receive higher compensation than other managers. In contrast to this, Lambert, Larcker & Weigelt (1993) found that CEO compensation is a decreasing function of the CEOs ownership.

There have also been few studies examining the effects of board characteristics on CEO compensation. Some of the earlier studies looked at the relationship between outside directors and CEO compensation, where Finkelstein & Hambrick (1989) found no relationship, as opposite to Lambert et al (1993) and Boyd (1994), who both found a positive relationship. Lambert et al (1993) also found that CEO compensation is higher when the CEO has appointed a greater proportion of the directors, while Hallock (1997) showed that CEO compensation is higher in firms with interlocked28 outside directors. Furthermore, Andjelkovic, Boyle & McNee (2002) found no evidence of a relationship between pay and performance, regardless of board structure.

Some of the more recent studies are Cyert et al, 1997; Core et al, 1999; Talmor & Wallace, 2000; Cahan et al, 2005, who all studied the relationship between board structure and CEO compensation.

Cahan et al (2005) studied 80 New Zealand public sector companies by testing how variables related to board composition, such as board size, CEO duality, director quality, number of directorships and number of inside and grey directors affected CEO compensation. In addition to this they also included a number of control variables related to managerial discretion and task complexity (e.g. firm size), firm performance (return on assets) and ownership structure. They found that board size, whether the CEO sits on the board and director quality have impact on CEO pay. They also found that the board variables had the second highest incremental explanatory power, after variables related to managerial discretion and task complexity. Thus, they conclude that board structure does affect CEO compensation in New Zealand public sector companies, although not as much as managerial discretion and task complexity.

Talmor & Wallace (2000) studied the relationship between board structure and CEO compensation in 160 U.S. financial institutions, where they tested for firm performance and managerial discretion. While they found that CEO compensation is related to the percentage of insiders, percentage of multiple directorships and the presence of outside blockholder representation on the board, they found no significant relationship between board size and CEO compensation. They also found that the board variables had the second highest amount of incremental explanatory power, while variables that proxy for managerial discretion and task complexity are found to best explain CEO compensation.

28 A director is interlocked if an inside officer of the firm serves on the board of that outside directors company (Core et al, 1999).
By studying the relationship in 495 publicly traded U.S. firms over a three year period, Core et al (1999) found that all of their board structure variables (board size, percentage of inside directors, percentage of outside directors appointed by the CEO, percentage of interlocked outside directors, grey outside directors, outside directors over age 69, multiple directorships, CEO duality), except percentage of interlocked outside directors, where significantly related to CEO compensation. Overall, their result suggests that CEOs in firms with weaker governance structure receives greater compensation.

Cyert et al (1997) studied the determinants of the level of CEO compensation, focusing on the role of the governance characteristics of the board of directors, in 1 671 large and small publicly traded U.S. firms. Their overall findings show that board composition plays a significant role in the determination of CEO compensation. In particular, they found that CEO compensation is decreasing with the board of director’s ownership, ownership of the largest shareholder, probability of bankruptcy, while it increases with CEOs ownership, the tenure of the CEO and the percentage of outside directors on the board. However, they found little evidence that a larger board size contributes to an overcompensation of the CEO, while the CEO compensation is higher if the CEO also holds the board chairmanship. Their results also hold after controlling for other important determinants of CEO compensation, such as firm size and market and accounting based performance measures.

3.5.1 Swedish Studies

As mentioned earlier, no studies examining the relationship between board structure and CEO compensation, has been done in Sweden. However, a few studies have investigated how different aspects of board structure affect firm value.

Oxelheim & Randøy (2003) studied the effect of foreign Anglo-American board membership on firm value, as measured by Tobin’s Q, with a sample of 650 firm-year observations for traded companies with headquarters in Sweden or Norway, of which 296 refer to Sweden. Their result indicates a significantly higher value for firms that have outsider Anglo-American board members, after a variety of firm-specific and corporate governance related factors have been controlled for. Their study also indicates that the positive effect of an appointment of an outside Anglo-American board member appears to be stronger in larger and older firms.

Ho & Williams (2003) investigated the link between corporate board features and corporate performance for a sample of 286 publicly traded firms from South Africa, Sweden and U.K., of which 94 refer to Sweden. Firm performance is in their study, in contrast to many other studies, defined as the efficiency of value added rather than in financial terms. Their empirical findings fail to show any unconditional link between board features and corporate performance across any of the three nations included in their study, and finds no evidence that specific board features are associated with corporate performance.

Durante et al (2005) and Becker et al (2005) have both studied the potential impact a diversified board has on firm value and corporate performance, respectively. Durante et al (2005) focused on the relationship between female directors and firm value measured by Tobins Q, for 97 publicly traded Swedish firms, and found no significant evidence of such a relationship. However, their result indicates a positive relationship between firm size and number of employees to the number of female directors. Becker et al (2005) focused on the relationship between a diversified board and corporate performance for 53 publicly traded
Swedish firms. In their study, the diversification of the board is defined by sex, age, nationality, education and independence of the directors. In contrast to earlier research, Becker et al (2005), in addition to their data analysis, carried out interviews with four directors, one member of a nomination committee and one analyst. According to their data analysis, diversification does not have a positive effect on firm performance, while their result based on the interviews predominantly promotes an increased diversification among board members.

Levin (2005) studied board structure and the functions of boards of 15 Swedish social enterprises, where a social enterprise is defined as a company which is founded with the purpose of creating jobs or a workplace, a meaning in life or enhance further integration. According to Levin (2005) there might be a connection between the founders of a social enterprise and the board composition, since a significant number of companies founded by users choose, what Levin (2005) calls, a classical co-operative board.
4. Development of Hypotheses and Descriptive Statistics

The variables of the cross-sectional regression are presented, hypotheses for each independent variable are developed and a summary of the statistics for CEO compensation and all independent variables is presented.

4.1 Dependent Variable

The dependent variable in our regression is the total CEO compensation, measured in SEK, which consists of base salary, annual bonus\(^\text{29}\) and other remunerations\(^\text{30}\), and it is labelled \(ceocomp\). The value of any stock options is not included in the CEO compensation, since it is a complex task to determine the right value of such a program\(^\text{31}\) (Core et al, 1999).

4.2 Independent Variables

In our regression analysis we include ten independent variables, out of which five are control variables. The independent variables are classified into four categories; board composition, managerial discretion and task complexity, firm performance and ownership. We base our classification on Cyert et al, 1997; Core et al, 1999; Talmor & Wallace, 2000 and Cahan et al, 2005, who all studied the board composition influence on CEO compensation\(^\text{32}\). A summary of the independent variables, their expected signs and units of measurement is found in Table 4.1.

4.2.1 Board Composition

We include five independent variables regarding the firm’s board composition; board size, CEO on board, busy directors, tenure of the directors and female directors\(^\text{33}\).

**Board Size**

Several studies show that firms with many directors are less effective, indicated by a lower market value (e.g. Huther, 1996; Yermack, 1996) and a more seldom response in the absence of a crisis (e.g. Jensen, 1993). According to Kim & Nofsinger (2004, p 38) some boards are too big for all directors to be actively involved, leading many directors to conveniently believe that others are doing the monitoring job. According to Vafeas (2000) a reduction in board size is an effective technique in attaining better monitoring. According to the Swedish Code of Corporate Governance (2004) a board should consist of a sufficient number of

\(^{29}\) Annual bonus is the bonus for performance in 2004, paid out in 2005.

\(^{30}\) Other remunerations include financial benefits such as; free car and house, compensation for moving expenditures and free lunch.

\(^{31}\) Since there are many different ways to calculate the value of stock options, the reliability would probably be negatively affected if we included these in our study.

\(^{32}\) In order to examine the relative explanatory power of the different classes of independent variables, Talmor & Wallace (2000) and Cahan et al (2005) both computed the adjusted R\(^2\) for the different categories individually.

\(^{33}\) Core et al (1999) and Cahan et al (2005) among others, also include variables to capture the percentage of independent and dependent directors. Since the time effort associated with the gathering of this information is beyond the scope of this study, we chose not to include any such variables. See 3.3.1 Board composition according to the Swedish Code of Corporate Governance and 3.5 Previous research.
directors that enables an easy and efficient work. However, they do not give any suggestions about how many directors that is. Consistent with Cyert et al (1997), Core et al (1999) and Cahan et al (2005) we include board size, labelled \textit{bdsize}, as a board variable. Both previous studies and theory indicates that large boards in general are less efficient, and we believe a less efficient board could lead to higher CEO compensation. Thus, we expect a positive relationship between board size and CEO compensation and our first hypothesis is:

Hypothesis 1.

\textbf{H1}_0: There is no relationship between \textit{bdsize} and \textit{ceocomp}

\textbf{H1}_A: There is a positive relationship between \textit{bdsize} and \textit{ceocomp}

\textit{CEO on the Board (dummy)}

Yermack (1996) suggests that the agency problem\textsuperscript{34} is more serious when the CEO is also the chairman of the board, and according to Core et al (1999) activist shareholders have thus argued for a separation of the CEO position and the board chair. Also Jensen (1993) argues for a separation of these two positions. When collecting the information for our study, we found that it is very rare that the CEO is also the chairman of the board within companies listed on the Stockholm Stock Exchange. According to the Swedish Code of Corporate Governance (2004), only one person from the senior management group is allowed to be a member of the board\textsuperscript{35}. However, since board duality\textsuperscript{36}, according to Beatty & Zajak (1994), can be an important factor within a board, we follow Cahan et al's (2005) example and modify this variable. We thus include a dummy variable, which represents whether the CEO is a member of the board or not. We label the variable \textit{ceoobd} and code it 1 if the CEO is on the board, and 0 otherwise. Since the CEO, in general, is assumed to lobby for a higher personal compensation and due to the fact that board duality leads to more influence on board decisions and that board members may be less objective and critical when the CEO is on the board (Boyd, 1994), we expect a positive relationship between CEO on board and CEO compensation. Our second hypothesis is then:

Hypothesis 2.

\textbf{H2}_0: There is no relationship between \textit{ceoobd} and \textit{ceocomp}

\textbf{H2}_A: There is a positive relationship between \textit{ceoobd} and \textit{ceocomp}

\textit{Busy Directors}

Today many directors serve on multiple boards, which lead some directors to be overextended and not being able to provide the time and expertise required (Kim & Nofsinger, 2004, p 37). According to the Swedish Code of Corporate Governance (2004) a director of the board should not hold more directorships than he/she can manage. We include the variable \textit{busy} as a measurement of the percentage of directors who serves on three or more boards, which is consistent with several other studies (e.g. Core et al, 1999; Talmor & Wallace, 2000; Cahan et al, 2005). Because too many directorships are assumed to reduce the director’s effectiveness, we expect a positive relationship between busy directors and CEO compensation. Consequently, our third hypothesis is:

\textsuperscript{34} See 3.4 Principal-agent theory.

\textsuperscript{35} See 3.3.1 Board composition according to the Swedish Code of Corporate Governance.

\textsuperscript{36} Board duality occurs when the CEO is also a director of the board (Beatty & Zajak, 1994).
Hypothesis 3.
H3₀: There is no relationship between busy and ceocomp
H3ₐ: There is a positive relationship between busy and ceocomp

Tenure of the Directors

One way to increase the effectiveness of the board is to reduce the tenure of the director (Ogden et al, 2003). According to the Swedish Code of Corporate Governance (2004) the directors of the board should be renewed continuously in order to keep up with the development of the firm’s activity, and the directors should only be elected for one year in a row. In order to check whether tenure has any explanatory value for CEO compensation we measure the percentage of the directors that have served on the board for more than five years. We label this variable as tenure and expect a positive relationship between tenure and CEO compensation, since increased tenure could be a sign of less effective boards (Ogden et al, 2003). Our fourth hypothesis is then:

Hypothesis 4.
H₄₀: There is no relationship between tenure and ceocomp
H₄ₐ: There is a positive relationship between tenure and ceocomp

Female directors

A diversified board has a broader competence and the opportunity to solve problems on the basis of different perspectives, and is thus better at generating a positive return for shareholders (Biggins, 1999). According to the Swedish Code of Corporate Governance (2004), every board should strive for an equal distribution in terms of sex. Recent studies have shown a positive relationship between female directors and firm value and firm performance (e.g. Singh, Vinnicombe & Johnson, 2001; Carter et al, 2003; Erhardt, Werbel & Shrader, 2003). Inconsistent with those findings, a Swedish study by Durante et al (2005) found no relationship between female directors and firm value within Swedish firms. Since a more diversified board is supposed to be better at monitoring, we include the variable female and, despite the findings of Durante et al (2005), expect a negative relationship between female directors and CEO compensation. We define female as the percentage of women that serves on the board, and our fifth hypothesis is:

Hypothesis 5.
H₅₀: There is no relationship between female and ceocomp
H₅ₐ: There is a negative relationship between female and ceocomp

4.2.2 Managerial Discretion and Task Complexity

As control variable for managerial discretion and task complexity we use two variables; firm size and number of employees.

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37 See 3.5 Previous research.
38 The relatively small sample size of 97 firms may explain why they did not find a significant relationship.
**Firm Size**

One way for a manager to increase his/her compensation is to engage in empire building\(^{39}\), since CEO compensation is highly correlated with the size of the firm (Ogden et al, 2003, p 86). This is consistent with earlier studies, who suggest that firm size is a determinant for CEO compensation (e.g. Rosen, 1981;1982; among others). Talmor & Wallace (2000) and Cahan et al (2005) further suggest that large firm size indicates that managers have more and larger decisions to make, thus a higher task complexity and consequently higher managerial discretion. Similar to Talmor & Wallace (2000) and Cahan et al (2005) we thus use firm size, labelled as \(fsize\), as a dependent variable. We define the variable as the firm’s total assets and, since firm size is supposed to be correlated with CEO compensation, we expect a positive relation between firm size and CEO compensation. Thus, our sixth hypothesis is:

Hypothesis 6

\[ H_{60} : \text{There is no relationship between } fsize \text{ and } ceocomp \]

\[ H_{6A} : \text{There is a positive relationship between } fsize \text{ and } ceocomp \]

**Number of Employees**

Another measure of managerial discretion and task complexity, used by Simunic (1980) and Cahan et al (2005), is decentralization and diversification of the firm. To measure this they use number of subsidiaries and number of industry segments that the firm operates in. Since this information is not always presented in a clear and legible way in the annual report, we have chosen not to include them in our study\(^{40}\). Instead we use the number of employees as an additional measure of managerial discretion and task complexity, since it is argued that it is more difficult to monitor management in firms with many employees (Eaton & Rosen, 1983). We label this variable as \(employ\), and expect a positive relationship between number of employees and CEO compensation. Our seventh hypothesis is then:

Hypothesis 7.

\[ H_{70} : \text{There is no relationship between } employ \text{ and } ceocomp \]

\[ H_{7A} : \text{There is a positive relationship between } employ \text{ and } ceocomp \]

**4.2.3 Firm Performance**

As control variable for firm performance we use the firms return on assets, in order to determine whether firm performance is an explanatory determinant for CEO compensation\(^{41}\).

**Return on Assets**

Managers often have an incentive to manipulate earnings upwards, in order to receive a higher compensation, since it is common that CEO compensation includes annual bonuses based on

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\(^{39}\) Empire building occurs when managers are maximizing the size of the firm, rather than its value (Ogden et al, 2003, p 86).

\(^{40}\) We choose not to include decentralization and diversification of the firm, due to the fear of reducing the reliability of our study.

\(^{41}\) Core et al (1999), among others, also include market-based measures, such as stock return (RET) as a firm performance variable. Since we do not include stock options in the CEO total compensation, we omit these market-based variables from our study.
the firm’s performance for the year (Ogden et al, 2003, p 84). Many studies have found a significant positive relationship between a firm’s accounting rate of return and CEO compensation (e.g. Lewellen & Huntsman, 1970; Sloan, 1993; Joskow & Rose, 1994; Core et al, 1999; Cahan et al, 2005). Similar to Cahan et al (2005), among others, we thus include the firm’s return on assets as a variable. We label it \( \text{roa} \) and expect a positive relationship between return on assets and CEO compensation, with our eight hypothesis as follows:

Hypothesis 8.

\[ H_{80} : \text{There is no relationship between } \text{roa} \text{ and ceocomp} \]
\[ H_{8A} : \text{There is a positive relationship between } \text{roa} \text{ and ceocomp} \]

4.2.4 Ownership Structure

The last two control variables, foreign ownership and option program, are used to determine whether the firm’s ownership structure affects CEO compensation. According to Cyert et al (1997) and Core et al (1999) ownership structure is an important determinant in explaining CEO compensation, since ownership structure affects the incentive of the owners to monitor the manager’s performance.

Foreign Ownership (dummy)

In Sweden, a shareholder who owns more than ten percent of a firm’s outstanding shares, a so-called corner, can thwart a takeover\(^{42}\) (Finansportalen, 2005). Furthermore, a block holder with more than ten percent of the firm’s outstanding shares can demand an extra shareholder meeting, and thus offer oneself as a candidate for the board. Due to the high proportion of ownership, the probability that such a large block holder will be elected to the board is quite high.

According to Oxelheim & Randøy (2003) foreign board membership is an essential part of a corporate governance structure that determines the firm value, where especially Anglo-American board membership has a significantly positive impact on Swedish firms\(^{43}\). Thus, if a foreign owner owns more than ten percent, and becomes a board member, it could affect the firm’s corporate governance structure. According to Biggins (1999) and Erhardt et al (2003), a diversified board is positively related to a higher return for shareholders and firm value, respectively.

However, since the information about each director’s nationality and whether the block holders are insiders or outsiders are not always presented in the annual report, it is very difficult to determine whether there is any relationship between the existence of large block holders and CEO compensation. If the board is packed with CEO cronies\(^{44}\) the possibility for higher CEO compensation increases, while it probably decreases if the block holder represents an institutional owner\(^{45}\) (Ogden et al, 2003, p 88).

\[^{42}\] More than 90 percent is demanded in order to conduct a forced coercion (Finansportalen, 2005).
\[^{43}\] See 3.5 Previous research.
\[^{44}\] CEO cronies are insiders with a bias toward management (Ogden, 2003, p 88).
\[^{45}\] Such as Sjätte AP:fonden, among others.
To measure if foreign owners affects the CEO compensation we thus, similar to Oxelheim & Randøy (2003)​46, include a dummy variable that measures whether any of the large block holders, who owns more than ten percent, are foreign owners​47. Since we have not been able to break this down by home country, foreign owners is represented by all nationalities outside Sweden. According to Dahlquist & Robertsson (2001) as much as 67.2 percent of all Swedish shares held by foreigners in 1997 were held by U.S. or U.K. investors. We label this variable as foreign and code it as 1 if there exist one or more foreign block holders that own ten percent or more, and 0 otherwise. Since CEO compensation, in general, is higher outside of Sweden and especially in U.S. and U.K. (Kim & Nofsinger, 2004, p 18) we expect a positive relationship between foreign ownership and CEO compensation. Our ninth hypothesis is:

Hypothesis 9.

H9₀: There is no relationship between foreign and ceocomp
H9ₐ: There is a positive relationship between foreign and ceocomp

Stock Options (dummy)

One solution to the agency problem​48 is to tie the CEO wealth to the wealth of the shareholders, so that everyone shares the same goal (Kim & Nofsinger, 2004, p 11). This can be done by issuing stock options as a significant component of the CEO compensation (ibid), and according to a study by Mehran (1995) firm performance is positively related to equity-based CEO compensation. However, as mentioned earlier it is often quite problematic to determine the right value of such stock options (Core et al, 1999). In order to measure whether the presence of stock options has explanatory value for CEO compensation, we include a dummy variable, labelled option. We code it 1 if there is any stock options​49 aimed at the CEO, and 0 otherwise. Since stock options is a part of the CEO total compensation, we expect that the existence of stock options reduces the total CEO compensation. Thus, we expect a negative relation between CEO stock options and CEO compensation with the tenth hypothesis as follows:

Hypothesis 10.

H10₀: There is no relationship between option and ceocomp
H10ₐ: There is a negative relationship between option and ceocomp

---

46 Oxelheim & Randøy (2003) measured the percentage of equity held by foreign citizens or institutions in relation to the total equity of the firm.
47 This information is available in the annual report.
48 See 3.4 Principal-agent theory.
49 When determining whether any stock options were present, we used the search word: option program, incentive program, incentive, option, financial instruments when searching in the annual report.
Table 4.1 Independent variables, their expected signs and units of measurement

<table>
<thead>
<tr>
<th>Variable</th>
<th>Variable name</th>
<th>Expected sign</th>
<th>Unit of measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>Board size</td>
<td>bdsize</td>
<td>+</td>
<td>Number of board directors</td>
</tr>
<tr>
<td>CEO on the board</td>
<td>ceoobd</td>
<td>+</td>
<td>Dummy, 0 or 1</td>
</tr>
<tr>
<td>Busy director</td>
<td>busy</td>
<td>+</td>
<td>Percent of busy directors</td>
</tr>
<tr>
<td>Tenure of the director</td>
<td>tenure</td>
<td>+</td>
<td>Percent of tenure directors</td>
</tr>
<tr>
<td>Female directors</td>
<td>female</td>
<td>-</td>
<td>Percent of female directors</td>
</tr>
<tr>
<td>Firm size</td>
<td>fsize</td>
<td>+</td>
<td>Total assets, MSEK</td>
</tr>
<tr>
<td>Employees</td>
<td>employ</td>
<td>+</td>
<td>Number of employees</td>
</tr>
<tr>
<td>Return on assets</td>
<td>roa</td>
<td>+</td>
<td>Percent of return on assets</td>
</tr>
<tr>
<td>Foreign ownership</td>
<td>foreign</td>
<td>+</td>
<td>Dummy, 0 or 1</td>
</tr>
<tr>
<td>CEO stock options</td>
<td>option</td>
<td>-</td>
<td>Dummy, 0 or 1</td>
</tr>
</tbody>
</table>

4.4 Descriptive Statistics

In Table 4.2 we present the descriptive statistics for the dependent and independent variables used in our study.

Table 4.2 Descriptive statistics for CEO compensation and independent variables*

<table>
<thead>
<tr>
<th>Variable</th>
<th>Mean</th>
<th>Median</th>
<th>Std. Dev.</th>
<th>Min</th>
<th>Max</th>
</tr>
</thead>
<tbody>
<tr>
<td>ceocomp</td>
<td>3 720 767</td>
<td>2 458 000</td>
<td>3 728 387</td>
<td>300 000</td>
<td>31 137 580</td>
</tr>
</tbody>
</table>

Board composition
- bdsize: Mean 7.56, Median 7.00, Std. Dev. 2.25
- ceoobd: Mean 0.61, Median 1.00, Std. Dev. 0.49
- busy: Mean 0.50, Median 0.50, Std. Dev. 0.22
- tenure: Mean 0.35, Median 0.38, Std. Dev. 0.25
- female: Mean 0.14, Median 0.14, Std. Dev. 0.12

Discretion and complexity
- fsize: Mean 34 200, Median 1 080, Std. Dev. 196 000
- employ: Mean 5 662, Median 468, Std. Dev. 18 035

Firm performance
- Roa: Mean 0.02, Median 0.06, Std. Dev. 0.20

Ownership structure
- foreign: Mean 0.24, Median 0.00, Std. Dev. 0.43
- option: Mean 0.51, Median 1.00, Std. Dev. 0.50

*See section 4.1 and 4.2 for variable definitions and table 4.1 for units of measurement

4.4.1 Descriptive Statistics for Dependent Variables

The highest CEO compensation during 2004 is 31.14 MSEK, paid to the CEO at Nokia, while the lowest CEO compensation is only 0.30 MSEK, paid to the CEO at Addnode. The average CEO compensation is 3.72 MSEK, which differs largely from the 9.35 MSEK, 8.32 MSEK and 0.80 MSEK reported by Cyert et al (1997), Core et al (1999) and Cahan et al (2005),

50 Using conversion rate for 1999 and 1997, respectively.
respectively. The median is as low as 2.46 MSEK, which indicates that our study will examine a different CEO compensation range than prior research.

4.4.2 Descriptive Statistics for Independent Variables

The average (median) number of directors serving on a board is 7.56 (7.00). The largest boards consist of 14.00 directors, while the smallest boards only have 3.00 directors. The CEO is a member of the board in 61 percent of the cases, 50 percent of the directors serve on more than three other boards and 35 percent has been a member of the board for five years or more. According to the Swedish Code of Corporate Governance (2004) every board should aim for an equal sex distribution, why it is interestingly to notice that only 14 percent of the board members are women.51 Worth mentioning is also that the highest percent of women serving on a single board is 50 percent, while some boards do not have any female directors at all.

There is a considerable diversity in firm size and number of employees between the firms included in our study. The largest firm, measured by firm size as a function of total assets, is Nordea with total assets of 2 520 000 MSEK, while Sign On is the smallest firm with total assets of 18 MSEK. The average (median) firm size is 34 200 (1 080) MSEK, which is considerably less than the 721 248 MSEK reported by Cahan et al (2005) and the 380 774 MSEK reported by Talmor & Wallace (2000). Securitas is the firm that has the largest number of employees, 206 153, while Luxonen is the firm with the fewest employees, one. The average (median) number of employees is 5 662 (468). The fact that the averaged value is so much higher than the median value, for both firm size and number of employees, indicate the presence of some large observations in the data. On average, the firms in our study earn a return on assets of two percent, compared to seven percent (Cahan et al, 2005) and eleven percent (Core et al, 1999). HQ Fonder is the firm that has the highest return on assets, 48 percent, while Digital Vision has the lowest, -158 percent.

Table 4.2 also shows that, on average, 24 percent of the firms have one or more foreign owner holding more than ten percent of the voting rights and that 51 percent of the CEOs are compensated by stock options.

4.4.3 Correlation Coefficients

Table 4.3 provides the correlation coefficients between the independent variables in our study. The highest correlation is between bdszie and employ, which could indicate that large firms with high managerial discretion and task complexity thrive for more directors since they are more difficult to monitor. This is also consistent with the relatively high correlation between bdszie and fszie. More interestingly, bdszie and female seems to be related, which suggests that women are more represented in larger boards. Furthermore, it is more likely that the CEO is a board member if the board is large, indicated by the correlation between bdszie and ceoobd. However, whether the CEO is compensated with stock options seems to be unrelated to whether the CEO is a member of the board.

51 Durante et al (2005) found that 17 percent of the directors in 2004 were women. However, they only studied 97 companies on the Swedish A- and O-list.
Interestingly, the correlation between *employ* and *fsize* is relatively low, indicating that number of employees is not a proxy for firm size, or the other way around. Thus, a large firm, measured by total assets, does not necessarily have to have many employees.

Table 4.3 Correlation Coefficients Between the Independent Variables*

<table>
<thead>
<tr>
<th></th>
<th>bdsiz</th>
<th>ceoobd</th>
<th>busy</th>
<th>tenure</th>
<th>female</th>
<th>fsize</th>
<th>employ</th>
<th>roa</th>
<th>foreign</th>
<th>option</th>
</tr>
</thead>
<tbody>
<tr>
<td>bdsiz</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ceoobd</td>
<td>0.248</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Busy</td>
<td>0.026</td>
<td>0.022</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>tenure</td>
<td>0.082</td>
<td>0.156</td>
<td>0.049</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>female</td>
<td>0.358</td>
<td>0.069</td>
<td>-0.009</td>
<td>-0.049</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fsize</td>
<td>0.323</td>
<td>0.062</td>
<td>0.020</td>
<td>-0.029</td>
<td>0.195</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>employ</td>
<td>0.376</td>
<td>0.181</td>
<td>0.015</td>
<td>0.140</td>
<td>0.119</td>
<td>0.188</td>
<td>1.000</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roa</td>
<td>0.218</td>
<td>0.089</td>
<td>0.101</td>
<td>0.196</td>
<td>0.101</td>
<td>0.012</td>
<td>0.108</td>
<td>1.000</td>
<td></td>
<td></td>
</tr>
<tr>
<td>foreign</td>
<td>0.052</td>
<td>-0.105</td>
<td>-0.050</td>
<td>-0.204</td>
<td>-0.064</td>
<td>-0.040</td>
<td>0.024</td>
<td>-0.075</td>
<td>1.000</td>
<td></td>
</tr>
<tr>
<td>option</td>
<td>0.116</td>
<td>-0.029</td>
<td>0.026</td>
<td>0.032</td>
<td>0.017</td>
<td>0.079</td>
<td>0.191</td>
<td>-0.042</td>
<td>0.081</td>
<td>1.000</td>
</tr>
</tbody>
</table>

* See section 4.2 for variable definitions
5. Results and Analysis

In this chapter the results from our study are presented and analysed, based on the theoretical framework.

5.1 Regression Analysis

In order to lessen the effect of scale differences, we transform the CEO compensation, firm size and number of employees into natural logs (ln) and use the transformed variables in our multiple regression. This is consistent with previous research, such as Barro & Barro, 1990; Sloan, 1993; Talmor & Wallace, 2000; Oxelheim & Randøy, 2003; Durante et al, 2005; among others. Thus, our multiple cross-sectional regression is:

\[ \ln(\text{ceocomp}) = \beta_0 + \beta_1 \text{bdsize} + \beta_2 \text{ceoobd} + \beta_3 \text{busy} + \beta_4 \text{tenure} + \beta_5 \text{female} + \beta_6 \ln(\text{fsize}) + \beta_7 \ln(\text{employ}) + \beta_8 \text{roa} + \beta_9 \text{foreign} + \beta_{10} \text{option} + \epsilon \]

The results from our regression model, with CEO compensation as dependent variable and the board composition, discretion/complexity, firm performance and ownership structure variables as the independent variables, are presented in Table 5.1.

Table 5.1 Regression of CEO compensation

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-value</th>
<th>Probability</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td>10.562</td>
<td>0.367</td>
<td>28.787</td>
<td>0.000*</td>
</tr>
<tr>
<td>Board composition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bdsize</td>
<td>0.013</td>
<td>0.020</td>
<td>0.622</td>
<td>0.534</td>
</tr>
<tr>
<td>ceoobd</td>
<td>-0.100</td>
<td>0.066</td>
<td>-1.515</td>
<td>0.131</td>
</tr>
<tr>
<td>busy</td>
<td>0.189</td>
<td>0.143</td>
<td>1.322</td>
<td>0.187</td>
</tr>
<tr>
<td>tenure</td>
<td>-0.170</td>
<td>0.130</td>
<td>-1.308</td>
<td>0.192</td>
</tr>
<tr>
<td>female</td>
<td>0.301</td>
<td>0.274</td>
<td>1.097</td>
<td>0.274</td>
</tr>
<tr>
<td>Discretion and complexity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnsize</td>
<td>0.151</td>
<td>0.022</td>
<td>6.830</td>
<td>0.000*</td>
</tr>
<tr>
<td>lnemploy</td>
<td>0.128</td>
<td>0.021</td>
<td>5.995</td>
<td>0.000*</td>
</tr>
<tr>
<td>Firm performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>roa</td>
<td>-0.148</td>
<td>0.169</td>
<td>-0.876</td>
<td>0.382</td>
</tr>
<tr>
<td>Ownership structure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>foreign</td>
<td>0.109</td>
<td>0.075</td>
<td>1.464</td>
<td>0.144</td>
</tr>
<tr>
<td>option</td>
<td>0.201</td>
<td>0.064</td>
<td>3.170</td>
<td>0.002*</td>
</tr>
</tbody>
</table>

Observations = 267  R2-adj = 0.610  F-stat = 42.631  Prob. (F-stat) = 0.000*

* See section 4.1 and 4.2 for variable definitions
* Statistically significant at 1 % level
As mentioned earlier, it is important to test for the assumptions underlying the linear regression model before making any interpretation of the results. To test for linearity, which is the first assumption underlying the linear regression model, we used Ramsey’s RESET test and White’s heteroscedasticity test including cross terms. Both test results shows that we fail to reject the null hypothesis of linearity, thus the model is linear. The fact that we have variation in the x variables and a constant term is included in the regression equation, assumption two and three are fulfilled. Also assumption four is fulfilled, since the x variates in our study are given and non-random, thus the estimators are considered to be both unbiased and consistent.

The fifth assumption, the assumption of homoscedasticity, is tested with White’s test for heteroscedasticity. We reject the null hypothesis of homoscedasticity, i.e. the errors are not constant, why we included White’s heteroscedasticity-consistent standard error estimates, which solved the heteroscedasticity problem. Since our regression is a cross-sectional regression, the probability that the errors are correlated with one another is quite low. Thus, the sixth assumption, i.e. autocorrelation, is probably not violated. Since assumption two to six holds, the estimators are considered to be most efficient, i.e. the OLS procedure gives the best linear unbiased estimates (BLUE).

The number of regression coefficients is ten, which is considerably less than the number of observations of 267, thus the seventh assumption also holds. The eighth assumption, normality, is tested for with the Jarque-Bera test and the result shows that we reject the null hypothesis of normality, i.e. the data is not normally distributed. Because of our large sample size, 267 observations, and the trade-off that exists between the need to remove outlying observations and the notion that each data point represent useful information, we do not remove any outliers, which otherwise could have solved the non-normality problem. The distribution has a skewness close to zero, indicating that the distribution is symmetric about its mean value, and a kurtosis somewhat above three, indicating that our data has a leptokurtic distribution. The ninth and last assumption, the assumption of multicollinearity, occurs when the independent variables are highly correlated with each other. The correlation coefficients presented in Table 4.3 indicates that there is no multicollinearity present in the data.

Our model explains the cross-sectional variation in CEO compensation by 61 percent, indicated by the adjusted $R^2$, which, according to Ramanathan (1998, p 103) as well as Brooks (2003, p 140), is a quite high value for a cross-sectional regression. The adjusted $R^2$ is similar to those of Cyert et al (1997), 51 to 58 percent, Core et al (1999), 53 to 62 percent and Cahan et al (2005), 68 percent. However, due to differences in the sample and variables the adjusted $R^2$ is not strictly comparable (Brooks, 2003, p 137). As indicated by the F-statistic probability, our overall model is strongly significant. The constant is also strongly significant, indicating that the average CEO compensation is different from zero.

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52 See 2.2.4 Assumptions underlying OLS.
53 See Appendix D Results from test for assumptions; Table D.1 Test for linearity.
54 See Appendix D Results from test for assumptions; Table D.2 Test for heteroscedasticity.
55 See Appendix D Results from test for assumptions; Table D.3 Test for normality.
56 Sufficiently large sample sizes will follow the appropriate distributions, even in the absence of error normality (Brooks, 2003, p 182).
57 A small degree of correlation will almost always exist, but will not cause too much loss of precision (Brooks, 2003, p 190).
58 Adjusted $R^2$, instead of $R^2$, is preferable when comparing models with different dependent variables, because the adjusted $R^2$ takes the loss of degrees of freedom, associated with adding extra variables, into account (Brooks, 2003, p 137).
5.1.1 Board Structure

The result for our five independent board variables, board size, CEO on board, busy directors, tenure of the directors and female directors, are here presented and analyzed.

Board Size

The first board structure variable, \(bds\), is not significant, indicating that the level of CEO compensation is not related to the size of the board. This is inconsistent with both theory (Kim & Nofsinger, 2004, p 38) and financial research (Jensen, 1993; Huther, 1996; Yermack, 1996; Vafeas, 2000), which suggests that large boards are less effective at monitoring than small boards\(^{59}\). Our findings are also inconsistent with those of Core et al (1999), Talmor & Wallace (2000) and Cahan et al (2005) who all found a significantly positive relationship between board size and CEO compensation. However, our result is consistent with Cyert et al (1997) who found little evidence that larger board size contributes to an overcompensation of the CEO. Thus, the importance of the recommendation in the Swedish Code of Corporate Governance (2004), that a board should consist of a sufficient number of directors that enables an easy and efficient work, could somewhat be questioned, since there is no relationship between board size and CEO compensation\(^{60}\) in firms listed on the Stockholm Stock Exchange.

CEO on Board

Surprisingly, the \(ceoob\) variable is not significant, indicating that the CEO payment is indifferent to whether the CEO is a member of the board or not. This is inconsistent with the findings of Cahan et al (2005), who found a significant positive relationship between CEO on board and CEO compensation. It is also inconsistent with Cyert et al (1997) and Core et al (1999), although they looked at the CEO as the chairman of the board.

Busy

Consistent with Cahan et al (2005), but in contrary to Core et al (1999), we find that \(bus\) is not significant, which indicates that directors with three or more directorships do not appear to be less effective than other directors. According to Cahan et al (2005) this could be explained by the fact that \(bus\) is a proxy for a director’s expertise. Thus, the risk of reduced effectiveness when serving on many boards is compensated by the positive effect of the director’s knowledge and skills (Fama & Jensen, 1983). However, despite our result we do not find the recommendation in the Swedish Code of Corporate Governance (2004), that a director should not hold more directorships than he/she can manage, questionable, since the positive effects at some point will probably be outbalanced by the negative effects.

Tenure

In contrast to theory, which says that a decrease in the tenure of the directors could lead to an increase in board effectiveness\(^{61}\), we find that the \(ten\) and CEO compensation are not significantly related. Thus, the tenure of the directors does not affect the level of CEO compensation. This may be explained by the fact that the loss of effectiveness, that follows

\(^{59}\) See 2.4.1 for further discussion about board size and its effectiveness.

\(^{60}\) A large board is less effective (Yermack, 1996) and CEOs in firms with weaker governance structure receives greater compensation (Core et al, 1999).

\(^{61}\) Se 2.4.1 for further discussion about tenure and its affect on board effectiveness.
from being a member of the board for a long time period, is compensated by an increased knowledge about the firm or an increase in the emotional boundary with the firm. However, the result may be different if a longer time period or a percentage of tenure within the board is studied.

**Female**

We found no significant relationship between the presence of female directors and the level of CEO compensation, which is consistent with Durante et al (2005) who found no relationship between female directors and firm value. Our results differ from previous research that suggests that a diversified board is better in monitoring (Biggins, 1999) and that there is a significant positive relationship between female directors and firm value (Singh et al, 2001; Carter et al, 2003; Erhardt et al, 2003). However, the low percentage of female directors, 14 percent\(^{62}\), may explain the insignificant result.

### 5.1.2 Managerial Discretion and Task Complexity

In order to evaluate how managerial discretion and task complexity affects CEO compensation, we present and analyze the results for the two control variables; firm size and number of employees.

**Firm Size**

Consistent with theory, which suggests that CEO compensation increase if the CEO engages in empire building\(^{63}\), we found a strongly significant and positive relationship between \(fsize\) and CEO compensation. Our result is also consistent with previous research, suggesting that firm size is a determinant for CEO compensation (e.g. Rosen, 1981:1982; Cyert et al, 1997; Core et al, 1999; Talmor & Wallace, 2000; Cahan et al, 2005) This indicates that firm size is a good measure of managerial discretion and task complexity and that CEOs in large firms get paid more than their counterparts in smaller firms.

**Number of Employees**

Together with the firm size variable, \(employ\) is one of the most important determinants for CEO compensation, with a strongly significant and positive coefficient. The result indicates that CEOs in firms with a large number of employees get paid more than their counterparts in firms with fewer employees. Thus, if number of employees is a good measure of managerial discretion and task complexity, this result is consistent with theory.

### 5.1.3 Firm Performance

In order to determine whether firm performance can explain CEO compensation, we present and analyze the results for the control variable \(roa\).

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\(^{62}\) See Table 2.4 Descriptive statistics.

\(^{63}\) See 2.4.2 for further discussion about the relationship between firm size and CEO compensation.
Return on Assets

The coefficient for roa is not significant, indicating that the CEO compensation is not affected by profitability. However, this result is somewhat puzzling, because many CEOs have a performance-based compensation as a part of their total compensation, which should indicate that CEO compensation would increase when profitability increase. The insignificant result is also inconsistent with previous studies (e.g. Lewellen & Huntsman, 1970; Sloan, 1993; Joskow & Rose, 1994; Cyert et al, 1997; Core et al, 1999; Talmor & Wallace, 2000; Cahan et al, 2005). The insignificant result may indicate that the performance-based compensation is incorrectly designed in many firms.

5.1.4 Ownership Structure

The results for the control variables, foreign ownership and option program, are presented and analyzed in order to determine whether the firms ownership structure affects CEO compensation.

Foreign

The coefficient for foreign is not significant. Thus, whether the firm has any foreign block holder, owing more than ten percent of the votes, does not affect the level of CEO compensation. The result is inconsistent with the findings of Oxeheim & Randøy (2003), who found that outside Anglo-American board members have significant impacts on firm value. It is also inconsistent with the fact that CEO compensation often is higher outside of Sweden (Kim & Nofsinger, 2004, p 18).

Option

The last independent variable, option, is strongly significant\(^{64}\). However, in contrast with our predicted sign, the presence of stock options is positively related to CEO compensation, which indicates that the CEO compensation is higher in firms where the CEO is also rewarded stock options, than in firms without any stock options. Since firm performance is positively related to equity-based CEO compensation (Mehran, 1995), this could be explained by the fact that firms that are issuing stock options are highly profitable firms that also pay a high total CEO compensation. However, this contradicts the insignificant relationship between ROA and CEO compensation.

5.2 Category Analysis

In order to examine the relative explanatory power of the different classes of independent variables, i.e. board structure, managerial discretion/task complexity, firm performance and ownership structure, Talmor & Wallace (2000) and Cahan et al (2005) computed the adjusted \( R^2 \) for the different categories individually. Their result shows that the discretion/complexity variable has the highest explanatory power, followed by board structure, ownership structure and last firm performance. As Talmor & Wallace (2000) and Cahan et al (2005) we performed a category analysis, and found that each category differs in their incremental

---

\(^{64}\) A test for differences in the estimated slope for the option variable has also been performed, but since the result is not statistically significant, no further discussion will be made.
explanatory power. However, when only the board structure variables are included in the regression, board size is strongly significant, indicating that board size and CEO compensation are positively related. When all variables are included board size is no longer significantly related to CEO compensation, which indicates that board size probably is a proxy for firm size, number of employees or CEO stock options.

The result from our category analysis shows the importance of testing the variables in a multiple regression framework, since board size is significantly related to CEO compensation when only board structure variables are included in the regression, but not when all variables are included. Thus, it also shows that it is not appropriate to draw conclusions about the board structures influence on CEO payment, from the category analysis, such as Talmor & Wallace (2000) and Cahan et al (2005) do.\textsuperscript{65}

\textsuperscript{65} Based on their category analysis they suggested that the board composition variables are important determinants for CEO compensation.
6. Conclusions

In this chapter the conclusions from our study and proposals about additional research are presented.

6.1 Discussions and Conclusions

We examine whether the board structure variables; board size, CEO on board, busy directors, the tenure of the directors and number of female directors, influences the level of CEO compensation. Similar to prior research (e.g. Cyert et al, 1997; Core et al, 1999; Talmor & Wallace, 2000; Cahan et al, 2005) we include three other categories of explanatory variables, i.e. managerial discretion/task complexity, performance and ownership variables, which serve as control variables.

Our study encompasses the relationship between board structure and CEO compensation, for the year 2004, and our final sample consists of 267 companies listed on the Stockholm Stock Exchange. Inconsistent with prior research, we find no significant relation between any board structure variable and CEO compensation. Instead, CEO compensation is significantly and positively related to firm size, as measured by the firm’s total assets, number of employees and the presence of CEO stock options. Thus, one conclusion from our study is that managers engaging in empire building probably will receive higher compensation than managers who do not engage in such activities, which is consistent with theory. Furthermore, the positive relationship between the presence of CEO stock options and CEO compensation, which is inconsistent with our predicted sign, indicates that CEO stock options is not a compensation for lower CEO pay. Interestingly, the insignificant relationship between return on assets and CEO compensation may indicate that the performance-based compensation is incorrectly designed in many firms.

The category analysis shows that board size is significantly related to CEO compensation when only the board structure variables are included in the regression, but is not significantly related when also control variables are included. We thus conclude that board size may proxy for firm size, i.e. that larger firms also have larger boards. However, since none of our board structure variables are significant, we can not draw any conclusions about the board structure variables incremental explanatory power, such as Talmor & Wallace (2000) and Cahan et al (2005) do.

The overall results suggest that board structure is not an important factor for determining the level of CEO compensation in companies listed on the Stockholm Stock Exchange, after controlling for other non-board factors affecting CEO compensation. Thus, we cannot find any relation between a weak board and higher CEO compensation, which is inconsistent with previous research.

Our study contributes to prior academic research, since no one has examined the relation between board structure and CEO compensation in companies listed on the Stockholm Stock Exchange in 2004. Thus, our study provides evidence that may be useful in the policy debate regarding corporate governance.

66 See 2.4.2 Managerial discretion and task complexity.
6.2 Additional Research

It would be of interest to conduct a study for previous years, since our study encompasses the relationship between board structure and CEO compensation for the year 2004. Thus, it would be possible to compare our results with results from previous years in order to see whether the results are consistent over years. It would also be of interest to compare our results with similar studies in other countries, i.e. a comparison with countries from the four different corporate governance systems (the Anglo-Saxon system, the Germanic system, the Latin system and the Japanese system).

The relationship between the existence of independent and dependent directors and CEO compensation, in firms listed on the Stockholm Stock Exchange, would also be of interest to study. Likewise, whether the existence of institutional owners affects the level of CEO compensation could be a subject for further research.

It would also be of interest to study the differences in board structure influences on CEO compensation between those companies that today are affected by the code and those that are not, since the Swedish Code of Corporate Governance is not yet comprised to all companies listed on the Stockholm Stock Exchange. Similar to Cahan et al (2005) it would also be of interest to study the differences between public and private sector companies in Sweden, and to examine whether the results differ if the value of CEO stock options is included in the total CEO compensation.
7. References


*CA Magazine.* (2005). Good Governance? (Jan/Feb), p 60


Finansportalen. Available at: [http://www.finansportalen.se/](http://www.finansportalen.se/) (2005-12-08)


OMX. Available at: www.omx.se (2005-12-08)


Appendix A:  
Conversion Rates

Table A.1 Average Conversion Rate: 01/01/2004 - 31/12/2004*

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<tr>
<th>Currency</th>
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* FXHistory, a foreign exchange database, was used to obtain the conversion rates  
** Average Conversion Rate for 01/10/2003 - 30/09/2004

Table A.2 Conversion Rate: 31/12/2004*

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* FXHistory, a foreign exchange database, was used to obtain the conversion rates  
** Conversion Rate for 30/09/2004
### Appendix B:
Companies included in the regression analysis, a total of 267

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<th>Company</th>
<th>Company</th>
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Appendix C: 
Size and Composition of the Board according to the Swedish Code of Corporate Governance

3.2 Size and Composition of the Board

The board should have a size and composition that enable it to embrace the various qualifications and experience needed and to meet the independence criteria required to manage the company’s affairs effectively and independently. The renewal of the board should be paced with due consideration for the development of the company’s operations as well as for the need for continuity in the work of the board.

3.2.1 With the company’s operations, phase of development, and other conditions taken into consideration, the board is to have an appropriate composition, exhibiting diversity and breadth in the directors’ qualifications, experience and background. An equal gender distribution on the board is to be an aim.

3.2.2 The board is not to exceed the size that will allow it to employ simple and effective working methods. There are to be no deputies to the directors chosen by the shareholders’ meeting.

3.2.3 No more than one person from senior management may be a member of the board.

3.2.4 The majority of the directors elected by the shareholders’ meeting are to be independent of the company and its management. A director is not to be considered independent if he or she:

- is the managing director, or in the preceding five years has been the managing director, of the company or associated enterprises,
- is employed, or in the preceding three years has been employed, in the company or an associated enterprise,
- receives significant remuneration for advice or services in addition to board work from the company or an associated enterprise or from someone in the senior management,
- has, or in recent years has had, extensive business ties or other extensive financial dealings with the company or an associated enterprise, in his or her capacity as customer, supplier or part-owner, either personally or as part of the senior management or the board or by being a major partner in another enterprise having such a business relationship with the company,
- is, or in the past three years has been, a partner or employee of the audit firm currently or then auditing the company or an associated enterprise,
- is part of senior management in another enterprise having a director who is part of senior management in the company,

- has been a member of the board for more than twelve years, or

- is a close relative or family associate of someone in the senior management of another person as provided in the preceding clauses, if this person's direct or indirect dealings with the company are sufficiently extensive and important that the director is not considered independent.

An associated enterprise refers to an enterprise in which the company, directly or indirectly, holds at least 10 per cent of the shares or participation or the votes or a financial interest that gives the right to at least 10 per cent of the return of this enterprise. If the company has more than 50 per cent of the capital or votes in another enterprise, the company is considered to have indirect ownership of this enterprise’s ownership in other enterprises.

The fourth point is not to apply to the customary bank-client relationships.

3.2.5 At least two of the directors who are independent of the company and its management are also to be independent of the company’s major shareholders. A director who represents a major owner or is employed or a member of the board in a company that is a major shareholder is not considered independent.

“A major shareholder” refers to owners who directly or indirectly control 10 per cent or more of the shares or votes in the company. If one company has more than 50 per cent of the capital or votes in another company, the first company is considered to have indirect control of the second company's ownership in other companies.

3.2.6 Members of the board are to be appointed for one year at a time.

3.3 Directors

The director’s position in relation to the company is similar to that of a trustee. This means that the director is obliged to devote the time and the care and have the competence required to look after the interests of the company and its owners in the best possible manner.

3.3.1 A director is not to have so many other duties that he or she is unable to devote the necessary time and care to the company’s board work.

3.3.2 A director is to form an independent judgement on each matter considered by the board and to express the views and take the positions that follow from this judgement. A director is to request whatever supplementary information that he or she believes is necessary for the board to make well-founded decisions.
3.3.3 A director is obliged to acquire the familiarity with the company's operations, organisation, market, etc. needed to discharge his or her duties.

3.3.4 A new director is to receive the necessary introductory training about the company and any other training that the chair of the board and the director mutually consider appropriate.
Appendix D:
Results from tests for assumptions

Table D.1 Test for Linearity

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* Nr. of fitted terms = 1
** Including cross terms

Table D.2 Test for Heteroscedasticity

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<td>1.756</td>
</tr>
<tr>
<td>Prob. F(17,249)</td>
<td>0.034</td>
</tr>
<tr>
<td>Obs*R-squared</td>
<td>28.589</td>
</tr>
<tr>
<td>Prob. Chi-square (17)</td>
<td>0.038</td>
</tr>
</tbody>
</table>

** Including no cross terms

Table D.3 Test for Normality

<table>
<thead>
<tr>
<th>Test</th>
<th>Test result</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jarque-Bera normality test</td>
<td></td>
</tr>
<tr>
<td>Jarque-Bera</td>
<td>28.104</td>
</tr>
<tr>
<td>Probability</td>
<td>0.000</td>
</tr>
<tr>
<td>Skewness</td>
<td>0.061</td>
</tr>
<tr>
<td>Kurtosis</td>
<td>4.585</td>
</tr>
</tbody>
</table>

* See Diagram D.1 for a diagram over the result

Diagram D.1 Diagram from the normality test

![Histogram of Standardized Residuals](image-url)
Appendix E:
The relative explanatory power of the different classes of independent variables

Table E.1 Regression of CEO Compensation on Board Structure

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td>13.162</td>
<td>0.172</td>
<td>76.411</td>
<td>0.000*</td>
</tr>
<tr>
<td>Board composition</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ln</td>
<td>0.198</td>
<td>0.020</td>
<td>10.014</td>
<td>0.000*</td>
</tr>
<tr>
<td>ceoobd</td>
<td>-0.045</td>
<td>0.085</td>
<td>-0.525</td>
<td>0.600</td>
</tr>
<tr>
<td>busy</td>
<td>0.217</td>
<td>0.186</td>
<td>1.170</td>
<td>0.243</td>
</tr>
<tr>
<td>tenure</td>
<td>-0.042</td>
<td>0.164</td>
<td>-0.255</td>
<td>0.799</td>
</tr>
<tr>
<td>female</td>
<td>0.489</td>
<td>0.355</td>
<td>1.376</td>
<td>0.170</td>
</tr>
</tbody>
</table>

Observations = 267  R2-adj = 0.329  F-stat = 27.085  Prob. (F-stat) = 0.000*

1See 4.2 for variable definitions
* Significant at the 0.01 level

Table E.2 Regression of CEO Compensation on Discretion/complexity

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000</td>
<td>0.000*</td>
</tr>
<tr>
<td>Discretion/complexity</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>lnfsize</td>
<td>14.777</td>
<td>0.048</td>
<td>308.362</td>
<td>0.000*</td>
</tr>
<tr>
<td>lnemploy</td>
<td>0.889</td>
<td>0.239</td>
<td>3.719</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

Observations = 267  R2-adj = 0.780  F-stat = 0.000  Prob. (F-stat) = 0.000*

1See 4.2 for variable definitions
* Significant at the 0.01 level

Table E.3 Regression of CEO compensation on firm performance

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coefficient</th>
<th>Std. Error</th>
<th>t-value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td>0.889</td>
<td>0.239</td>
<td>3.719</td>
<td>0.000*</td>
</tr>
<tr>
<td>Firm performance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Roa</td>
<td>14.777</td>
<td>0.048</td>
<td>308.362</td>
<td>0.000*</td>
</tr>
</tbody>
</table>

Observations = 267  R2-adj = 0.046  F-stat = 13.829  Prob. (F-stat) = 0.000*

1See 4.2 for variable definitions
* Significant at the 0.01 level

Table E.4 Regression of CEO compensation on ownership structure

<table>
<thead>
<tr>
<th>Variable</th>
<th>Coeff.</th>
<th>Std. Error</th>
<th>t-value</th>
<th>Prob.</th>
</tr>
</thead>
<tbody>
<tr>
<td>constant</td>
<td>0.445</td>
<td>0.094</td>
<td>4.723</td>
<td>0.000*</td>
</tr>
<tr>
<td>Ownership structure</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>foreign</td>
<td>14.539</td>
<td>0.070</td>
<td>206.454</td>
<td>0.000*</td>
</tr>
<tr>
<td>option</td>
<td>0.121</td>
<td>0.110</td>
<td>1.101</td>
<td>0.272</td>
</tr>
</tbody>
</table>

Observations = 267  R2-adj = 0.078  F-stat = 12.265  Prob. (F-stat) = 0.000*

1See 4.2 for variable definitions
* Significant at the 0.01 level