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Economic Determinants of Director Compensation in Sweden:

A Study of OMX Stockholm 30 Firms

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Key words:	Non-executive Directors, remuneration, determinants of compensation, Sweden, agency theory.
Purpose:	We attempt to fill a void in the research field of determinants of non-executive director compensation of the most actively traded companies in Sweden.
Research questions:	1) *What are the economic determinants of director compensation in Swedish firms?* *2) What are the economic determinants of chairman compensation in Swedish firms?*
Methodology:	We are using a deductive and quantitative approach with a multiple regression to analyze our data and through that, serve our purpose.
Theoretical perspective:	Agency theory, optimal contracting theory, stewardship theory, managerial power theory, tournament theory and prior research has been used to fill our purpose.
Conclusions:	Swedish firms compensate their directors according to agency theory. We found that director compensation is positively related to the following variables: *firm size, investment opportunities, CEO compensation, Busyness, CEO board presence* and *Anglo-American directors*. We also find a negative relationship to concentrated *voting-power.* The results for chairman compensation aligned with these numbers except for non-statistically significant results of *CEO board presence.*

1. Introduction

This section gives an introduction to the subject and presents a brief overview of prior studies. We then present a problem discussion that ends with a research question that we will try to answer to fulfill our purpose. Finally we disclose our limitations and the overall structure of the paper.

Corporate board structure has undergone significant changes in the past decade due to numerous board failures and increased financial regulation. Although the most drastic changes have been witnessed in countries with Anglo-Saxon board structures (e.g. the US and UK), continental European boards have also become subject to new corporate governance codes. In an attempt to prevent further debacles, a majority of governance codes now require company boards to contain a minimum number of non-executive directors. Unlike executive management, non-executive directors do not partake in the daily activities of the company and their main purpose is to neutralize inherent agency conflicts between shareholders and executive management. Due to their unique role, a general consensus on the structure of non-executive director remuneration has yet to be determined. Prior research on board composition has revealed a steady increase in the number of non-executive directors on company boards around the world, however studies concerning their compensation and its determinants are generally lacking when compared to their executive counterparts. Furthermore, constraints on data availability have restricted the majority of research on non-executive director compensation to the Anglo-Saxon market. Although helpful to a certain extent, areas of contrast exist within Continental European board structure that may lead to differences in compensation of non-executive directors.

Research of non-executive directors in Swedish firms is a relatively new field due to the recent changes in the Swedish code of corporate governance. Prior literature on board structure in Scandinavia has focused on board composition and ownership (Eklund *et al,* 2009; Bohren and Strom, 2005; Smith *et al,* 2006; Randøy and Oxelheim 2003, 2006; and Rose, 2007). These studies primarily find a significant negative correlation between board size and firm performance. Eklund *et al.* (2009) specifically researches Swedish

listed companies and finds that board size has a significant negative effect on investment performance. Furthermore, they also observe an increase in the gender diversity of company boards and a decrease in the number of firms that have the CEO on the board. We attempt to fill a void in the research by analyzing the determinants of non-executive director compensation of the most actively traded companies in Sweden. Our hypothesized determinants of compensation are derived from a combination of theory and prior research.

Given the relatively small field of research concerning Swedish corporate governance and board structure, we contribute to the academic literature by being the first, of our knowledge, to attempt to answer the following research questions:

1) *What are the economic determinants of director compensation in Swedish firms?*
2) *What are the economic determinants of chairman compensation in Swedish firms?*

Limitations

The focus of our research is on the most actively traded firms in Sweden (i.e. OMX Stockholm 30), therefore the sample group neglects small and medium-sized firms that are publicly traded in Sweden. Furthermore, adoption of IFRS by Sweden has constrained us to observing a five-year sample period (2005-2009).

The variables chosen for this study omit certain elements that have been tested in prior research. We include voting-power as a proxy for ownership concentrating however share ownership by institutional investors, block holders, and directors' ownership nor the overall structure of holdings is included. Our decision to do so is due to our time frame and the availability of data. Along the same reasoning, we also use a dummy variable for shared-based compensation instead of accounting for the individual structure of these pay schemes.

Structure

This paper is organized as follows. In Section 2, we present an overview of corporate governance aspects that are relevant to our analysis of director compensation. In Section 3, we review theory that is particularly ascribed to director compensation and

that we use as a foundation for our hypothesized determinants. Section 4 consists of an overview of the two major fields of prior research concerning non-executive directors: firm performance and economic determinants of compensation. In Section 5, we present our data, hypothesized determinants of director compensation, and econometric model. Section 6 consists of an analysis of our empirical results of determinants of director compensation. In Section 7, we present our final conclusions based on our results coupled with suggestions for further research.

2. Overview of Governance Structures

This section will present the two governance structures that are of most relevance for our thesis and also the two most studied. We will then, in more detail describe the Swedish context and finally give a brief overview of the characteristics of non-executive directors.

2.1. Common Board Structures

Governance structures vary across economic markets due to a number of reasons such as regulatory environment and ownership concentration. Traditionally, the governance structure of Sweden has grown out of the Continental European model however it has acquired characteristics from other countries over the years. The following section briefly introduces the most popular governance systems in order build a comparison to the unique governance system found in Sweden.

2.1.1. Anglo - American

The Anglo-American board structure has developed out of market-based economies such as the US, Canada, UK, Australia and New Zealand. Anglo-American boards are considered one-tier due to the fact that they are comprised of a mixture of executive management and non-executive directors. In terms of compensation, non-executive directors are commonly paid in a mixture of cash and company shares in attempt to align their interests with a wide dispersement of shareholders (Clark 2007). The defining characteristic of Anglo-Saxon markets is an emphasis on liquidity and short-term returns. Although the high level of dispersed ownership has lead to evidence of agency problems, the Anglo-Saxon markets are more easily able to capitalize on new ideas and grow at a high rate.

2.1.2. Continental European

The Continental European governance structure is relationship based and reflects a mixture of different cultures throughout the continent. It is primarily market-oriented but there exists clear influences of block holders, families, and financial institutions. These networks are the main stakeholders in the firms and contribute to the moderate and high levels of ownership concentration. In contrast to the Anglo-American board structure, Continental European boards are two-tiered consisting of an executive board

that runs the company and a supervisory board that is responsible for monitoring, appointing, and dismissing executive managers. Director compensation is usually not based on performance and economic relationships are viewed as long-term commitments (Clark 2007).

2.1.3. Swedish

Although Sweden's corporate governance standards are often categorized as Continental European, Swedish firms implement a 'mixed system' board structure that falls in between the more common unitary and two-tiered board structures (Heidrick and Struggles, 2009). Similar to the Continental European system, there exists both a board of directors and an executive management board in Swedish firms. However, Swedish Corporate Governance code allows for one (1) member of the executive management board (usually the President or CEO) to sit on the board of the directors. This practice, analogous to a unitary board structure, is what helps to define Swedish board structure type as 'mixed system'.

Even though the adhering Swedish Code of Corporate Governance is not a requirement to become listed on Sweden's regulated stock markets, it has become the *de facto* standard of publicly trade companies in Sweden. The main purpose of the code is to issue a framework of standards to ensure that firms are run as efficiently as possible on behalf of their shareholders (The Swedish Code on Corporate Governance 2010). Sweden is noted for its exceptional transparency of corporate governance practices and extensive amount of information can be found in majority of firms' annual reports (Heidrick and Struggles 2009).

Similar to other governance systems, director and executive compensation is established by the remuneration committee. The chairman of the board is allowed to sit and chair the remuneration committee. The Swedish Corporate Governance Code does not prescribe an extensive guide of how to set director remuneration, rather there are a few number of general rules that are to be followed. According to Governance Code, director remuneration is to be linked to predetermined and measurable performance criteria that is aimed at long-term value creation. Furthermore, remuneration of non-

executive directors is not to include share options.

A recent comparative study of European board structures by Heidrick and Struggles (2009) reveals a wealth of descriptive information on Swedish corporate governance characteristics. The report revealed that Swedish boards contained an average of 10.8 members and that 79% of them were Swedish citizens. Furthermore, Sweden achieved the highest attendance rating for board meetings, at 96%, and firms held an average of 10.9 board meetings in 2009. The country had the highest proportion of fixed fees for total compensation of the board, 99%, and the average remuneration of directors in Sweden was €54,000. In comparison, the highest paid directors operated in Switzerland, where the compensation average was €194,000.

2.2. Non-Executive Directors

2.2.1. Role of Non-Executive Directors

Non-Executive directors, also known as outside or independent directors, have become an integral part of company boards in order to counteract inherent agency conflicts between shareholders and executive management. Nominated by shareholders at the General Shareholder Meeting, non-executive directors are agents of shareholders appointed to monitor, control, and advise executive management (Hahn, 2006). Robert, McNulty, and Stiles (2005) argue that non-executive directors operate in a balance between support and intervention, which is "achieved through strong and rigorous process of accountability with the board." Moreover, there are three main functions that are attributed to non-executive directors: the *agency/control* role, the *strategic decision and policy report role,* and *resource acquirer* role (Hahn 2010).

2.2.2. Independence

Independency has been classified in several different ways over the years but The UK Combined Code (2003) offers the following explanation: "A non-executive director is considered independent when the board determines that the director is independent in character and judgment and there are no relationship or circumstances which could affect, or appear to affect, the directors judgment". Several criteria stipulating how the relationship should appear then follows this statement within the Combined Code, however we shall only highlight the criteria regarding remuneration and ownership.

First, a director should not be compensated in any additional way apart from the remuneration received for sitting on the board and in its committees. Second, a director should not in any way represent any significant shareholder (Clarke 2007). Other criteria's handling aspects such as work within the firm is not of relevance in our study due to the Swedish market regulations that prevent more then one member of the board to be a member of executive management of the company or a subsidiary (The Swedish Code on Corporate Governance 2010).

3. Theoretical Framework

The following section presents theories that have been used in prior research to explain methods of non-executive compensation. Specifically, we include Agency theory, Optimal Contracting theory, Stewardship theory, Managerial Power theory, and Tournament theory to apply in our research.

3.1. Agency Theory

In economics, agency theory attempts to describe a situation where one party (the principle) delegates another party (the agent) to perform work on its behalf (Eisenhardt 1987). There are two main problems that can arise within this relationship: 1) A conflict of interest between the principle and agent and/or 2) the agent's actions are difficult to observe by the principle. In the context of a publicly traded firm, the shareholders (the principle) appoint management (the agent) with the intent of maximizing their original investment in the firm. Since shareholders cannot monitor management directly due to a variety of reasons, the board of directors acts on behalf of shareholders in monitoring management's decisions. Agency theory goes on further to assert that the board of directors does not completely solve the agency problem and that can lead to what is known as the 'double agency dilemma'. The double agency dilemma is similar to the principle-agent problem as described earlier, however, the board of directors occupy a dual role of being both an agent to the shareholders and a principle to executive management. When this situation arises, the role of non-executive board members becomes extremely important due to their supposed independence and objectivity (Stiles and Taylor 2002).

Agency theory has become the theoretical framework of prior research pertaining to compensation of non-executive directors. Central to relationship between the shareholder (the principle) and non-executive directors (the agent) is the contractual agreement that establishes compensation. Methods of compensation to non-executive directors fall under two broad categories: behavior-oriented (i.e. fixed salary) or outcome-oriented (i.e. incentive-based) (Eisenhardt 1987). Released in 1995, the Greenbury Report made a strict case for abstaining from personal incentive in

compensation and advised that non-executive directors should only be paid fixed fees. However, more recent research has provided strong support for a portion of non-executive director compensation to performance-based (Hahn and Lasfer 2010). The argument being that information asymmetry is the main cause of the principle-agent problem and could be alleviated by aligning the incentives of both parties through outcome-oriented compensation structures (Davis et al 1997).

3.1.1. Optimal Contracting Theory

Optimal contracting theory can be considered a subset of agency theory that involves solving the principle-agent problem through contractual arrangements. The information asymmetry that occurs between two parts brings fourth a risk that needs to be handled. An agreement between these parties puts a constraint on the part that holds the information advantage so it cannot exploit it on the expense of the other part (Salanié 1997, Laffont & Martimort 2002). According to Fich and Shivdasani (2005), optimal contracting theory posits that corporate performance is expected to positively influence compensation.

3.2. Stewardship Theory

Contrary to agency theory, Stewardship theory refutes the notion that managers and directors are opportunistic, self-serving individuals that will exploit gaps in their contractual agreements to shirk at the expense of shareholders. Stewardship theory argues from a sociological and psychological standpoint that managers "are stewards whose motives are aligned with the objectives of their principles" (Davis et al 1997). The foundation of the stewardship theory is that man's behavior is considered pro-organizational, and that collectivistic behaviors have higher utility than those of the self-serving nature as described in agency theory (Donaldson and Davis 1991). Within the firm structure, stewardship theory is embodied by the idea that managers (and directors) seek to attain the objectives of the organization and that their future fortunes (pension rights, future employment etcetera) are related to their current period performance (Donaldson and Davis 1991, Davis et al 1997).

The majority of research in corporate governance has used stewardship theory to defend the dual-role of an individual serving as both a firm's CEO and Chairman of the Board. Although the Swedish Corporate Governance Code does not allow for this

particular situation, stewardship theory can still be adapted to director compensation schemes.

3.3. Managerial Power

In their 2006 Book "Pay without Performance", Bebchuk and Fried argue that performance-based pay schemes do not control agency problems, rather they are a major reason for the problems in the first place. At the heart of their argument is managerial power theory, which proposes that there is a positive correlation between management power and the rents that they can extract. 'Rent' is defined as value obtained from a transaction that is beyond what would be considered arms-length (Bebchuk and Fried 2006). Particular to firm management, rent extraction is primarily found in compensation schemes where managers are able to use their power to influence the pay-setting process. If they are powerful enough, managers will be able to increase their compensation without having to proportionally increase their performance and, consequently extract rents from the shareholders (Bebchuk and Fried 2003).

In relation to corporate governance, a CEO that has considerable power can use the board of directors as a vehicle for approving rent extracting pay schemes. Furthermore, a powerful CEO may also be able to increase rents for other executives of the firm that are not on the board of directors, this is known as the 'spill over effect'. Since CEOs are allowed to sit on the board of directors in Swedish firms, it is entirely plausible that rent extraction may occur by *both* the CEO and directors. As mentioned previously, directors are responsible for setting CEO and, through the remuneration committee, their own compensation. According to managerial power theory, a system of 'self-dealing' may occur where both parties agree to increase compensation levels without any additional performance expectations.

3.4. Tournament Theory

> *"The salary of the vice president acts not so much as motivation for the vice president as it does as motivation for the assistant vice presidents."*
>
> Edward P. Lazear[1]

[1] *Personnel Economics for Managers* by Edward P. Lazear

A 1981 article by Edward P. Lazear and Sherwin Rosen explored the relationship between personal incentives and remuneration within companies and their conclusions differ from the common belief that individual output levels are the main determinant of compensation. Instead their observations were explained using 'tournament theory', which focuses on hierarchy and ranking in a workplace and that, in some cases, different levels of compensation were the reason for stimulus among staff. Lazear and Rosen argue that the salary of the CEO can provide stimulus for lower level staff to increase their individual effort in hopes of occupy the same position (Lazear and Rosen 1981).

Javant R. Kale, Ebru Reis and Anand Venkateswaran wrote an article in 2007 also discussing the topic of tournament theory and CEO compensation. They analyzed 18,000 firm-year observations (1993-2004) and studied, among other things, if there was a positive relation between tournament incentives like the one described above and firm performance and found out that there were (Jayant et al 2007). The opposite was concluded in an Israeli study on CEO remuneration and firm performance were they found no support for either tournament theory or equity incentive models (Ang et al 1998). Another study, made by Ray Bachan, also found some support for tournament theory in the study of CEO's of UK higher education institution and the determinants of their remuneration (Bachan 2008).

Tournament theory has been applied in a number of studies on CEO compensation over the years; however, Ian Gregory-Smith adapted the theory to director compensation and observed the relationship between director promotion and their colleagues' development within the firm. Analyzing a sample of UK firms, Gregory-Smith comes to the conclusion that a director's salary increased by approximately 10% if any of their colleagues were promoted to CEO. Further findings indicated that directors who were not promoted were almost twice as likely to leave the company (Gregory-Smith 2009). Even though the above stated studies are just a sample of the total numbers of papers applying tournament theory, it is worth highlighting its importance due to its relevance not just to CEO compensation studies but in compensation studies of other areas (such as the board of directors). Still, according to Iman Anabtawi (2007), it is important to keep in mind that agency theory is the dominant theory in studies, such as ours.

4. Literature Review

In this section we present relevant prior research within the field of non-executive directors, including their effects on firm performance and the economic determinants of their compensation.

4.1. Non-Executive Directors and Firm Performance

Prior research regarding non-executive directors and firm performance has primarily focused on two distinct categories: board ownership structure and board composition. The majority of data sets used in these studies are from countries with one-tier board structures, e.g. the United States and United Kingdom. The following sections give an overview of the relatively small field of research on this topic.

4.1.1. Board Ownership Structure

Prior research in the area of board ownership has encompassed several different markets using a number of approaches, however, all focus on minimizing agency costs through alignment of incentives. As mentioned earlier, agency theory posits that incentive alignment is achieved through share ownership which will enhance firm efficiency and performance.

Using an agency theory framework, Roberto Mura researched UK firms between 1991 and 2001 in order to analyze the relationship between operating performance (proxied by Tobin's *q*[2]) and total managerial and non-executive director ownership. He found a positive correlation with a causality direction that ran from managerial ownership to firm performance. He highlighted that the type of owner can have varying effects on performance, with executive owners resulting in the most significant impact. Non-executive directors and their level of ownership were concluded to have no effect on firm performance. Similar to prior research by Baysinger et al (1985) and Dahya et al (2005), Mura concluded that the proportion of non-executive directors had a positive

[2] Tobin's q is defined as the ration of market value of a firm's assets to the replacement cost. Perfect et al. conducted an excellent study in 1994 that empirically compares different constructions of Tobin's q.

effect on company performance. In the 1980's Randall Morck continued researched the field of management ownership using a cross-section of 371 firms listed on the Fortune 500. The study focused on the effect of executive ownership and the direct influence on the market value of the firm calculated by Tobin's Q. Morck found a relationship between the two and aligned with Mura's argument that the improvements in performance derived from a reduced agency effect with increased ownership. These results have been supported even in modern research by Baghat in 2001, who found results from an OLS regression that share ownership by outside directors were positively related to enhanced firm performance.

4.1.2. Board Composition

Research into board composition of firms mainly focuses on the proportion of executive and non-executive members (also referred to as 'inside' and 'outside' directors) on the board and the overall effect on firm performance. It should be mentioned that there exists a variety of different methods for evaluating firm performance, such as those related to accounting measurements and share-earnings. Besides using these types of measures, a number of past research use Tobin's *q* for estimating firm performance.

Results regarding the proportion of non-executive directors and their effect on fiscal performance have been mixed. A study from Baysinger *et al.* (1985) reports a positive correlation between an increase in the proportion of independent directors in US firms in 1970 and their respective industry-adjusted return on equity in 1980. During the 1990s, the *Cadbury Report* was introduced in the UK that called for at least three outside directors for publicly traded corporations. Dahya *et al.* (2005) studied board composition during this period of legislative change and reported an improvement in the operating performance of firms who complied with the *Cadbury Report*. Using data from 1985-1995 of 934 publicly listed US firms; Bhagat *et al.* (2002) report a reasonably strong inverse relationship between firm performance and the proportion of non-executive board members. Studies by Yermack (1996) and Agrawal *et al.* (1996) also report a negative correlation between the proportion of non-executive members of the board and a number of measures of firm performance, such as Tobin's *q* and sales/assets. Furthermore, Bhagat *et al.* also confirm research from an earlier study by

Hermalin *et al.* (1988) and find that companies tend to increase their proportion of independent board members subsequent to a period of poor performance.

The majority of literature on the effects of board composition on firm performance has failed to find any significant correlation in a US setting (MacAvoy *et al,* 1983; Hermalin *et al,* 1988; and Ferris *et al,* 2002). This has also been the case in studies from other countries with Anglo-Saxon board structures, such as in Australia (Lawerence *et al,* 1999) and Singapore (Mak *et al,* 2001). The reason for such mixed results on the subject could be due to an endogenous relationship between firm performance and board composition. As noted above, studies by Bhagat *et al.* and Hermalin *et al.* have pointed towards firm performance having an effect on future board composition.

4.2. Economic Determinants of Compensation

Studies regarding the economic determinants of non-executive compensation are relatively few in number and primarily use data from countries with one-tier board structures (e.g. Bryan *et al,* 2000; Hahn and Lasfer 2010). However, there are notable exceptions of studies of firms that utilize a two-tier board structure (e.g. Elston *et al,* 2003; Schmid 1997). Andreas *et al.* (2009) have compiled an excellent summary of the majority (20) of prior studies on economic determinants of directors' compensation, including both one-tier and two-tier board structures. The studies are divided into two categories based on the subject of the study, either *Determinants of Total Director Compensation* or *Determinants of Performance-based/Incentive Pay*. Provided in the summary are the specifics of firm data (country, time period, number of observations, regression method) and the economic determinants used as explanatory variables (including specific industry and period dummies).

Economic determinants of non-executive compensation are grouped into three broad categories: *Corporate Characteristics*, *Corporate Performance,* and *Governance Structure* (Andreas *et al,* 2009). The previous categories are adopted from research on studies of executive compensation by Barkera and Gomez-Mejia (1998).

4.2.1. Corporate Characteristics

Characteristics of a firm, such a size or leverage, can have a significant impact on the compensation of directors. For example, a higher amount of management discretion is a byproduct of larger firm size and successful monitoring by directors requires increased incentives (Jensen and Meckling, 1976). The majority of prior literature indicates that firm size (usually proxied by the natural logarithm of firm assets) has a positive effect on directors' compensation levels (e.g. Ryan *et al,* 2004; Andreas *et al,* 2009; Brick *et al,* 2004). Only research by Bryan *et al.* 2004 has found firm size to have a negative (and statistically significant) effect on compensation. Furthermore, firms' investment opportunities have also shown to have a positive effect on directors' compensation as well (e.g. Bryan *et al,* 2000; Ryan *et al,* 2004; Fich *et al,* 2005). Similar to performance measures, investment opportunities of a firm can be measured in a number of ways such as market-to-book ratio or research and development expenditures (Bryan *et al,* 2000). Other characteristics that have been tested in prior research include firm leverage (Bryan *et al,* 2000; Cordeiro *et al,* 2000), free cash flows (Bryan *et al,* 2000), growth opportunities (Cordeiro *et al,* 2000), Risk (Adams, 2003), and Diversification (Bryan *et al,* 2000).

4.2.2. Corporate Performance

Past studies of pay-performance sensitivity have revealed that there is a significant link between measures of firm performance and non-executive compensation. Measures of performance can be related either to accounting performance (e.g. Tobin's *q,* Return on Assets, Return on Shares) or capital market performance (e.g. Total Shareholder Return, Market Adjusted Return). With regards to accounting performance measures, past studies have found a mixture of positive (e.g. Schmid, 1997; Brick *et al,* 2006), inconclusive (Farell *et al,* 2008), and negative (Ryan *et al,* 2004) correlation towards director compensation. As Andreas *et al.* (2009) notes, a stronger link between accounting measures and compensation is found in countries where stock-option incentives are not as prevalent (e.g. Germany). Results from the US have found that capital market performance has a significant positive effect on director compensation (e.g. Yermack, 2004; Bryan *et al,* 2000, Brick *et al,* 2006), indicating incentive alignment between directors and shareholders.

4.2.3. Governance Structure

Governance Structure determinants tested in prior research fall under two broad categories: ownership characteristics and board characteristics (Andreas *et al,* 2009). The majority of ownership characteristics of *Governance Structure* that have been tested concern levels of ownership in the firm by management, directors, and outside shareholders. Examples of variables included in prior research are managerial ownership (Bryan *et al*, 2000), shareholder concentration (Knoll *et al,* 1997), and institutional investors (Fich *et al,* 2005). Results from past research has lead to competing observations regarding ownership structure, with empirical evidence suggesting that compensation is used as a substitute to other corporate governance methods (Falenbrach 2009) and, conversely, other evidence indicating that compensation compliments governance strength (Hartzell and Starks 2003).

Characteristics of board members that have been researched previously include effort, independence, and busyness. Empirical evidence shows that shareholders' associate incentives with the effort[3] of directors (Brick *et al,* 2006; Bryan *et al,* 2000). Furthermore, studies have also found a negative relationship between director busyness[4] and corporate performance (Oehmich *et al,* 2009) and that compensation-based incentives can act as a way to counteract this effect (Boyd 1996). Recent changes in corporate governance practices have contributed to an increase in the amount of research into board members' independence. Results regarding board independence and compensation, however, have been mixed with positive and negative correlation having been found (e.g. Hahn, 2006; Bryan *et al,* 2000).

[3] Effort is proxied by the number of board meetings

[4] Busyness is proxied by the number of other positions that a director has on other boards, executive management, etc.

5. Methodology

This section will describe our research approach, including our methods for collecting data and theoretical motivations for each of our hypothesized determinants of director compensation. We also describe our econometric model in detail.

Research approach

Based on what is known from prior research, we have set up different hypotheses for our variables. This approach is called a deductive approach, a method were what is known becomes a hypothesis that will be subjected to empirical scrutiny by a researcher to see if the hypothesis will hold (Bryman and Bell 2003). We test our hypotheses through a multiple regression analysis based on quantitative data collected from different sources (Reuters Datastream, Worldscope, SIS Ownership Data Corp. database and Annual reports). Finally, we compare our empirical results to our hypotheses to see if they could be accepted or not in Section 6.

5.1. Data

Our sample consists of firms currently listed on the Nasdaq OMX Stockholm 30 exchange over a five-year period[5]. According to the Nasdaq OMX website, the index is composed of the 30 most actively traded stocks on the Stockholm Stock Exchange (SSE) and its constituents are revised bi-annually (Nasdaq OMX, 2010). Due recent changes in Swedish accounting standards, the five-years observed are 2005 to 2009[6]. For consistency, only each firm's ordinary shares were considered and, as a result, our sample was reduced to 29 firms due to dual-share listings[7]. Unlike other publications, we have included financial and foreign-based firms since their governance structure is similar to other firms in the sample and by removing them we would lessen the sample size by considerable amount. None of the firms in the sample lacked full year data and thus, we are able to obtain balanced panel data on 29 individual firm observations.

[5] We are aware that a number of firms (Boliden, SSAB, Getinge, and Modern Times Group) were not listed on the OMX Stockholm 30 exchange during the entire period of our sample, however they were listed on the SSE and were included in order to control for the firms' individual governance practices. The full list of firms included in our sample can be found in the appendix section in table 1.

[6] Publicly Listed Firms in Sweden were required to report financials according to IFRS beginning in 2005. Therefore, comparing data would require manual reconciliation or an older data period (e.g. 1999-2004).

[7] Both share types of Atlas Copco are listed on the OMX Stockholm 30 (ticker symbol: ATCO A, ATCO B) .

The collection of firm data varied according to type and availability. Comprehensive data on director compensation, governance, and board characteristics in Sweden is not as readily available in database format as in Anglo-Saxon countries such as the US or UK. The majority of director compensation and firm ownership data was collected from SIS Ownership Data Corp, in the form of their annual publications and online database[8]. Data regarding CEO compensation and board characteristics (e.g. number of board meetings, board members, etc) was collected manually from annual reports and firm websites. Finally, financial data was collected using Reuters Datastream and Worldscope. Missing data for firm observations were calculated manually in a consistent fashion of the database where the majority of the data was originally retrieved. AstraZeneca, ABB and Nokia present their Annual Reports in foreign currency (GBP, CHF and EUR). To present all monetary data in SEK we have converted all concerned data with the conversion rates for each currency from December 31st each year.

5.2. Dependent Variables

In order to evaluate the determinants of director[9] compensation, we have divided remuneration data collected into three categories: Total Compensation, Average Director Compensation, and Chairman Compensation. Total compensation consists of the total remuneration paid to directors during the year, including fees paid to directors fulfilling additional committee roles. The majority of firms in the sample use cash as the basis for remuneration, however four firms in the sample[10] implement a mixture of cash and stock grants. The value of stock grants are individually calculated into their cash value by the firm and are included in their respective annual reports. Similar to other studies on director compensation (e.g. Andreas, 2008; Hahn, 2006), we calculate average director compensation by dividing the total compensation paid to the board divided by the number of paid members (including the chairman). Although the CEO is included in the board of the directors in a number of firms, they are not compensated for this role and therefore not included in our calculation for average director

[8] SIS Ownership Data Corp. annually publishes the following reports: Directors and Auditors in Swedish Public Listed Companies (Sundin and Sunqvist), Owners and Power in Swedish Public Listed Companies (Sundin and Sundqvist)

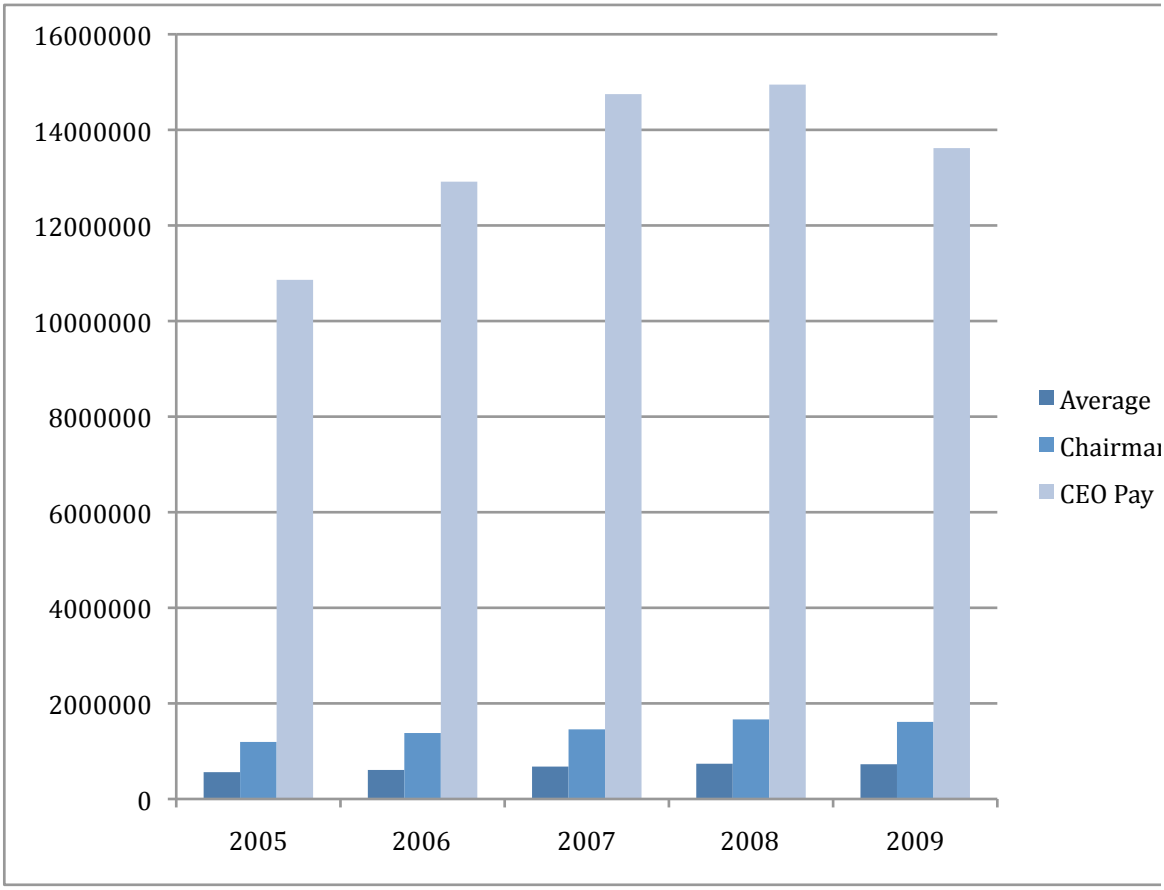
[9] Note to the reader: Since directors in Swedish companies are considered non-executive, we do not feel a need to distinguish between non-executive directors and directors of Swedish companies from here forward.

[10] Investor, ABB, Electrolux, and Ericsson

compensation. Since the chairman of the board is responsible for a number of additional duties and their compensation is a considerable percentage of total remuneration (approx. 29%), we have collected data on the individual remuneration for each chairman of the board of the firms included in the sample. To adjust for skewness in the data, we have used the logarithmic scale for each variable in the regression analysis.

Chart 1:

Comparative Compensation Levels between CEO, Chairman, and Average Director (SEK)



Descriptive statistics for director compensation variables are presented below. The table is divided into three panels: Average Director Compensation (including the chairman), Chairman Compensation, and Total Compensation.

Table A:

Descriptive Statistics of Compensation (SEK)

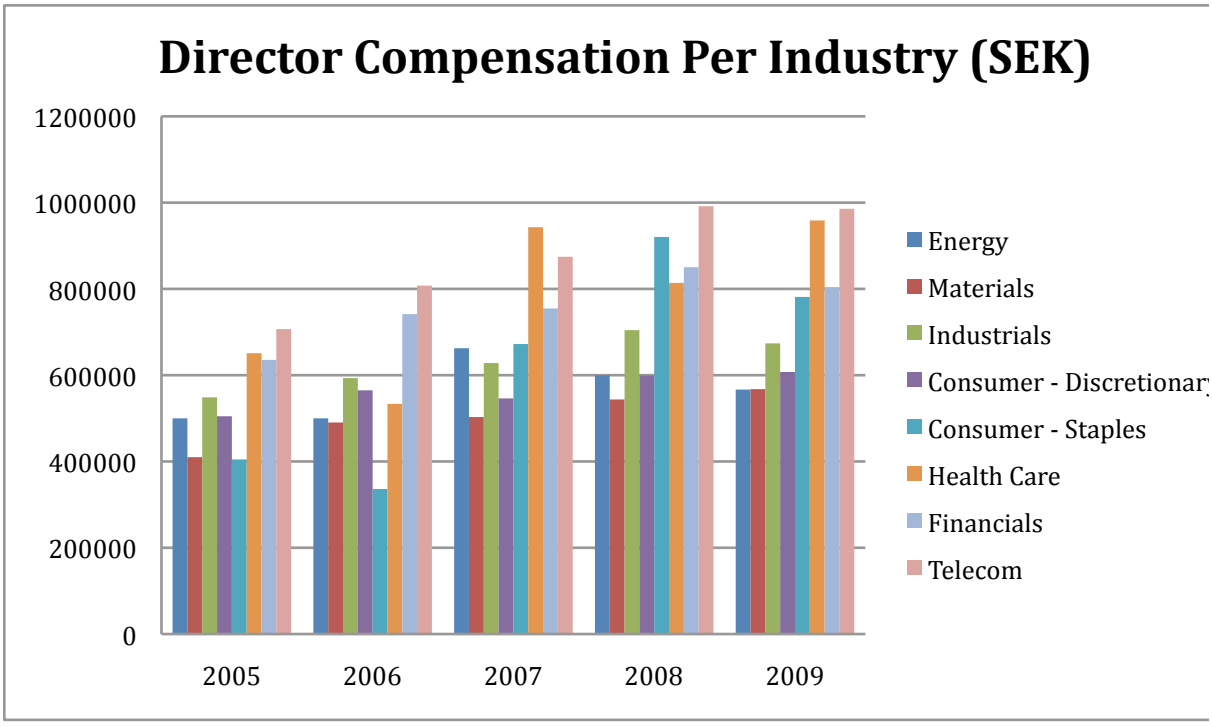
Variable	2005	2006	2007	2008	2009	CAGR[11]
Average Compensation (SEK)						
Mean	627,700	670,890	760,414	825,455	821,848	
Mean Growth Rate	-	6.9%	13.3%	8.6%	-.004%	**5.5%**
Median	500,000	545,714	603,571	646,904	640,625	
Median Growth Rate	-	9.1%	10.6%	7.0%	-.008%	**5.1%**
Total Compensation (SEK)						
Mean	5,214,104	5,607,486	6,364,424	6,944,261	6,906,217	
Mean Growth Rate		7.5%	13.5%	9.9%	-.005%	**5.2%**
Median	4,153,000	4,275,000	4,877,320	5,420,000	5,425,000	
Median Growth Rate		2.9%	14.1%	11.1%	~0%	**6.7%**
Chairman Compensation (SEK)						
Mean	1,507,002	1,715,410	1,731,059	1,981,821	1,942,627	
Mean Growth Rate		13.8%	1%	14.5%	-2%	**5.2%**
Median	1,050,000	1,225,000	1,025,000	1,450,000	1,450,000	
Median Growth Rate		16.7%	-16.3%	41.5%	0%	**6.7%**

Based on the data, the average compensation per director has grown 5.5% since 2005, ranging from 627,700 SEK (€60,874[6]) to 821,848 SEK (€79,703[12]) in 2009. Compensation increased most from 2006 to 2007 at 13.3% and was nearly stagnant (-.004%) from 2008 to 2009, which corresponds to the global economic downturn during those years.

[11] Compound Annual Growth Rate = (2009 Value / 2005 Value) ^ (1/# of Years) * 100

[12] Based on December 31st, 2009 exchange rate (1 SEK = € .096980)

Chart 2:
Comparison of Average Director Compensation across Industry[13] (SEK)



5.3. Hypothesized Determinants

The following section presents our hypothesized determinants of director compensation along with our hypothesized effect (positive, negative, no effect) of each determinant.

5.3.1. Corporate Characteristics

The majority of studies on non-executive director remuneration have found a significant, and positive, link between company size and compensation, regardless of geographical location (e.g. Andreas, 2008; Brick, 2006; Yermack, 2004; Bryan, 2000). Similar to previous studies, we measure company *Size* as the natural logarithm of total assets for each year. On average, larger firms have more complex operations that require directors to dedicate increased effort in order to monitor effectively (Demsetz and Lehn, 1985). We expect firm size to have a positive effect on director remuneration.

As a proxy of firms' perceived *Investment Opportunities* (i.e. growth), we include each firm's market-to-book value per share at year-end. Prior research from Anglo-Saxon

[13] Industry Categories according to Nasdaq OMX index

markets have found *Investment Opportunities* to have a significant positive effect on director compensation (Cordeiro et al, 2005; Ryan et al, 2004; Farrell et al, 2008), due to the fact that larger companies with more investment opportunities are more costly to monitor and require increased director compensation (Yermack 1995). Results from German data (Andreas, 2009), however, find a negative, yet insignificant link between investment opportunities and director compensation most likely due to less performance-based director remuneration in a two-tier setting. Therefore, we expect *Investment Opportunities* to have a negative effect on director compensation since the majority of director remuneration is fixed in Sweden. We also use the volatility of each firms' stock prices throughout the year as a proxy for *Risk.* Stock price volatility is measured as a stock's average annual price movement to a high and low from a mean price for each year (Worldscope 2003). Andreas' study (2009) on German firms also used the same variable and found a positive but insignificant effect on director's compensation. The results could show that firms, especially large ones, with high risk are the ones with greatest demands on their directors, which calls for larger compensation. We also predict a positive sensitivity to *Risk* because of our sample data consisting only of Large Cap firms in a market with similar governance structure as tested in Andreas (2009).

5.3.2. Corporate Performance

As mentioned previously, the majority of prior research on director compensation has attempted to establish a link with corporate performance, be it either accounting or capital market performance. In line with prior studies, we use return on assets (*ROA)*[14] as proxy for accounting performance. Although capital market performance measures have been used in studies of pecuniary remuneration, we have included Total Shareholder Return (*TSR*[15]*)* since four firms included in the sample pay their directors a percentage of stock grants and many directors of Swedish firms hold a small amount of shares in their respective firms. Since Director compensation levels are determined at the annual meeting (usually held within six months after the previous fiscal year-end), we have decided to lag both performance measures by one year. Therefore, ROA and

[14] ROA is calculated as year-end Net Income divided by Total Assets.

[15] TSR = $\frac{\text{Change in Share Price Return + Dividends}}{\text{Beginning Share Price}}$

TSR reflect years 2004 to 2008 for each company[16]. We expect both *ROA* and *TSR* to have a positive effect on director compensation, as supported by optimal contracting theory.

5.3.3. Ownership Structure

Prior studies of firm ownership in Sweden have found that ownership is highly concentrated and that firms usually have a "clearly indentified controlling owner". Although slightly outdated, a study of the 304 companies listed on the Stockholm Stock Exchange (SSE) by Agnblad et al. (2001) reveal the that the largest shareholder controlled, on average, 37% of voting rights and that the second largest owner controlled 11.2%. Conversely, their research shows that ownership and control in Swedish are strongly separated due the presence of dual-class shares in a number of firms, which more closely aligns with ownership structure theory as proposed by Demsetz (1983) and as seen in Anglo-Saxon markets. To observe for ownership effects on director remuneration, we have included data on the shareholder with the largest number of voting power for each firm. The variable itself, *Voting-Power,* is presented in percentage form of the voting rights for each firm over the sample period as reported by SIS Ownership Data Corp. and we make no differentiation between block holders and institutional investors. The largest shareholder of each firm in our sample, on average, controlled, 29% of the voting-rights for the five-year period (Table B), 8% less than previously determined by Agnblad et al (2001). We have included an ownership concentration variable that is in-line with previous research of director remuneration in Continental Europe (Andreas, 2009; Schmid, 1997; Elston et al, 2003) due to the similarity of ownership concentration levels with that of Sweden. Research has shown that the free-rider problem can be controlled by the presence of a large minority shareholder (Shleifer and Vishny 1987). We hypothesize that, as supported by agency theory and prior research, the percentage of voting-power held by a single shareholder will have a substitution (i.e. negative) effect on director remuneration due to a lower level of monitoring and advisory necessary by directors.

[16] ROA for firm year 2004 was handpicked from firms' annual reports due to WorldScope producing Net Income and Total Assets according to Swedish GAAP.

5.3.4. Board Structure

Characteristics of boards can have a direct effect on director productivity (Smith and Watts 1992) and therefore, we hypothesize that these aspects may have an effect on director compensation. Unlike remuneration policies for directors in other countries (e.g. France and Germany), compensation of directors included in our sample is not explicitly linked to the number of board meetings attended. However, we have included a variable for *Effort* (measured as the number of board meetings during the year) to observe if it is equivocally linked to director compensation in Sweden. Prior studies have found a relationship between director busyness and compensation (Andreas 2009; Ferris et al. 2003) and therefore we have included a dummy variable that measures director *Busyness*. Firms receive a one (1) if 50% of directors hold a minimum of three additional directorships at other companies (either domestic or foreign).

In a study of Swedish and Norwegian board composition, Oxelheim and Randøy (2003) find that companies with Anglo-American outside board members exhibit significantly higher firm value. In follow-up research, Oxelheim and Randøy (2005) also find higher levels of CEO compensation in firms that are exposed to Anglo-American influence. Therefore, we include a dummy variable for Anglo-American members on the board of directors in our model. A firm receive a one (1) for the year if one or more directors are from the US, UK, or Canada. We expect *Anglo-American* directors to have a positive effect on director compensation.

As mentioned previously, a number of firms have implemented a mixture of stock grants and cash remuneration for their directors. Since cash-based compensation is still the leading method of remuneration for directors in Sweden (96% of all firms listed on the SSE), share-based remuneration is a shift away from common practice. Researchers have argued that share-based remuneration is a way of mitigating agency problems by aligning director compensation with shareholder interest (Jensen and Meckling, 1976) However, incentive compensation schemes have come under their fair share of criticism with the argument centered on the amount of compensation and implications of self-dealing between those who set compensation and those who receive it. Core and Guay (2000) found that share-based compensation is something that is more often used by

firms with financial constraints than without, due to the possibility of compensating directors without spending cash and thus, enhancing firm liquidity.

The structure of Swedish boards offers us a unique opportunity to observe the relationship between CEO and Director remuneration. In a study of Australia CEO compensation, Evans (2002) found the non-executive remuneration has a significant impact upon the determination of CEO compensation however failed to find evidence that director characteristics (number of non-executive directors, degree of independence, and participation) has an effect on CEO compensation. Since the CEO is present on the board in a majority of the firms included in our sample (69% of all firm year observations), we introduce two variables in our study in order to observe the relationship between CEO and director remuneration. The first variable is a simple dummy variable (1,0) that indicates if the CEO was included in the board of the directors for each year. Firms where the CEO is present on the board of directors receive a one (1) for that particular year. Furthermore, we also include *CEO compensation* for the year, which is calculated as the logarithmic scale of total compensation consisting of fixed and variable salary and includes value of short-term and long-term stock options granted. Depending on the different theories discussed in our theoretical framework, we can expect varying results on the effect of CEO remuneration on director compensation. Following agency theory, one would expect CEO remuneration to have either a negative or no correlation with director remuneration. Conversely, CEO remuneration would have a positive effect on director compensation according to managerial power theory.

Table B:
Descriptive Statistics of Hypothesized Independent Variables

Variable	Mean	St.Dev.	25th Perc.	Median	75th Perc.	VIF
Corporate Characteristics						
Size (ln)	18.108	1.579	16.971	17.730	18.901	3.390
Investment Opportunities	3.632	5.378	1.653	2.350	3.818	1.933
Risk	27.4896	7.7914	22.32	33.21	24.94	1.861
Corporate Performance						
TSR	0.1325	0.4141	-0.1509	0.1838	0.3333	1.237
ROA	10.025	10.233	3.576	8.713	13.473	2.972
Ownership Structure						
Voting-Power	0.286	0.174	0.196	0.227	0.373	1.604
Board Characteristics						
Effort	9.772	3.601	7	9	11	1.765
Busyness (1,0)	0.945	0.229	1	1	1	1.188
CEO on Board (1,0)	0.703	0.458	0	1	1	1.333
CEO Compensation	13.398	0.174	0.196	0.227	0.373	1.489
Share-Based Rem.	0.117	0.323	0	0	0	1.233
Anglo-American (1,0)	0.566	0.497	1	1	1	1.510

The preceding table presents all independent variables included in our regression. We have included variance inflation factors (VIF) to determine if any of the variables suffer from collinearity. The results show that the VIF of all variables can be rejected below the conventional levels (VIF < 5). The tables reveals that the average size (as measured by total assets) of the firms included in our sample is 73,148,340 SEK and that, on average, one shareholder controls nearly 30% of the voting rights in each firm. Variables included in Board Characteristics reveal that the average number of board meetings for firms over the five-year period was roughly 9.8 and that the CEO presence on the board of directors in 70% of the observations. Furthermore, nearly 90% of boards were considered busy and over half (~57%) of the boards had at least one director from an Anglo-American background.

The following table presents our hypothesized effects of each determinant on director compensation:

Table C:
Determinant Descriptions and Hypothesized Effect on Compensation

Variable	Description	Hypothesized Effect	Supporting Theory	Source of Data
Corporate Characteristics				
Size (ln)	Total Assets	Positive	Agency Theory	WorldScope
Investment Opportunities	Market-to-Book Value	Negative	Agency Theory	WorldScope
Risk	Volatility of Stock Price – Previous 12 months	Positive	Agency Theory	Worldscope
Corporate Performance				
ROA	Return on Assets	Positive	Agency Theory, Optimal Contracting	Worldscope, Annual Reports
TSR	Annual change in shareholder return	Positive	Agency Theory, Optimal Contracting	Worldscope
Ownership Structure				
Voting-Power	Largest % of voting-power by a single shareholder	Negative	Agency Theory	SIS Ownership Co., Annual Reports
Board Characteristics				
Effort	Number of Board meetings	Positive	Agency Theory,	Annual Reports
Busyness (1,0)	Dummy: 50% or more of directors hold > 3 other directorships	Negative	Agency Theory,	Annual Reports
CEO on Board (1,0)	Dummy: CEO on Board	Positive/Negative	Managerial Power, Agency Theory	Annual Reports
CEO Compensation (ln)	CEO Compensation (Fixed, Variable, Shares-Based)	Positive/Negative	Managerial Power, Agency Theory	Annual Reports
Share-Based Remuneration (1,0)	Dummy: Directors paid in mix of cash and shares	Positive	Agency Theory	Annual Reports
Anglo-American (1,0)	Dummy: 1 or more directors from US, UK, or Canada	Positive	Signaling Effect, Internationalization	SIS Ownership Co., Annual Reports

5.4. Econometric Model

In order to test our hypothesized determinants of director compensation, we follow prior research (e.g. Andreas 2009, Hahn 2006, Bryan 2000) and utilize an ordinary (panel) least squares (OLS) model. As mentioned previously, we employ panel data due to the fact that our sample contains cross-sectional data (i.e. specific firms) over a period of time. The pooled OLS method is not an efficient procedure because it assumes that the relationships between the variables are constant over time and cross-sectional units

(Brooks, 2009). Thus, we would not be able to control for unobservable heterogeneity between firms that can have an effect on director compensation such as the contracting environment (Brick et al. 2006).

There are two different methods that can be employed in order to control for firm heterogeneity using panel data: a Fixed-Effects Model or Random-Effects Model. According to Brooks (2009), a fixed-effects model allows the intercept to vary cross-sectionally and over time however the slope of the estimates remain fixed. A random-effects model also allows for different intercepts cross-sectionally, however these intercepts "arise from a common intercept α plus a random variable that varies cross-sectionally but is constant over time" (Brooks 2009). Literature on deciding which particular method to use suggests that the fixed-effect model is appropriate when the cross-section entities constitute the entire population of a particular group (Brooks 2009). Although our sample consists of the entire population of the OMX Stockholm 30 exchange, it is necessary to use the Hausman-Taylor test to aid in our selection of a model since companies listed on the OMX Stockholm 30 are also a part the larger pool of listed companies in Sweden, the SSE. Results of a Hausman-Taylor test confirm our earlier assumption about our sample and indicate that differences in coefficients are systematic, thus the random effects model is not appropriate (Brooks 2009).

Although the use of a random-effect model has been rejected, it does not indicate the precise combination of fixed-effects (cross-section, period, cross-section and period, or none) that are to be included in our model. In order to determine which fixed-effects to use, we conduct a Likelihood Ratio Test to determine any redundant fixed-effects and find that a model using period fixed-effects and a model without any fixed-effects are not qualitatively different. Thus, this leads us to believe that model with cross-section fixed effects is to be utilized. Three types of redundant fixed-effects tests verify our observation and indicate that that the pooled OLS method cannot be employed. Therefore, we estimate the following cross-section fixed effects model for determining director compensation:

$$\textbf{COMPENSATION}_{it} = \alpha + \beta_1 SIZE_{it} + \beta_2 INVEST_{it} + \beta_3 RISK_{it} + \beta_4 ROA_{it} + \beta_5 TSR_{it} + \beta_6 OWNERSHIP_{it} + \beta_7 BUSY_{it} + \beta_8 EFFORT_{it} + \beta_9 AA_{it} + \beta_{10} CEOCOMPENSATION_{it} + \beta_{11} CEOBOARD_{it} + \beta_{12} SHAREBASED_{it} + \mu_i + \upsilon_{it}$$

Where i = 1,… N for each cross-section (firm), t = 1,…T for each time period (2005-2009), α is the intercept, μ_i is an individual cross-section effect, and υ_{it} as the 'remainder disturbance' that varies both over time and cross-sections (Brooks 2009). As stated earlier, $COMPENSATION_{it}$, $\beta_1 SIZE_{it}$, and $\beta_{10} CEOCOMPENSATION_{it}$ are included as the natural logarithms of their respective measures in order to adjust for skewness in the data. $BUSY_{it}$, $EFFORT_{it}$, AA_{it}, $CEOBOARD_{it}$, and $SHAREBASED_{it}$ are all (1,0) variables to control for certain board characteristics.

There are several assumptions that the OLS model relies on in order for the hypothesis tests regarding the coefficient estimates to be validly conducted (Brooks 2009). We have attempted to control specifically for multicollinearity, autocorrelation, heteroscedacticity, and normality in our statistical model using a variety of techniques. We have tested for multicollinearity in our sample data through calculation of the variance inflation factor (VIF) for each independent variable. As presented in Table B the VIFs for each variable are under five (5) and therefore we can conclude that multicollinearity does not exist with our sample data (Brooks 2009). Results from the Durbin-Watson statistic indicate that our regression does not suffer from autocorrelation.

Due to the use of panel data, we were unable to specifically test for heteroscedacticity in the sample with the statistical software package that was used. Therefore, we conducted White's heteroscedacticity test on a pooled OLS regression of our sample data and the results indicated that heteroscedacticity was present in the model. Therefore, we attempt to account for this by including White's robust standard errors in our cross-sectional fixed effects model. Evidence of non-normality was also found in the model distribution through a Bera-Jarque test, however there is not a general consensus on correcting for this phenomenon (Brooks 2009). Through the removal of outliers (two in total) using dummy variables, we increase the chances of error normality well above

acceptable levels. However, arguments against this practice state that removing outliers is a case of artificially improving the model (Brooks 2009). As stated previously, we are unable to add more observations since our sample consist of the entire population of the OMX Stockholm 30. Due to this fact, we have chosen not to include outlier dummy variables in our regression since we see no statistical or theoretical need to do so (Brooks 2009).

In addition to analyzing average director compensation, we also have chosen to explore chairman compensation in an effort to observe any differences in sensitivity to our hypothesized determinants. By analyzing the results, we will be able to observe if tournament theory applies to chairman compensation. Panel data was constructed in the same method as that of director compensation and a cross-sectional fixed-effects OLS model was deemed appropriate using a Hausman-Taylor test. Furthermore, heteroscedacticity and non-normality is also present in the sample and has been controlled for using the same techniques as mentioned previously. An estimate of the model is as follows:

$$\textbf{CHAIRMAN COMPENSATION}_{it} = \alpha + \beta_1 SIZE_{it} + \beta_2 INVEST_{it} + \beta_3 RISK_{it} + \beta_4 ROA_{it} + \beta_5 TSR_{it} + \beta_6 OWNERSHIP_{it} + \beta_7 BUSY_{it} + \beta_8 EFFORT_{it} + \beta_9 AA_{it} + \beta_{10} CEOCOMPENSATION_{it} + \beta_{11} CEOBOARD_{it} + \beta_{12} SHAREBASED_{it} + \mu_i + \upsilon_{it}$$

6. Empirical Results

This section includes our empirical results; an evaluation of how each hypothesized determinant affects director remuneration and with what significance. The variable results are presented in a summary table (including coefficient, significance level and T-statistics) followed by a more evaluating text.

This table below presents our analysis of determinants of both average director compensation and chairman compensation. For each dependent variable, the natural logarithm of compensation is used. In both models we control for unobserved heterogeneity using firm fixed effects. T-statistics are presented below the coefficient of each variable. Definitions of each variable are provided in Table 3. Statistical significance at the 10%, 5%, and 1% is denoted by *, **, and ***, respectively. The results of our regression are discussed according the category of determinants used.

Table D:
OLS Panel Data with Firm Fixed Effects Regression Results

Dependent Variable	**Average Compensation per Director (ln)**	**Chairman Compensation (ln)**
Corporate Characteristics		
Size (ln)	0.2025*** (2.77)	0.2790*** (3.15)
Investment Opportunities	0.0132*** (3.97)	0.0156*** (3.36)
Risk	0.0001 (0.02)	0.0055 (1.23)
Corporate Performance		
Capital Market Performance		
Total Shareholder Return (TSR)	-0.0627 (-1.48)	-0.0293 (-0.80)
Accounting Performance		
Return on Assets (ROA)	0.0011 (0.63)	-0.0015 (-0.60)
Ownership Structure		
Ownership Percentage (% Voting-Power)	-0.8381*** (-6.27)	-0.8808*** (-5.71)
Board Characteristics		
Effort (# of meetings)	0.0051 (1.20)	0.0026 (0.36)
Busyness (1,0)	0.1048* (1.68)	0.0819*** (1.50)
CEO Compensation (ln)	0.1058*** (2.81)	0.1229*** (2.77)
CEO on the Board (1,0)	0.0800** (2.44)	0.0380 (1.18)
Share-based Remuneration (1,0)	0.1165 (1.42)	0.1064 (1.46)
Anglo-American Directors (1,0)	0.2898*** (14.96)	0.1659*** (18.30)
Cross-Section Fixed Effects	Yes	Yes
Period Fixed Effects	No	No
White's Standard Errors	Yes	Yes
R-Squared	.45	.40
Observations	145	145
Cross-Sections	29	29

Results of our statistical regressions are discussed in the following section, which is divided according to determinant categories. Unless otherwise noted, theoretical discussion applies to both average director and chairman compensation. This is due to

the fact that chairman compensation is included in calculation of average compensation and that regression results for both variables are decidedly similar. A ' * ' denotes information specific to chairman compensation.

6.1. Corporate Characteristics

Our results indicate that corporate characteristics have an effect on director compensation. Corresponding with the majority of previous research, our sample data indicates that firm size has a significant and positive effect on director compensation in Sweden. The coefficient of *size* denotes that director compensation will increase by .20 (.27*) when total assets of the firm double. In comparison to studies of single and two-tier board structures, we find that our results are relatively the same however more closely aligned with research of two-tiered boards (e.g. Andreas 2009, Edward et al 2009). The positive link between firm size and director ownership supports the theory that larger firms require increased incentives for successful monitoring (Jensen and Meckling, 1976).

Similar results are shown for *Investment Opportunity*, which is based on market-to-book value per share at year-end. The results show a small positive relation with a high significance (at the 1% level). This is contradicting to our hypothesis that Investment Opportunities should have a negative effect on director's compensation due to the fixed remuneration structure on the Swedish market. It also goes against Andreas' (2009) study of German firms that showed a negative relationship. The positive sensitivity of compensation to *Investment Opportunity* would suggest that directors in firms with higher growth potential are compensated at increased levels. Although our results align with the Anglo-Saxon studies that found a positive and significant effect on director's compensation (Cordeiro et al, 2005; Ryan et al, 2004; Farrell et al, 2008), it is important to highlight the small relationship with a coefficient of only 0.01312 (0.0157*).

Risk is a variable that prior studies also used as a variable when analyzing directors compensation (Andreas 2009), but without being able to establish any significance in the results. Similar to their results, we also find a minimal positive effect that is statistically insignificant. Therefore, we infer that our results derive from chance and broad conclusions cannot be made.

6.2. Corporate Performance

In opposition to our hypothesis, our regression results show that measures of accounting and capital market performance (as proxied by *ROA* and *TSR)* do not have any significant effect on director compensation. As mentioned previously, both of these variables have been lagged by one fiscal year in order to observe any performance-based relationship on director compensation. Although no statistical significant results were shown, we are able to infer that director compensation is possibly determined according to some unobserved or unreported methods that are specific to each individual firm (i.e. a pay scheme that is developed based on specific and, most likely, private firm measures). Following agency and optimal contracting theory, one would believe that corporate performance measures would have a positive affect on compensation due to the alignment with shareholder interests. Therefore, the results also lead us to conjecture that Swedish directors are perhaps paid strictly for their role as monitors (Hahn, 2006) and not as agents for maximizing shareholder return.

6.3. Ownership Structure

Inline with our hypothesis, our results indicate that director compensation is significantly affected by increases in voting concentration. The negative coefficient of *Voting Concentration* provides support for the substitution hypothesis and that director compensation acts as a replacement for other corporate governance mechanisms. From our results, we can infer that the costs of monitoring and mitigating agency problems, as proxied by directors' compensation, increase as voting-power becomes more diffused in firms listed on the OMX Stockholm 30. Comparing between average director and chairman compensation, we find that *Voting Concentration* has a greater negative effect on chairman compensation. Moreover, the results reveal that the influence of *Voting Concentration* on director compensation is significantly larger than other determinants included in the regression.

6.4. Board Characteristics

Based on our results, we were unable to find statistical evidence regarding *Effort,* as proxied by the number of board meetings per firm. Unlike compensation practices in other countries, directors sampled in our study were not paid per meeting attended. This could be seen as a possible explanation for the non-result of *Effort.* Contrary to our hypothesis, the coefficient of *Busyness* was found to have a positive relationship to

director compensation at the 10% signficance level. These results are interesting since previous research found a significant negative relationship between board *Busyness* and director compensation, suggesting that holding more directorships may incapacitate directors' monitoring ability (Andreas 2009, Fich and Shivdasani 2006). Only one prior study that we came across (Boyd 1996), which studied US non-executive compensation, observed *Busyness* to have a positive relationship to compensation. Taking our evidence into account, it is apparent that Swedish boards do not face coordination problems that would have a negative effect on their compensation. As Ferrarini et al (2009) posit, the positive relationship between *Busyness* and director compensation could signal collusion with executive management. However, substation for these claims is difficult to based off our results.

Complimenting prior research by Randøy and Oxelheim (2003, 2005), we find significant evidence (at the 1% level) for increased director compensation when a board contains at least one Anglo-American member. Our results show that director compensation increases .29 (.16*) when an Anglo-American occupies a seat on the board. We posit that Anglo-American directors can influence board compensation in a number of different ways. Firstly, Anglo-American directors may influence Swedish firms to adopt similar compensation rates to those of their countries' of origin (Randøy and Oxelheim 2006). Furthermore, Anglo-American directors can provide useful knowledge from countries with strict corporate governance codes and their presence can be used as a signal of increased governance to potential investors, both domestic and foreign (Randøy and Oxelheim 2003). Directors on these boards, however, will have to reconcile between two corporate governance systems (Anglo-American and Scandinavian) and it may "pose new challenges and tasks for them" (Randøy and Oxelheim 2003).

Results for the share-based remuneration dummy variable show a positive effect on board compensation, however results are not statistically significant. These results are particularly interesting since share-based remuneration of directors is a relatively new trend in Sweden and has only been adopted by a relatively few number of firms. Therefore, this could suggest why the results were statistically insignificant since only four firms implemented a mixture of share-based compensation. Judging by the

coefficient, it can be observed that director compensation increases by .11 (.10) when paid in a mixture of cash and share-based compensation. Following agency theory, the results would suggest that Swedish firms have instituted a mixture of share-based remuneration in an attempt to align directors' incentives with those of shareholders.

Variables concerning CEO compensation and presence on the board were included in order to observe Sweden's unique corporate governance structure in which the CEO is allowed to be a member of the board of directors. With regards to firms including the CEO on the board of directors, we found a positive and significant result (at the 10% level) on average director compensation. Statistical significance, however, was not found concerning chairman compensation. Moreover, results of *CEO compensation* indicate a positive and statistically significant (at the 1% level) effect on average director compensation. Taking this evidence into account, the positive sensitivity of director compensation to CEO compensation may indicate evidence of self-dealing, as hypothesized by managerial power theory.

6.5. Robustness Tests

Using both panel data with fixed effects, control variables, and an extensive set of hypothesized determinants, we are able to limit unobservable variables that may cause endogeneity within our statistical model (Brooks 2009). As evidence from past literature, we realize that there exists numerous methods of measuring firm performance. In order to provide added support to our results, we duplicated both average director and chairman compensation statistical models using Return on Invested Capital (ROIC) instead of *ROA* as a measure of accounting performance. The results can be found in the appendix section and are largely similar to those found in our original models and there is no change in statistical significance between any of the variables.

7. Conclusion

This last section presents our conclusions drawn from our study followed by suggestions of further studies.

Research into non-executive director compensation has steadily increased since a wave of new corporate governance codes were instituted across markets. Beginning with US data, analyses have not only attempted to explain non-executive director compensation but also determine the most suitable method for aligning director interests with shareholders without compromising their role as efficient monitors. With our study we have attempted to expand the research of director compensation into the unique 'mixed' governance system of Sweden. In doing so, we observed a sample of boards in which all directors are considered 'non-executive' however the majority of directors operate in close proximity to the CEO.

During the five-year period sampled, average director remuneration of the most actively traded firms in Sweden has risen annually at a rate of 5.5% to a year-end 2009 value of 821,848 SEK. Mean chairman compensation has also risen at a comparable rate (5.2%), however their level of pay is considerably higher at 1,942,627 SEK. The sample also reveals that the concentration of voting-power is not as low as found in Anglo-Saxon markets; on average, one group of shareholders holds nearly 29% of the voting-rights. This fact can be attributed to the presence of dual-class shares in the majority of firms sampled. We also observed a small number of Swedish firms instituting a portion of share-based remuneration to their directors, similar to firms operating in the US and UK. Together, these facts offer support for the agency theory hypothesis in that Swedish firms have begun to compensate their directors in an attempt to mitigate agency problems by aligning their interests with shareholders.

The results of our multivariate regression provide additional evidence that Swedish firms compensate their directors according to agency theory. In line with previous research, we find that director compensation is positively linked to corporate characteristics such as firm size and investment opportunities. This can be attributed to the fact that firms larger in size and those with higher growth potential have more

complex operations that require directors to dedicate increased effort in order to monitor effectively, thus increasing their compensation. Contrary to prior research, we do not observe any sensitivity of director compensation to corporate performance, as proxied by total shareholder return (TSR) and return on assets (ROA). Therefore, we infer that compensation may be developed according to unobservable firm practices or that directors are paid strictly for their roles as monitors. Supporting these findings is the positive (yet statistically insignificant) sensitivity of director compensation in companies implementing a mixture of share-based compensation. Moreover, we found that the percentage of voting rights by a single shareholder has a significant negative effect on director compensation. This gives evidence that directors are used as governance instruments in the absence of a majority shareholder. We compliment earlier research by Randøy and Oxelheim (2003,2006) and find that the presence of Anglo-American directors on the board has a positive effect on director compensation. Reconciliation between Anglo-American and Swedish corporate governance systems poses a challenge for boards, however the signal of strong governance produced by Anglo-American directors can provide assurance to both current and potential shareholders. Moreover, we find that director busyness (as proxied by holding more than three other directorships) has a positive relationship to compensation. This finding goes against the majority of previous research that posits that busy boards can suffer from coordination problems. Overall, we find that directors of firms listed on the OMX Stockholm 30 are compensated with regards to strengthening governance in the absence of concentrated shareholders and counteracting agency problems.

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In analyzing chairman compensation, we attempted to discover both the determinants of their compensation and if they varied in any significant way from that of director compensation. From a theoretical standpoint, we also attempted to observe if chairman compensation in Swedish firms could be explained by tournament theory. As evidence from our descriptive statistics of director compensation in Table A, chairman compensation is more than 30% higher than average director compensation throughout the years sampled. As put forward by Lazear and Rosen (1981), a high level of executive pay can be seen as a motivational tool for lower-level employees. In the case of our study, this could be observed in the relationship between the chairman of the board and other directors. As discussed above, results of both statistical regressions were similar

in coefficient values and levels of significance. The only notable differences found are a decrease in the positive sensitivity of Anglo-American presence on chairman compensation and that no statistical significance was found on the *CEO on the Board* dummy variable. Since the determinants of both average director compensation and chairman compensation are similar, it likely that the higher level of chairman compensation is determined by an unobserved firm-specific process. It is possible that tournament theory may play a role in setting compensation yet without further research, it is impossible to make any definite conclusions.

Being the first study of the economic determinants of non-executive directors in the Swedish market, we believe that our study warrants more extensive research of topic. During our research, we have come across an interesting number of aspects that we were unable to include in our analysis due to the limitations mentioned in our introduction. Therefore, we present the following proposals of further research. First, the focus of our research only concerned the 29 most actively traded firms in Sweden and we feel that a wider scope of data, both in terms of firms and number of years, could provide fruitful in explaining director compensation within the entire Swedish market. Secondly, our results show that voting-right concentration has a significant effect on director compensation and we believe that research into ownership determinants should be expanded to include share ownership of directors, executive management, block holders, and institutional investors. Although currently consisting of only a small-percentage of firms, share-based remuneration of directors in Sweden represents a pay scheme aimed at combating agency problems and further research into this topic may possibly revel a shift towards performance-pay for Swedish directors. Complimenting this research suggestion is also the effect that Anglo-American directors have on director compensation, for performance-pay is extremely popular in the US. Lastly, we suggest for the study of economic determinants of compensation to be conducted on other markets in the Nordic region due to governance structures being similar.

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9. Appendix

1. List of Sample Companies

ABB Ltd.	**Hennes & Mauritz**	**Scania**	**Swedish Match**
Alfa Laval	**Investor**	**SEB**	**Tele2**
Assa Abloy	**Lundin Petroleum**	**Securitas**	**TeliaSonera**
AstraZeneca	**Modern Times Group**	**Svensk Handelsbanken**	**Volvo**
Boliden	**Nordea Bank**	**Skanska**	
Electrolux	**Nokia**	**SKF**	
Ericsson	**Sandvik**	**SSAB**	
Getinge	**SCA**	**Swedbank**	

2. Average Compensation of Directors, Per Industry (SEK)

Industry	2005	2006	2007	2008	2009	Average
Materials	409,993	490,367	502,945	543,748	567,666	**502,44**
Consumer – Discretionary	504,814	564,951	546,162	599,150	607,427	**564,501**
Consumer - Staples	404,810	336,222	672,222	920,429	781,429	**623,022**
Energy	500,000	500,000	662,500	600,000	566,667	**565,833**
Industrials	548,767	593,315	628,156	704,406	673,719	**629,673**
Health Care	650,919	533,439	943,035	813,883	958,724	**780,000**
Financials	635,494	741,523	754,700	860,314	804,210	**757,248**
Telecom	706,868	807,691	874,525	991,661	985,760	**873,301**

3. Robustness Test: ROIC

Table D:
Cross-Sectional Fixed Effect OLS Regression on Average Director Compensation and Chairman Compensation (ROIC)

Dependent Variable	**Average Compensation per Director (ln)**	**Chairman Compensation (ln)**
Corporate Characteristics		
Size (ln)	0.2364*** (3.18)	0.2881*** (3.75)
Investment Opportunities	0.0131*** (5.58)	0.0158*** (5.02)
Risk	0.0001 (0.02)	0.008 (1.39)
Corporate Performance		
Capital Market Performance		
Total Shareholder Return (TSR)	-0.0584 (-1.45)	-0.0263 (-0.79)
Accounting Performance		
Return on Invested Capital (ROIC)	0.0006 (0.35)	-0.0026 (-0.92)
Ownership Structure		
Ownership Percentage (% Voting-Power)	-0.6888*** (-2.86)	-0.8364*** (-3.22)
Board Characteristics		
Effort (# of meetings)	0.0050 (1.02)	0.0024 (0.53)
Busyness (1,0)	0.1084 (1.27)	0.0867 (1.48)
CEO Compensation (ln)	0.0993* (1.85)	0.1261 (1.51)
CEO on the Board (1,0)	0.0805 (1.56)	0.0366 (0.51)
Share-based Remuneration (1,0)	0.1152* (1.94)	0.0999** (2.35)
Anglo-American Directors (1,0)	0.2836*** (3.39)	0.1593** (2.66)
Cross-Section Fixed Effects	Yes	Yes
Period Fixed Effects	No	No
White's Standard Errors	Yes	Yes
R-Squared	.45	.40
Observations	145	145
Cross-Sections	29	29