STOCKHOLM SCHOOL OF ECONOMICS Department of Finance Bachelor Thesis Spring 2013

The Prevalence and Causes of Multiple Directorships

Diana Imreorowa^{*}

Therese Kollin[†]

ABSTRACT

This thesis investigates the determinants of the number of directorships held by board directors, using a cross-sectional methodology with Swedish data from year 2007. Individual, board and company characteristics are used as explanatory variables to find out what affects the number of directorships held, and from these results we argue for three main causes of the existence of multiple directorships. The implication of the results is that multiple directorships is in some cases a conscious decision made by companies, with the purpose of strengthening the relationships within their contractual environment. However, it can also be seen as an outcome of market imperfections, caused by an excess demand for skilled directors. Further, we find that the incentives of the directors to hold multiple directorships is essential to the existence of multiple directorships. Finally, the low incidence of multiple directorships indicates that regulating against it would probably be ineffective.

Key Words: Multiple directorships, corporate interlocks, corporate governance, market for directors, board of directors

Tutor: Laurent Bach Presentation Date: May 29th 2013

^{* 22317@}student.hhs.se

[†] 22142@student.hhs.se

Acknowledgements: We would like to thank Laurent Bach for his valuable help and inspiration.

TABLE OF CONTENTS

1. INTRODUCTION	2
2. PREVIOUS LITERATURE	4
3. DATA	7
3.1 DATA ORIGIN	7
3.2 DATA RESTRICTIONS	7
3.3 DATA ISSUES	9
4. METHODOLOGY	9
4.1 EXPLANATIONS OF THE VARIABLES	9
4.1.1 DEPENDENT VARIABLE	9
4.1.2 EXPLANATORY VARIABLES	
4.1.3 CONTROL VARIABLES	
4.2 SUMMARY STATISTICS	
4.3 REGRESSIONS	
4.3.1 SIMPLE	
4.3.2 MULTIVARIATE	
4.3.3 ROBUSTNESS TESTS	
4.4 METHODOLOGY ISSUES	
5. RESULTS	
5.1 THE PREVALENCE OF MULTIPLE DIRECTORSHIPS	
5.2 SIMPLE REGRESSIONS	
5.3 MULTIVARIATE REGRESSIONS	
5.4 COMPARISON TO PREVIOUS RESEARCH	20
5.5 ROBUSTNESS TESTS	21
6. IMPLICATIONS AND CONCLUSIONS	21
6.1 THREE CAUSES OF MULTIPLE DIRECTORSHIPS	
6.2 CONCLUSION	25
6.3 FUTURE RESEARCH	
REFERENCES	
APPENDIX A	
APPENDIX B	

1. INTRODUCTION

Board composition is a highly debated topic and criticism has been put forward regarding the efficiency of having board directors active on several boards, a phenomenon known as multiple directorships. It has been argued that it in fact inhibits the ability of the board directors to adequately monitor the management and carry out the strategic work of the board. Recently, a debate article in Dagens Industri suggested that the Swedish Corporate Governance Code should be revised in order to hinder CEOs to hold multiple directorships. The criticism of multiple directorships has caused several scholars to present studies on the subject and they have mainly focused on examining whether multiple directorships has a positive or negative impact on companies. However, before determining the consequences of multiple directorships, it is important to understand why multiple directorships exist and understand whether it stems from an efficient process or market imperfections.

Previous research on multiple directorships focuses on different aspects of the subject and is within numerous academic fields. It exists several studies on how multiple directorships affect the corporate performance and the value of the firm. However, these studies are ambiguous with no clear consensus regarding the effects of multiple directorships. Core et al (1999), Shivdasani and Yermack (1999) and Fich and Shivdasani (2006) argue that over-committed directors lead to poor firm performance whereas Weisbach (1988), Cotter et al (1997) and Miwa and Ramseyer (2000) find multiple directorships to have a positive impact on companies. Furthermore, it is difficult to provide a generalised conclusion based on the studies since they have been focusing on specific types of companies and contexts. In contrast to examining the effects of multiple directorships. Many of these studies have been within the fields of social science or economic theory. However, some of the studies have been within the field of finance, and the most influential ones are Fama and Jensen (1983), Kaplan and Reishus (1990), Gilson (1990), Ferris and Jagannathan (2001), and Ferris et al (2003).

The purpose of this thesis is to investigate the incidence and determinants of multiple directorships in order to understand the causes of the phenomenon. Based on this we want to discuss whether the market for directors is efficient or not. We aim to make a comparison with previous researchers' methods when analysing our results, due to the lack of solid theoretical frameworks. The contribution of our study is to investigate Swedish data, include companies of varying sizes and also include private and public companies. A majority of the previous studies have mainly focused on large, publicly listed companies in the U.S. In addition, unlike previous scholars, we do not only investigate the determinants of number of multiple directorships, but also the underlying causes of why multiple directorships exist.

The data sets used in this investigation are obtained from PAR AB. It includes accounting and company data for Swedish companies over the years 1997-2008. From this data several restrictions are made. Micro-companies, bottom-level subsidiaries and inactive companies are excluded and we only focus on year 2007. After the restrictions the data consists of 1421 companies, 4122 unique directors and 4591 directorships. Summary statistics are provided for this data to explain the incidence of multiple directorships in Sweden. Furthermore, we perform non-parametric tests in order to find if there are any correlations between the different explanatory variables. This is made on both an individual and a company level, with emphasize on the latter. Moreover, simple and multivariate OLS regressions are carried out to further investigate the determinants of multiple directorships. Robustness tests are made for these regressions by exchanging some of the independent variables with alternative proxy variables. Finally, we analyse the variables explaining the number of directorships in order to come to a conclusion regarding the underlying causes of the phenomenon of multiple directorships and the efficiency of the director market.

Through our investigation we find the phenomenon of multiple directorships not to be widespread in Sweden. Only 1.92% of the directors in our study hold three or more directorships. This is lower than the results obtained by previous scholars. However, those studies were carried out more than ten years ago, meaning there could be discrepancies from today. This low incidence of multiple directorships raises questions about the need for regulating against it. Our results are consistent with earlier research with regards to the explanatory variables chosen on the basis of previously used variables. *Size, Return on Assets for 2004* and *Number of Board Members* are all positively and significantly correlated with *Mean Directorships* whereas *Mean Tenure* has a significant negative relation to mean directorships. The additional explanatory variables presented in this thesis are of both economic and statistical significance. *Young Companies* have on average more directorships than mature companies without. Through an analysis of the explanatory variables for the number of directorships we conclude that there are three underlying causes for the existence of multiple directorships: the companies' need for networking, the excess demand for skilled directors and the directors' strive for empire building. Companies make

conscious decisions of letting their directors sit on key customer and supplier boards in order to strengthen business relationships. Multiple directorships are also created by a shortage of skilled directors forcing the companies to share those directors between them. Finally, the director's willingness to build empires and sit on several boards is crucial to the existence of multiple directorships.

2. PREVIOUS LITERATURE

Multiple directorships is a topic present within numerous academic fields, stretching from sociology to finance. Many of these studies combine the research to include several academic perspectives. Mizruchi (1996) argues that multiple directorships are significant indicators of network connections between firms and that there is a need for continued research to provide insight into corporate behaviour. Another reason for continuing studying this subject is that many studies have been on cross-sectional data or panel data during a specific period in time. Due to the dynamic nature of corporate governance and board composition there is a need to have continued and updated insight of the behaviour of the board of directors.

Within the finance related studies there are different approaches to understand the phenomenon of multiple directorships. The first category includes research on how multiple directorships affects the performance and the value of the firm. Within this field of study there are various and different opinions to whether this effect is negative or positive. Scholars like Core et al. (1999), Shivdasani and Yermack (1999) and Fich and Shivdasani (2006) believe that over-commitment leads to a lack of monitoring, which results in greater agency costs for the firm, with a subsequent reduction in firm performance and firm value as a result. However, there are other scholars who suggest that multiple directorships affect firm performance positively. Miwa and Ramseyer (2000) found this to be true for cotton spinning industries in Japan, Cotter et al (1997) made the same conclusion while studying acquisitions and Weisbach (1988) came to the same insight with regards to discharging of CEOs of poor performing firms. However, Ferris et al (2003) highlights that these findings are made under specific circumstances and it might be difficult to come to a generalized conclusion.

Furthermore, scholars have realised that there is a need for understanding the determinants of multiple directorship in order to correctly understand and interpret the effects multiple directorships has on firm performance and value. Mizruchi (1996) highlights that another reason for the importance of studying the determinants is that the number of busy directors do not necessarily stem from a conscious decision of the company, but might just be a result from the companies' contextual environment. According to Fama and Jensen (1983), there is a strong correlation between past firm performance and number of outside directorships held, explained as a reputational effect. Directors of firms performing well are viewed as high quality directors in the external labour market of directors and the conclusion is thus that in an efficient labour market the best directors should receive the most directorship offers. Other researchers that has come to the same conclusion regarding the past performance correlation are Kaplan and Reishus (1990) and Gilson (1990). Kaplan and Reishus investigate, in a similar fashion to Fama and Jensen, if past firm performance relates to number of additional directorships. However, they are only interested in additional directorships accepted by top executives and have used the reduction of the dividends as a proxy for poor performance. Their empirical work results in the conclusion that top executives of companies reducing their dividends with 50% are less likely to be offered other directorships than are those that do not reduce their dividends. This is further evidence of the reputational effect, first introduced by Fama and Jensen. Furthermore, they conclude CEOs of poorly performing firms have less time to engage in activity on outside boards, since they need to focus on their own firm's survival. Also, they reason that CEOs tenure is a proxy for his reputation in his own firm. Gilson (1990) focuses on financially distressed firms and conclude that directors that leave those firms hold approximately one third fewer directorships three years after their departure.

Previous performance is only one of several factors influencing the number of directorships held, and researchers have tried to find these other variables through empirical studies. Some of the most influential studies have been made by Dooley (1969), Booth and Deli (1996), Ferris and Jagannathan (2001) and Ferris et al (2003).

One of Dooley's (1969) main finding is that the largest corporations tend to have more multiple directorships since directors of large corporations are the most capable and competent directors available and that directors of large corporations have more personal influence over other companies. Furthermore, management controlled boards seem to avoid multiple directorships with other companies. Moreover, Dooley finds that non-financial firms tend to have more multiple directorships than financial firms.

Booth and Deli (1996) investigate several factors that explain why CEOs hold outside directorships. Their results can analogously be used in order to examine the explanation to why directors hold multiple directorships. Their main finding is that the number of directorships held is linked to the marginal products of the CEO. Growth opportunities, which are represented by market-to-book, correlate negatively to the number of outside directorships held by a CEO. This suggests that a CEO in a firm with growth opportunities is busy to manage the own firm, implying that the marginal product of the CEO is high. When the chairman is a different individual from the CEO, their research suggests that CEOs will hold more outside directorships implying that the CEOs marginal product is low. Finally, they find that CEOs on larger firms have on average more directorships.

As opposed to Booth and Deli, Ferris and Jagannathan (2001) does not focus solely on the CEO, but studies the determinants of multiple directorships for the entire board. Similar to Booth and Deli they find a significant positive relationship between the firm size and the number of multiple directorships per board member. Their explanation for this is that larger firms have a greater number of external contracting relationships leading to a greater opportunity for directorship offerings. Similar to firm size, the board size also affects the number of multiple directors positively since a larger board is thought of as providing an opportunity to use more directors to form more external contracting relationships. Market-to-book ratio is used as a proxy for growth opportunities and they find that there is a negative relationship to the number of multiple directorships. The reason for this being that additional board assignments may lead to reduced oversight and attention and focus deterring from primary decisions regarding the growth opportunities. In line with previous research on past firm performance, they moreover find that previous firm performance is positively correlated with multiple directorships. Furthermore, they come to the conclusion that board equity ownership has an inverse relation to multiple directorships because directors accept board memberships as a form of perquisite consumption, implying the agency conflict's presence. Finally, they reach the conclusion that directors of regulated firms hold fewer directorships because of the limited competition and insulation from the market.

Two years after Ferris and Jagannathan's first study on multiple directorships, they, together with Pritchard, carried out another study on multiple directorships' effect on firm performance as well as the determinants of multiple directorships. In the latter study they find no evidence that multiple directorship harm subsequent firm performance. Regarding the determinants they provide an additional variable, average age of the director, which is positively significant for existing directorships and negatively significant for additional directorships. Age is a proxy for experience as well as the energy that an individual might have for the demands of board service. This is in line with them reporting that lack of time is the reason most often cited for declining offers of board seats. Furthermore, they provide an alternative explanation for the firm size factor and state that it is a proxy for the intensity of monitoring required of the director. Big firms might demand more effort, but they might also send a positive signal of a director's skill as a monitor.

3. DATA

3.1 DATA ORIGIN

The data sets used in this study are obtained from PAR AB, a Swedish company focusing on gathering company information, CRM and direct marketing. The Department of Finance at the university purchased the data sets and has been made available to us for the purpose of thesis writing. In the data sets there are information on accounting records, company specific information, consolidated account information and finally information on individuals having a function related to the governing, ownership or auditing of the company. The data sets consist of information on all Swedish companies from year 1997 to year 2008. Important to highlight is the unique nature of the data, since it includes companies of varying sizes and the data sets also include private and public companies.

3.2 DATA RESTRICTIONS

Due to the extent of the data sets and in order to use a cross sectional methodology, the data is restricted to only include observations within a given point in time. The fiscal year of 2007 is chosen because it is the most updated data available without uncertainties regarding the observations' end time, which is true for year 2008. Furthermore, it is after the implementation of the Swedish Corporate Governance Code in 2005, making the conclusions in this thesis applicable to the business environment today. In the original data sets there is a significant amount of information that is irrelevant to our study and thus several restrictions are made. Starting with the accounting data set, all observations regarding micro-companies are excluded, because of their limited economic impact. In accordance with the definitions made by the

European Commission in 2006, a company is considered to be a micro-company if it has total assets and sales below 2 million EUR as well as number of employees below 10. The accounting data set also include consolidated accounts as well as standalone entity accounts. Thus, the data set is further restricted to not include consolidated accounts. The reason for this being that it is impossible to investigate the structure of ownership for all companies and also because companies which are consolidated at some level will be included, even if these companies are subsidiaries to a parent company. Furthermore, if a consolidated account were reported instead of stand alone accounts it would be counted multiple times.

Along with the accounting data, a data set consisting of information regarding parent and subsidiary information is used to sort out those companies being bottom-level subsidiaries, i.e. those companies owned by a parent company and not having any subsidiary companies themselves. The logic behind this is that board of directors of bottom-level subsidiary companies rarely have real influence over the strategy of the company, but instead follow the directives from board of directors higher up in the ownership structure. It is also common that board of directors and top management of the parent company sit on the board of the subsidiary, which is why it is important to exclude them. However, companies that are consolidated at some level, implying that they are a parent company for at least one subsidiary, are kept, since the board of directors are considered to possess some real influence of the company.

As the focus of our study is multiple directorships, those individuals having a function in the company other than being a board member, are excluded from the data set. However, those individuals being CEOs sitting on its own board are still included. Furthermore, for those board directors where there is no information provided with regards to the end date of their mandate, but information regarding their start date, we interpret it as those board directors still being active during year 2008, when the data was compiled. In the data we find duplicates with regards to the same social security number (SSN) showing up twice or more for the same company. Joining the time frames for those duplicate observations and dropping one of them solve this problem. Moreover, for some of the observations the whole SSN is missing or the last four digits of the SSN is missing and all these observations are therefore excluded from the data set.

In the company data, industry codes for specifying the nature of the industry for each company is according to SCB year 2002 classification, even though the company information is from year 2007. In 2007, SCB changed its classification codes and in order to find the equivalent definition

of each code the 2002 industry codes are converted into the codes for year 2007. The codes in the data set are expressed in specific industry definitions, and in order to make it comprehensible and economically interesting for analysing differences across industries, the industry codes are recodified to their main categories, resulting in 16 main categories. As a last restriction within the company data, all companies that are reported to be inactive in year 2007 are excluded.

3.3 DATA ISSUES

The main issue with the data set is missing values. Observations with missing values with regards to assets, sales and number of employees are excluded, since it is crucial for our study that the size of the company is known. There are some companies that do not have any company information. These companies are also excluded because they are missing several important data. The other data issue is regarding the use of standalone accounting data. When choosing to take standalone entity accounts we are aware of the fact that some assets may not be included.

4. METHODOLOGY

A cross-sectional methodology is used, i.e. restricting the data to one point in time, which is year 2007. The condition for an observation to be considered to belong to the year of interest is that the director has been sitting on the board for at least a day during 2007. A cross-sectional analysis will provide us with an understanding of whether there is a significant impact of the independent variables, what the direction of the correlation is and of what magnitude they affect multiple directorships. Because of the large size of the original data, a panel data methodology is time wise outside the scope of this thesis.

4.1 EXPLANATIONS OF THE VARIABLES

4.1.1 DEPENDENT VARIABLE

Initially, the number of directorships per director is calculated in order to carry out an analysis at the individual level. The variable is calculated by counting the number of directorships associated with every SSN. An extension from this variable is the mean number of directorships per director, which is calculated at a company level. In order to calculate this second dependent variable, the first step is to identify all individuals that are directors in each company. After this is done the total number of directorships held by these individuals are added and then divided by the number of board directors within each company. The reason for doing this distinction is to be able to examine individual director characteristics and firm characteristics separately. The dependent variable *Mean Number of Directorships per Board Director within a Company Board* will henceforth be referred to as *Mean Directorships* in order to make it more comprehensible for the reader.

4.1.2 EXPLANATORY VARIABLES

In an attempt to find the causes of multiple directorships, possible determinants are defined and these are related to either individual, board or company characteristics. Additional calculations and definitions of variables can be found in Appendix B.

Individual Characteristics

Female

We hypothesize that females hold more directorships because of a historical shortage of supply of qualified and experienced females on boards, and because of an increasing public pressure, which indicates an increasing demand to have females on boards.

CEO Director

Both Booth and Deli (1996) and Dooley (1969) examine the effect on the number of directorships held within a board if the CEO of the company also sits on the board, indicating that the firm in some sense is management controlled. When we use this variable at the individual level we want to test the hypothesis that a director who also is a CEO hold less directorships than other directors.

Board Characteristics

Number of Board Members

Ferris and Jagannathan's (2001) reason for including number of board members as an explanatory variable is that the firm might use its directors to create advantageous external

contracting relationships. Furthermore, Yermack (1996) reasons that large boards are often unwieldy. We believe this to enable the directors to spend less time on that specific board and instead hold more multiple directorships. Thus we have decided to hypothesise that increasing number of board members should lead to an increase in mean directorships.

Mean Tenure

According to Kaplan and Reishus (1990), a director's tenure on the board can be viewed as the director's internal reputation within the firm. We reason that this implicates that a long tenure will lead to positive reputation and attractiveness in the market for directors, which will lead to more offers and thus more directorships held. Therefore, we hypothesise that increased tenure leads to higher mean directorships.

Mean Age

The age of a director can proxy for experience and therefore imply attractiveness on the labour market for elder directors. However it can equally be a proxy for a declining energy level when a director is considered old and thus lowering their attractiveness. The two contrasting perspectives on age are described in previous research by Ferris et al (2003). We are interested in finding out what effect the age of a director has on the number of directorships and thus not taking a stand to what perspective we believe to be true.

Female Ratio

This variable is an extension of the female dummy variable that is used for the individual level, where we instead look at the female ratio of the board. For the same reasons stated for the female variable, we hypothesize that female ratio will be positively related to mean directorships.

CEO Director

A CEO sitting on its own board is an extensively studied phenomenon and we consider it to be of importance to explain the *Mean Directorships* for a company. We assume that when a CEO is on the board the other directors are required to spend more time on the board, since the CEO will be somewhat occupied by its responsibilities as a CEO. This is rather consistent with Dooley's study from 1969 where he concludes that directors on management-controlled boards tend to avoid holding multiple directorships. Therefore, we hypothesise that a company with a CEO director will on average have lower mean directorships than companies not having a CEO on the board.

Company Characteristics

Size

Ferris et al (2003) describe the incidence of multiple directorships as a large-firm phenomenon. Booth and Deli (1996) further reason that a larger firm has a more widespread external contracting environment with more contracting relationships and thus more to gain from multiple directorships. Based on this previous research we expect size to have a positive correlation with *Mean Directorships*. Assets are used as a proxy for size. The reason for taking the logarithm of size is because there are major differences between the sizes of firms in our sample.

Return on Assets 2004

According to previous research by Fama and Jensen (1983) and Ferris and Jagannathan (2001), the return on assets has a positive impact on multiple directorships because of the reputational effect. We therefore assume that return on assets will have a positive correlation with mean directorships. The return on assets three years prior to 2007 is used since we assume the effect from performance not to be evident immediately. This is consistent with the research of Kaplan and Reishus (1990) who finds that directors of poor performing firms do not gain or lose outside directorships in the three fiscal years after a firm present poor results.

Scaled Research & Development

Previous research focuses on the market-to-book ratio and believes it to be a proxy for future growth opportunities. Ferris and Jagannathan (2001) and Booth and Deli (1996) come to the conclusion that firms' growth opportunities are negatively related to number of directorships since multiple directorships are characterized by opportunity costs due to decreased oversight and attention. A director for a firm with growth opportunities has more to lose by neglecting its own firm. Since we do not only look at public firms we have decided to proxy growth opportunities with research and development expenses (R&D) with the reason being that we believe firms with more future opportunities are in a greater need of R&D. The R&D is scaled against yearly sales since we believe that to be more accurate when comparing firms of different sizes. Based on previous research we believe *Mean Directorships* to decrease as R&D increases.

Young Company

Directors holding multiple directorships are according to Hermalin and Weisbach (1988) sources of counsel, since they provide experience and expertise to the board and might have other valuable perspectives. Furthermore, Mace (1986) believes that directors signals prestige and serve as business contacts. For the reasons stated above we believe that young companies are in need of this guidance by experienced directors and therefore strive to recruit these directors holding multiple directorships. Therefore, we hypothesise that a young company has, on average, higher *Mean Directorships* than mature companies. Those companies older than ten years are defined as mature companies. The reason for drawing the line at ten years is because the youngest ten percent of the companies are eight years or younger.

4.1.3 CONTROL VARIABLES

Industry Dummy Variables

Since the sample consists of companies operating in different industries, there might be some industry specific differences with regards to mean directorships, which we want to control for.

4.2 SUMMARY STATISTICS

Individual Level Summary Statistics

The analysis begins with a simple description of the data in terms of *Individual Multiple Directorships*, which includes mean, median, minimum, maximum and standard deviation values of the sample. In order to find to what extent multiple directorships exist in Sweden a frequency chart is provided for the number of directorships held per director. Based on the frequency chart, absolute and cumulative percentages are calculated. Furthermore, it is investigated how large percentage of the board members that have three or more directorships to evaluate to what extent the directors have multiple directorships. Summary statistics regarding if the individual is a *Female* is also provided in terms of mean, median, minimum, maximum and standard deviation to see if there are any major differences between male and female directors. Similar summary statistics are provided for *CEO Director*.

Company Level Summary Statistics

General summary statistics for the *Mean Directorships* are provided in terms of mean, median, minimum, maximum and standard deviation. In order to get an overview of the independent variable and its relatedness to the number of multiple directorships, the first approach is to divide *Size, Number of Board Members, Mean Tenure, Female Ratio, Mean Age* and *Return on Assets 2004* into quartiles. Thereafter, the average of *Mean Directorships* is calculated for each quartile and presented in a chart. By doing this, a basic analysis can be made based on the differences in the *Mean Directorships* between the different quartiles. Because there is a need to make a statistical conclusion, non-parametric tests are used, as it is independent subsamples and normality cannot be assumed. The tests are performed in order to investigate if there is a significant correlation between the mean values of the sub samples and if the mean values differ. First, the Kruskal Wallis test is performed to see if there is any difference in the mean between the different subsamples. A significant p-value indicates that it is a significant difference between the means. Second, the Spearman Correlation is calculated in order to arrive at a possible correlation between the quartiles. The Spearman Correlation indicates if it is a significant.

Moreover, the dummy variables *CEO Director* and *Young Company* are analysed by dividing the sample into two sub samples and investigating whether there is a significant difference between the two using a Wilcoxon Rank Sum Test. The Wilcoxon Rank Sum Test is the appropriate statistical method since the subsamples are independent and an assumption of normal distribution cannot be made. Also, this test approaches a normal distribution as the number of sample observations increases and because of the large number of observations in the sample it becomes even more accurate to use.

Industries

Industry specific summary statistics are provided in terms of number of companies, number of directorships and mean firm size as well as mean, median, max and standard deviation for *Mean Directorships*. This is done in order to discover differences across industries with regards to multiple directorships.

4.3 REGRESSIONS

4.3.1 SIMPLE

The Ordinary Least Squares (OLS) regression model is used in order to find the determinants that are of significance in explaining the *Mean Directorships* for a company. In order to use the OLS regression model, the four MLR assumptions presented in Table 18 need to be assumed to be true. The regression formulas can be found in Table 19.

4.3.2 MULTIVARIATE

Multivariate regressions are also executed using the OLS regression model, but now the explanatory variables are used in the same regression to be able to control for several factors simultaneously. However, the independent variables that yield insignificant result from the simple regressions and are assumed to not be correlated to the variables that yield significant result will not be included in the multivariate specification. The multivariate regressions are performed with and without the industry dummy variables in order to see the difference the control variables make. From a regression output we can extract information if there is a correlation and to what magnitude a change of one independent variable will affect the dependent variable. The multivariate regression formulas can be found in Table 20.

4.3.3 ROBUSTNESS TESTS

Since most of the independent variables proxies for something, it is particularly important to check for the robustness in our findings. This is done by replacing the variable used with another variable, which proxies for the same underlying variable. By doing this we test if it is the proxy chosen that is the cause of the results or if it is the underlying factor for which we proxy for that is the determinant. However, this is not possible for all the variables, but is carried out for *Size, Young Company* and *Return on Assets 2004*. For *Size*, we check the robustness by changing the total assets to *Sales* and also to the *Number of Employees*. For the dummy variable, *Young Company*, we check the robustness by taking a continuous variable that measures the *Company Age*. For *Return on Assets 2004*, we check the robustness by replacing it with the *Operating Margin for 2004*.

4.4 METHODOLOGY ISSUES

Because of the large size of the sample, we are aware that statistical significance may not particularly difficult to achieve. This implies that we must be careful when interpreting the economic significance of the results.

Many of the independent variables are in reality not exogenously given, implying that they themselves are determined by other factors. For example, the number of board seats could be affected by the ability of the company to be able to pay for their board directors and at the same time affect the number of directorships. We are critical to our implicit assumption with regards to the zero conditional mean when using an OLS regression model. The misspecification of our model could potentially lead to an endogeneity problem, which would result in a biased estimation.

The order of causality is another methodology issue that needs to be addressed. By recognising some variables as independent variables we indirectly say that these are the factors causing the number of directorships held. Usually economic and finance theory should provide the establishment of causality, due to the lack of it in our field of study, we have used intuition, reason and previous research to specify the order. For instance it could be argued that the number of directorships held could affect *Return on Assets 2004*. We are thus aware of the potential reversed causality.

5. RESULTS

5.1 THE PREVALENCE OF MULTIPLE DIRECTORSHIPS

After limiting the data through various restrictions, our sample consists of 1421 unique companies and 4122 unique individual directors. The first results indicate that directors holding multiple directorships are in fact not a widespread phenomenon. Looking at Table 1 in Appendix A it can be observed that the average number of directorships held by an individual director is 1.11. This indicates that most directors sit on only one company board during a year. The median value is exactly one directorship, which is lower than the mean. The standard deviation (0.46) is seemingly high in comparison to the mean. However, since it is impossible for our dependent variable to take a value less than one, the variation of the distribution has to come from observations having multiple directorships. In Table 2 it can be observed that the maximum

number of directorships an individual director holds is eight directorships and by calculating the cumulative percentage we find that only 1.92% of the individual directors hold three or more directorships. This strengthens the suggestion that multiple directorships seem not to be prevalent in a wider context.

707 directors out of 4122 directors are females, which is approximately 17 percent of the sample. The total number of board seats held by females within the sample is 779 out of 4591, which is presented in Table 3. When we test the hypothesis that females on average hold more directorships we find that this does not hold. In fact, males have on average more directorships than females, but the difference is not statistically significant. The summary statistics for *CEO Directors* are presented in Table 4, and we find that 400 out of 4122 individuals of the sample hold double positions, both as a CEO and as a director. Further, we find that our hypothesis holds, that a CEO who also is a director within the same company on average hold less directorships, at a significant level.

Table 5 in the Appendix provides summary statistics for the *Mean Directorship*. We find that the mean value for this variable is 1.27 *Mean Directorships* and the median is one directorship.

In Table 6, the summary statistics for all the company explanatory variables can be found and in Table 7, the summary statistics for the dummy variables can be found. The results from the non-parametric tests are presented in Table 8 for the regular explanatory variables, and in Table 9 and Table 10 for the dummy variables. We find that there is a positive and significant correlation between *Size* and *Mean Directorships*. The same holds for the *Number of Board Members*, which we find to have a positive and significant correlation to *Mean Directorships*. When we test for the *Mean Age* of the board we find that there is a significant and positive correlation. However, this correlation coefficient is relatively small, which indicates that the economic significance is low. The *Female Ratio* of the board is positively correlated with *Mean Directorships* and it has a significant Spearman Correlation. No significant correlation is established for *Return on Assets 2004, Mean Tenure* and *Research and Development*. The explanation to why it is difficult to establish a significant result for research and development is because there are too few observations.

When the test is performed for comparing a *Young Company* with a mature company, we find that the young company holds on average 1.35 *Mean Directorships*, whereas a mature company holds 1.24 *Mean Directorships*. This test shows a significant difference. Finally, we find that boards with a

CEO Director has on average 1.22 Mean Directorships, which is lower compared to the average for boards without a CEO Director, which is 1.28. However, the difference between the two is not statistically significant, when we perform this test on the company level.

Summary statistics for Mean Directorships, number of board seats and size is provided with regards to different industries in Table 11 in the Appendix. There are 16 different industries represented in our sample, although the number of companies within each industry varies. In our sample, the manufacturing industry consists of 373 companies whereas mining and quarrying only consists of five companies. The one industry where Mean Directorships is the highest is human health and social work activities. The average for the human health industry is 2.35 Mean Directorships, which is relatively high compared to the education industry, where the industry average is 1.49 Mean Directorships. At a third place we find administrative and support service activities, which has 1.37 Mean Directorships as the average for the industry. However, all three industries that hold the top three places consist of a small number of companies. The industry which consist of more than 30 companies and places among the industries above average for all companies is wholesale and retail trade; repair of motor vehicles and motorcycles, which consists of 336 companies and has an average value of 1.35 Mean Directorships. The average size of all the companies within the sample in terms of total assets is 2.3 Billion SEK. However, the industry average in size is lower than the total average of the sample. This is because the industry of financial and insurance activities has relative large amount of total assets, which increases the total average. It is interesting to notice that financial and insurance firms have lower mean directorship than the sample average.

5.2 SIMPLE REGRESSIONS

Table 12 provides output from the simple regressions for variables hypothesized to be of explanatory power to the dependent variable, *Mean Directorships*. It is a further extension to the company non-parametric tests in the previous section and the simple regression provide us a stronger statistical tool to capture the effect of a change in the independent variable to the dependent variable.

For *Size* we find a strong significant positive correlation to *Mean Directorships*, which is consistent with our results in the quartile analysis. We achieve similar results for *Number of Board Members* that have a positive relation and are strongly significant to *Mean Directorships*. Moreover, this does not differ from the results in the quartile analysis. $R \notin D$ *Scaled* is another variable that show

comparable results to the non-parametric tests. It is neither significant nor has an economical viable interpretation since its correlation coefficient is relatively low. For the two dummy variables, Young Company and CEO Director, we find simple regressions results for Young Company to almost mimic the results in the non-parametric test above whereas CEO Director differs. Young company is positively correlated with mean multiple, but insignificant. If a CEO sits on the board of directors the mean number of directorships is higher compared to a board without the CEO holding a directorship position and the results are significant even though they were insignificant in the non-parametric test. Mean Age and Female Ratio differs from the non-parametric tests since they in the previous tests are significant, but in the simple regressions turn out to be statistically insignificant. Moreover, no economic significance could be established for Mean Age since the coefficient is relatively low. However, the Female Ratio has a slightly positive correlation with mean directorships, which could be interpreted in an economic sense, even though it is statistically insignificant. Mean Tenure and Return on Assets 2004 stand out as the only variables showing better results in the simple regression than in the non-parametric tests. In the quartile tests Mean Tenure is highly insignificant, whereas in the regression it is significant and has a negative correlation with the dependent variable. For Return on Assets for 2004 we find that it differs from the quartile analysis in the sense that it has a positive correlation to Mean Directorships in the simple regression instead of a negative. Furthermore, the coefficient for Return on Assets for 2004 is significant in the simple regressions. Since R&D, Female Ratio and Mean Age yield insignificant results, they will not be included in the multivariate regressions. However, Return on Assets 2004 and Young Company are included despite their statistical insignificance due to their inherent correlation to size.

5.3 MULTIVARIATE REGRESSIONS

Table 13 provide multivariate regression output for variables that we have decided to use as explanatory variables based on analysis of the simple regressions. Model 1 is without industry dummy variables and Model 2 shows multivariate regression with industry dummy variables.

The multivariate regressions demonstrate similar results to the simple regressions, with some improvements in the significance level for some of the variables. For the regression without the industry dummy variables *Size, Young Company, Number of Board Members* and *Mean Tenure* show comparable results to the simple regressions. However, *Return on Assets 2004* and *CEO Director* are of greater significance and with higher magnitude in the correlations. The explanatory power of this regression is 0.023.

For the multivariate regressions with the industry dummy variables the variable results differ compared to the other multivariate regression on several variables. There is no significant difference for *Return on Assets 2004* and *Young Company* when comparing the two multivariate regressions. However, *Number of Board Members* and *Mean Tenure* show a significance level of 5% instead of 1%, but with almost unchanged coefficients. Conversely, *Size* and *CEO Director* have a higher impact on *Mean Directorships* when controlling for industries. The explanatory power of this regression is 0.088.

5.4 COMPARISON TO PREVIOUS RESEARCH

Our finding that the prevalence of multiple directorships among Swedish firms is low is similar to Ferris and Jagannathan's (2001) conclusion with regards to the incidence of directorships among U.S. companies. However, Ferris et al (2003) find that the proportion of directors holding multiple directorships is higher and in Ferris and Jagannathan's study (2001) they find that 4% of the individual directors hold three or more directorships, while we find that only 1.92% sit on three or more board seats. This difference could be explained by the fact that we try to explain multiple directorships in Sweden and holding multiple directorships may be more common in the U.S. However, we need to keep in mind that their study was performed a decade earlier than ours and the trend of multiple directorships seems to be of declining nature. Our results from the summary statistics regarding industries differ in some aspects from previous research. The industries in which we find to have most directorships per board member, the educational and human health industries, received a lower rank in Ferris and Jagannathan study (2001).

Regarding the multivariate regressions we find, similar to Ferris and Jagannathan (2001) and Ferris et al (2003), that *Size* has a positive and significant relation to *Mean Directorships*. Indicating that multiple directorships is a large-firm phenomenon. Correspondingly, Ferris and Jagannathan also find *Number of Board Members* to be positively correlated with *Mean Directors*. A result achieved by this study as well. Furthermore, our findings are consistent with the research of Ferris and Jagannathan, Ferris et al and Fama and Jensen (1983) that found firm performance to have a positive and significant correlation with *Mean Directorships*. The significance of *Mean Tenure* as an explanatory variable has been studied by Kaplan and Reishus (1990), but their focus lies at additional directorships accepted by top executives. This makes it difficult to compare our findings to theirs. They find a negative correlation to additional directorships accepted and we can conclude that their findings are similar to ours since we find a negative correlation to *Mean Directorships*. Dooley (1969) come to the conclusion that a board with a higher ratio of officers

have a tendency to avoid multiple directorships. This can be compared to our results that a board with a CEO present has on average lower *Mean Directorships* than those boards without a CEO.

5.5 ROBUSTNESS TESTS

We test the robustness of our findings in the multivariate regression by first replacing the dummy variable, *Young Company*, with the age of the company as a continuous variable. The results are provided in Table 14 and we find that age of the company has a statistically significant negative impact on *Mean Directorships*, even though the magnitude of the impact is rather small. The small magnitude can be explained by the fact that *Company Age* is measured in years and that just one year in difference does not have a huge impact but aggregated in years it could potentially have. Since company age show, with significance, the same impact the *Young Company* has as our first variable, we conclude that our choice of proxy does not affect the outcome of the regressions.

The robustness test results for *Size* with the replacement with *Sales* are presented in Table 15 in Appendix A, and we find that the impact has the same direction as before. However, it is only significant at the 10 percent level. Yet, with the replacement of assets to *Number of Employees*, we find that this latter variable is significant at the one percent level and roughly shows the same positive magnitude as assets do. Hence, we conclude that our choice of proxy does not affect the outcome of the regressions.

When we replace *Return on Assets 2004* with the *Operating Margin 2004* we find that it also show a positive impact on *Mean Directorships*, although the magnitude of the impact is relatively small. Since both are statistically significant at the one percent level, we conclude that our choice of proxy does not affect the outcome of the regressions. These results can be found in Table 16.

6. IMPLICATIONS AND CONCLUSIONS

The fact that multiple directors exist could be used to argue that the supply of directors is smaller than the demand for them. This line of reasoning would lead to the conclusion that multiple directorships is a consequence of market imperfections within the labour market for directors. However, this rather simplistic way of interpreting multiple directorship, neglects the fact that companies may in fact want to have directors serving as directors elsewhere too. These two conflicting ways of interpreting multiple directorships, raises the question whether it is an unconscious or a conscious decision made by companies to have multiple directors.

The results show that holding more than one directorship is not common among directors. Even if multiple directorships is interpreted as a consequence of market imperfections, we would still be able to argue that because of the rather low prevalence of multiple directorships, it could be concluded that the market for directors is almost efficient in reality. If we abandon the market imperfections interpretation and see multiple directorships as something that is valued either by companies or directors, we quickly go from seeing the low prevalence as a sign of almost efficiency to wanting to understand the underlying causes for it.

Our study implies three main causes for the prevalence of multiple directorships, where two of them take the perspective of the company and the third of the director. Furthermore, a restriction for the directors is identified, which impacts the number of directorships held by them.

6.1 THREE CAUSES OF MULTIPLE DIRECTORSHIPS

We believe one of the mechanisms leading to the creation of multiple directorships is some companies' need for maintaining and managing relationships with key customers and suppliers and other important stakeholders. By letting a company's board member sit on customer and supplier boards it strengthens the relationship and enable for closer cooperation. We come to this conclusion by an analysis of the determinants of Mean Directorships. It is evident that size is positively and significantly related to multiple directorships indicating that *Mean Directorships* is a large-firm phenomenon. Similar to Booth and Deli (1996) we believe the reason for this to be that larger firms have a naturally larger external contracting environment. They have a higher frequency of negotiations and thus use multiple directors as a way of simplifying these negotiations. Through common board members, with insight into the companies, it should be easier to come to a conclusion to what decisions profit the companies the most. Furthermore, the board size also indicates a cause of multiple directorships being a company's need for networking. A larger board leads to higher Mean Directorships. If every director enters the company with an array of possible business contacts to the company, the company would probably, for the reasons stated above, want to engage with some of these contacts by letting its board members sit on those boards. Thus, for every additional board member recruited to a board, the possible companies for which the company would want to place its board members increase. Moreover, we believe the results that young companies have higher Mean Directorships implies that they have a need to recruit multiple directors in order to have a foundation from where they can create new

business contacts. To have multiple directors can thus be viewed as a conscious decision for some companies.

Another explanation to the existence of multiple directorships is some companies' need for recruiting experienced directors possessing some sort of expertise or other valuable characteristic, henceforth called a skilled director. When this demand for experienced directors exceeds the supply of the experienced directors it leads to a necessity of sharing the directors among the companies demanding them. This creates multiple directorships among the experienced directors since they will be sitting on several boards in order to satisfy the demand. This cause is supported by the findings of the determinants of multiple directorships. First, large firms are evidently more difficult for a board to monitor and are thus in need of directors capable of doing this. In our results we find that larger firms have higher Mean Directorships implying that they demand more expertise directors than are supplied and thus leading to creation of multiple directorships. Second, the number of board members could be viewed as a signal of the company's complexity. A more complex company would need more board directors in order to tackle the different aspects of the company strategy and these directors would also need to have the skills to monitor such a complex company. Our findings support an excess demand of these skilful directors since higher number of board members lead to more directorships held. Third, a young company also experience this shortage of supply of skilled directors, leading to multiple directorships. Young companies' usually does not have the expertise gained by years of experience of strategizing and are in need of recruiting directors possessing this expertise. This is in line Hermalin's research from 1988 saying that directors add experience and expertise to the board. In our results we find that young companies have on average more multiple directors further supporting the shortage supply of skilled directors as a possible cause for multiple directorships. Finally, by analysing the Mean Directorships for different industries we find that the two industries having the highest Mean Directorships are human health and social work activities as well as education. These two industries have during the past years been undergoing a deregulation in Sweden. According to Ferris and Jagannathan (2001), a regulated company has fewer multiple directorships because of less competition and we argue that the increased competition within the two industries creates a greater demand for directors having the abilities to handle higher competition. Since the skilled directors are in lesser supply, multiple directorships are created. In contrast to the previous cause, the need for networking, is this not necessarily a conscious decision made by the company. The multiple directorships created are merely a result of the excess demand for these skilled directors.

We argue in the previous two paragraphs that companies either have a direct or indirect demand for multiple directors. The common ground for when either choosing a director because of the network opportunity or when choosing a director because of scarce expertise, is that companies are dependent on the willingness of director to act as multiple director. Without a director's willingness to serve several boards, multiple directorships would not exist. The motives of the directors for serving on multiple boards are therefore of interest. We believe that our findings along with previous research imply that some directors are not only interested in the wellbeing of the company, but directors take on more directorships in order to pursue their own motives, a form of empire building. According to Mace (1986) are acceptance of additional directorships a way for directors to achieve prestige and acceptance from their peers. This becomes evident in our results where some variables indicate a director's need for prestige achievement. One of these variables is firm size. Due to the nature of large firms being more difficult to monitor and thus requiring more skills, and because of the power and influence it brings being a director for such a large firm, we argue that they are attractive for those directors wanting to achieve respect from their peers. This becomes evident since larger firms have on average more multiple directorships. The variable, number of board members, have a similar interpretation. Companies with larger boards have more multiple directorships indicating that directors are willing to be multiple directors for those companies, probably due to the prestige associated with complex companies. Furthermore, our results show increasing Mean Directorships for firms with higher return on assets three years prior. This is an indication of the reputational effect, mentioned by Fama and Jensen (1983), meaning that directors are attracted to firms doing well in order to continue building their directorship empire. What further strengthens our idea of directors engaging in empire building is that our results indicate that a company board, which has directors sitting a shorter period of time will hold more multiple directorships. The implication of this is that multiple directors seem not to be as loyal to a specific company as directors holding only one directorship are. We reason about it as multiple directors stay a shorter period of time to receive a merit of being on a specific board in order to achieve more prestigious directorships in the future.

A director's willingness to hold multiple directorships is not a sufficient explanation enough for the creation of multiple directorships. Restrictions exist preventing directors to accept or hold the amount of directorships wanted. Through our explanatory variable analysis we find that the two main restrictions are the time available to the directors and the competence they posses. Ferris et al (2003) write that lack of time is the foremost reason for directors declining directorship offers. This is consistent with our results in the multivariate regression. Decreasing *Return on Assets* leads to decreased *Mean Directorships*. The interpretation being that directors of poor performing firms need to focus on its own company in order to solve the situation, thus leaving no or little time to hold additional directorships. The same results are found when studying the effect a CEO on a board has on *Mean Directorships*. The CEO himself will have both obligations as a CEO and director and thus have limited time available to hold additional directorships. Dooley (1969) came to the same conclusion saying that companies ruled by managers have on average fewer multiple directors on the board. Furthermore, the other directors on the board will also need to spend more time on their own company since one of the directors, the CEO, will be somewhat preoccupied by his CEO obligations. These two arguments are supported by the results that a board with a CEO as a director has on average lower multiple directors. Moreover, a director on a larger board, in terms of number of board seats, will have more time to hold multiple directors's personal contribution. This is consistent with our results showing that companies with larger boards have higher Mean Directorships. Additionally, the skills of a director determine its level of attractiveness on the market for directors. It seems to be a shortage of skilled directors, giving them the opportunity to sit on multiple boards.

6.2 CONCLUSION

The low incidence of multiple directorships suggests that the market for directors, even from a critical point of view, is almost efficient. However, because multiple directorships still is an observable phenomenon the underlying reasons for its existence is of importance and the conclusion we draw is that multiple directorships is a consequence of three main causes. The first being the networking opportunity multiple directorships offer. The second being the scarcity of expert directors and the last reason being the motive of a director to gain prestige and be influential, and hence engage in empire building. The bottom line is that multiple directorships is both a valued occurrence and an outcome of market imperfections. Perhaps would multiple directorships even be a more prevalent phenomenon if it were not for the time restriction faced by the directors.

However, critiques regarding multiple directorships seem to have exaggerated the incidence and implications of multiple directorships. Even seeing multiple directorships as a consequence of market imperfections, it could be argued that the prevalence of it is low, and hence unnecessary to regulate against it. By regulating against multiple directorships, we argue, would force firms to recruit lesser-suited candidates, due to the companies being unable to share the skilled directors. Companies would also need to find other ways to network with suppliers and other contractual

partners, if there was a regulation against holding multiple directorships. Since we acknowledge that there is an incentive by directors to build a directorship empire, we suggest stimulating the future supply of skilled directors.

6.3 FUTURE RESEARCH

Our hope is that this thesis will inspire other researchers into continuing the research of the underlying reasons for the existence of multiple directorships. We are aware of the fact that there are probably additional perspectives and underlying causes to investigate further. One example could be the existence of information asymmetry between current and potential investors and it could be of interest to examine the potential signalling effects multiple directorship offers to this asymmetry. Furthermore, a comparison between public and private companies should be done to investigate potential differences between them. Another area for future research to tackle is how board ownership affects the motives of directors to engage in multiple directorships. This is an important aspect to examine further in order to see if the incentives of directors to build a directorship empire are affected if a director becomes an owner of the company. Moreover, in order to determine if choosing a multiple director is a conscious or unconscious decision, future research need to investigate further the decisions made by the recruiter and what the causes and arguments are for the recruitment of an multiple director. It would also be interesting to perform a qualitative study of how often and the reason why a director neglects an additional directorship to better understand the incentives and the restrictions faced by directors. A last suggestion for future researchers is to do a qualitative analysis of the prevalence of directors that sits on supplier and customer boards, to further investigate our conclusion that multiple directorships serve the function of networking opportunities.

REFERENCES

Booth, J.R. And Deli, D.N. (1996), "Factors Affecting the Number of Outside Directorships Held by CEOs", Journal of Financial Economics, Vol. 40, pp. 81 -104.

Core, J.E., Holthausen, R.W. and Larcker, D. F. (1999), "Corporate Governance, Chief Executive Officer Compensation, and Firm Performance", Journal of Financial Economics, Vol. 51, pp. 371-406.

Cotter, J.F., Shivdasani, A. and Zenner, M. (1997), "Do Independent Directors Enhance Target Shareholder Wealth during Tender Offers?", Journal of Financial Economics, Vol. 43, pp. 195-218.

Dagens Industri (2013), "Debatt: Ska vd:n ha styrelseuppdrag?", January 10. (Accessed: 2013-03-10), <http://www.di.se/artiklar/2013/1/10/debatt-ska-vdn-ha-styrelseuppdrag/>.

Dooley, P.C. (1969), "The Interlocking Directorate", American Economic Review, Vol. 59, pp. 314-323.

European Commission (2006), "Den nya definitionen av SMF-företag", Publikationer om Näringsliv och Industri, (Accessed: 2013-03-10) <http://ec.europa.eu/enterprise/policies/sme/files/sme_definition/sme_user_guide_sv.pdf>.

Fama, E.F. and Jensen, M.C. (1983), "Separation of Ownership and Control", Journal of Law and Economics, Vol. 26, pp. 301-326.

Ferris, S.P. and Jagannathan, M. (2001), "The Incidence and Determinants of Multiple Corporate Directorships", Applied Economics Letters, Vol. 8, pp. 31- 35.

Ferris, S.P., Jagannathan, M. and Pritchard, A.C. (2003), "Too Busy to Mind the Business? Monitoring by Directors with Multiple Board Appointments", The Journal of Finance, Vol. 58, pp. 1087-1111.

Fich, E.M. and Shivdasani, A. (2006), "Are Busy Boards Effective Monitors?", The Journal of Finance, Vol. 61, pp. 689-724.

Gilson, S.C. (1990), "Bankruptcy, Boards, Banks and Blockholders: Evidence on Changes in Corporate Ownership and Control When Firms Default", Journal of Financial Economics, Vol. 27, pp. 355-387.

Hermalin, B.E. and Weisbach, M. (1988), "The Determinants of Board Composition", RAND Journal of Economics, Vol. 19, pp. 589-606.

Kaplan, S.N. and Reishus, D. (1990), "Outside Directorships and Corporate Performance", Journal of Financial Economics, Vol. 27, pp. 389-410.

Mace, M. (1986), Directors: Myth and Reality, Harvard Business School Press Boston, MA.

Miwa, Y. and Ramseyer, J.M (2000), "Corporate Governance in Transitional Economies: Lessons from the Prewar Japanese Cotton Textile Industry", Journal of Legal Studies, Vol. 29, pp. 171-203.

Mizruchi, M.S. (1996), "What Do Interlocks Do? An Analysis, Critique, and Assessment of Research on Interlocking Directorates", Annual Review of Sociology, Vol. 22, pp. 271-298.

Shivdasani, A. and Yermack, D. (1999), "CEO Involvement in the Selection of New Board Members: An Empirical Analysis", Journal of Finance, Vol. 54, pp. 1829–1853.

Weisbach, M.S. (1988), "Outside Directors and CEO Turnover", Journal of Financial Economics, Vol. 20, pp. 431-460.

Wooldridge, J. M. (2009), Introductory Econometrics: A Modern Approach. 4th Ed. Canada: South-Western Cengage Learning.

Yermack, D. (1996), "A Higher Market Valuation of Companies with a Small Board of Directors", Journal of Financial Economics, Vol. 40, pp. 185-205.

APPENDIX A

Table1. Summary Statistics - Number of Directorships per Director

	Mean	P10	Median	p90	Max	Std.
Directorships per Director	1,11	1,00	1,00	1,00	8,00	0,46

Directorships per Director	Freque ncy	Absolute Percentage	Cumulative Percentage
1	3780	91,70%	91,70%
2	263	6,38%	98,08%
3	57	1,38%	99,47%
4	9	0,22%	99,68%
5	6	0,15%	99,83%
6	3	0,07%	99,90%
7	2	0,05%	99,95%
8	2	0,05%	100,00%

Table 2. Frequency of Number of Directorships

Table 3. Summary Statistics - Number of Directorships per Gender

	Mean	Median	Max	Std.	Wilcoxon z-score (p-value)
Male	1,12	1,00	8,00	0,45	1,581
Female	1,10	1,00	8,00	0,49	0,11

Table 4. Number of Directorships - CEO Director

	Mean	Median	Max	Std.	Wilcoxon z-score (p-value)
CEO Director	1,12	1,00	8,00	0,85	2,738
Other Directors	1,29	1,00	4,00	0,39	0,01

	Mean	p10	Median	p90	Max	Std.
Mean Directorships	1,27	1,00	1,00	2,00	8,00	0,64

Table 5. Summary Statistics - Mean Directorships

Table 6. Summary Statistics - Explanatory Variables

	Mean	Median	p10	p90	Min	Max	Std.	Observations
Size	2,28	0,12	0,03	1,88	0,02	637,00	20,50	1421
Nr. of Board Members	3,23	2,00	1,00	7,00	1,00	18,00	2,52	1421
R&D Scaled	0,08	0,04	0,01	0,22	0,00	0,60	0,10	105
Mean Tenure	2,83	2,51	1,42	4,67	0,23	10,62	1,44	1387
Mean Age	50,40	50,50	40,00	60,00	22,00	86,00	7,78	1421
Company Age	19,77	18,00	8,00	36,00	1,00	36,00	10,32	1421
Return on Assets 2004	0,10	0,04	-0,09	0,28	-5,00	24,83	0,82	1392
Female Ratio	0,15	0,00	0,00	0,50	0,00	1,00	0,26	1421
CEO Director	0,13	0,00	0,00	1,00	0,00	1,00	0,34	1421

Table 7. Summary Statistics - Dummy Variables

	Observations	Percentage
Young Company	323	23%
Mature Company	1098	77%
Total	1421	100%
CEO Director	400	28%
Other Directors	1021	72%
Total	1421	100%
Regulated Company	77	5%
Non-Regulated Company	1344	95%
Total	1421	100%

					Spearman Correlation	K Wallis
	Q1	Q2	Q3	Q 4	(p-value)	(p-value)
Size	1,17	1,24	1,32	1,33	0,219	69,234
	(0,71	0,57	0,72	0,54)	(0,00)	(0,00)
Nr. of Board Members	1,18	1,21	1,30	1,38	0,299	132,073
	(0,64	0,58	0,65	0,68)	(0,00)	(0,00)
Return on Assets 2004	1,25	1,25	1,31	1,25	-0,021	1,179
	(0,53	0,60	0,83	0,60)	(0,43)	(0,76)
Mean Tenure	1,29	1,32	1,27	1,20	-0,011	8,333
	(0,68	0,82	0,57	0,46)	(0,68)	(0,04)
Mean Age	1,19	1,35	1,34	1,18	0,055	39,977
	(0,57	0,80	0,70	0,42)	(0,04)	(0,00)
Company Age	1,35	1,27	1,22	1,23	-0,038	4,007
	(0,83	0,70	0,47	0,54)	(0,16)	(0,26)
Female Ratio	1,18	1,21	1,30	1,38	0,299	132,073
	(0,64	0,58	0,65	0,68)	(0,00)	(0,00)
R&D Scaled	1,33	1,22	1,20	1,44	0,083	3,513
	(0,54	0,44	0,34	0,70)	(0,40)	(0,32)

Table 8. Non-Parametric Tests on Company and Board CharacteristicsMean and (Standard Deviation)

Table 9. Mean Directorships forYoung and Mature Companies

	Mean	Median	Max	Std.	Wilcoxon z-score
Young Company	1,35	1,00	8,00	0,83	-1,816
Mature Company	1,24	1,00	7,00	0,58	0,07

Table 10. Mean Directorships for Companies with and without CEO Directors

	Mean	Median	Max	Std.	Wilcoxon z-score
CEO Director	1,22	1,00	3,20	0,43	-0,184
No CEO Director	1,28	1,00	8,00	0,71	0,85

Industry	Nr. of Companies	Nr. of Board Members	Mean Directorships	Median	Max	Std.	Mean Size (Assets in Billion SEK)
Human health and social work activities	23	114	2,35	1,00	6,50	2,16	0,4
Education	12	40	1,49	1,07	3,00	0,75	0,1
Administrative and support service activities	15	36	1,37	1,00	3,33	0,76	0,5
Wholesale and retail trade; repair of motor vehicles and motorcycles	336	951	1,35	1,00	8,00	0,84	0,6
Construction	131	517	1,28	1,00	3,50	0,53	1,8
Professional, scientific and technical activities	211	667	1,27	1,00	5,80	0,50	2,5
Information and communication	91	255	1,22	1,00	4,00	0,49	0,2
Electricity, gas, steam and air conditioning supply	45	233	1,22	1,00	3,00	0,39	7,6
Other service activities	12	59	1,20	1,00	2,00	0,34	0,4
Manufacturing	373	1106	1,19	1,00	4,00	0,42	1,7
Agriculture, forestry and fishing	16	56	1,17	1,00	2,80	0,46	3,1
Financial and insurance activities	24	92	1,16	1,00	2,00	0,28	35,2
Transportation and storage	102	340	1,11	1,00	2,50	0,28	3,4
Water supply; sewerage, waste management and remediation activities	8	57	1,10	1,05	1,50	0,17	1,2
Accommodation and food service activities	17	53	1,07	1,00	1,60	0,18	0,5
Mining and Quarrying	5	15	1,00	1,00	1,00	0,00	6,3
Total	1421	4591	1,27	1,00	8,00	0,64	2,3

Table 11. Summary Statistics - Industries

			0			- L ~			
Natural Log of Size (Assets in SEK)	0.0334***								
Nr. of Board Members		0.0184*** (0.00538)							
Return on Assets 2004		(000000)	0.0178**						
Mean Tenure			(on/nn/n)	-0.0279***					
Mean Age				(0+<00.0)	-0.00102				
Young Company					(10100.0)	0.113**			
Female Ratio						(0.0492)	0.0402		
CEO Director							(0.0642)	-0.0575*	
R&D Scaled								(0.0310)	0.00827 (0.0387)
Constant	0.629*** (0.168)	$\begin{array}{c} 1.206^{***} \\ (0.0251) \end{array}$	1.263*** (0.0174)	1.348** (0.0370)	1.316^{***} (0.0818)	1.239 *** (0.0174)	1.259*** (0.0183)	1.281 * * * (0.0222)	1.327 * * (0.141)
Observations R-squared	1,421 0.008	1,421 0.005	1,392 0.001	1,391 0.004	1,421 0.000	1,421 0.005	1,421 0.000	1,421 0.002	105 0.001
Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1									

Table 12. Simple Regression - Mean Directorships

Table 13. Multivariate Regressions

Company Characteristics		
<u> </u>		
Natural Log of Size (Assets in SEK)	0.0299***	0.0412***
	(0.00894)	(0.00929)
Return on Assets 2004	0.0216***	0.0196***
	(0.00746)	(0.00741)
Young Company Dummy	0.119**	0.109**
	(0.0494)	(0.0476)
Board Characteristics		
Nr. of Board Members	0.0156***	0.0141**
	(0.00558)	(0.00603)
CEO Director Dummy	-0.0663**	-0.0777**
	(0.0316)	(0.0331)
Mean Tenure	-0.0291***	-0.0221**
	(0.00929)	(0.00889)
Industry Dummies	NO	YES
Constant	0.721***	0.438**
	(0.186)	(0.184)
Observations	1,362	1,362
R-squared	0.023	0.088

(1) Mean Directorships without Industry Dummies (2) Mean Directorships with Industry Dummies

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 14. Robustness Test - Young Company

	Mean Dir	rectorships
Natural Log of Size	0.0293***	0.0322***
	(0.00881)	(0.00900)
Number of Board Members	0.0172***	0.0175***
	(0.00560)	(0.00565)
Return on Assets 2004	0.0195***	0.0179**
	(0.00738)	(0.00722)
Mean Tenure	-0.0237***	-0.0239***
	(0.00839)	(0.00850)
CEO Director	-0.0470	-0.0486
	(0.0324)	(0.0325)
Young Company	0.125**	. ,
	(0.0496)	
Company Age		-0.00550***
		(0.00183)
Constant	0.699***	0.780***
	(0.180)	(0.183)
Observations	1,385	1,385
R-squared	0.022	0.023

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Mean Dir	rectorships
0.0293***	0.0297***
(0.00881)	(0.00875)
0.0172***	0.0169***
(0.00560)	(0.00547)
0.0195***	
(0.00738)	
	3.59e-05***
	(6.31e-06)
-0.0237***	-0.0233***
(0.00839)	(0.00823)
-0.0470	-0.0391
(0.0324)	(0.0322)
0.125**	0.124**
(0.0496)	(0.0489)
0.699***	0.692***
(0.180)	(0.178)
1,385	1,414
0.022	0.022
	O.0293*** (0.00881) 0.0172*** (0.00560) 0.0195*** (0.00738) -0.0237*** (0.00839) -0.0470 (0.0324) 0.125** (0.0496) 0.699*** (0.180) 1,385 0.022

Table 15. Robustness Test - Return on Assets

Robust standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 16. Robustness Test - Size

		Mean Directorships	
Natural Log of Size	0.0293*** (0.00881)		
Natural Log of Turnover	(,	0.0193*	
Natural Log of Nr. of Employees		(0.0100)	0.0376*** (0.0137)
Number of Board Members	0.0172***	0.0201***	0.0189***
Return on Assets 2004	(0.00560) 0.0195***	(0.00556) 0.0170**	(0.00552) 0.0165**
Mean Tenure	(0.00738) -0.0237***	(0.00769) -0.0227***	(0.00760) -0.0224***
	(0.00839)	(0.00857)	(0.00863)
CEO Director	-0.0470 (0.0324)	-0.0565* (0.0317)	-0.0556* (0.0315)
Young Company	0.125**	0.123**	0.125**
	(0.0470)	(0.0420)	(0.0470)
Constant	0.699*** (0.180)	0.875*** (0.202)	$\frac{1.084^{***}}{(0.0688)}$
Observations	1,385	1,385	1,385
R-squared	0.022	0.018	0.022

Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1

APPENDIX B

Variable	Definition
Nr of Directorships	Number of directorships for each individual director.
Female	A dummy variable which takes the value of one if the individual director is a female, otherwise it takes the value of zero. We use the SSN to determine whether an individual director is a female. If the second last digit is an even number, it give us the information that it is a female.
CEO Director- individual level	A dummy variable which takes the value of one if the individual director is also a CEO, otherwise it takes the value of zero.
Mean Directorships	The average number of directorships per board director witin a company.
Number of Board Members	The number of board members within a board.
Mean Tenure	The average tenure of the board directors presented in years.
Mean Age	The average age of the board directors within a board. We calculate the mean age for directors within a board by first calculating the age of each individual director, through the SSN, and then take the average for all directors within each company.
Female Ratio	The number of female directors over the total number of directors witin a board.
CEO Director	A dummy variable which takes the value of one if the CEO of the company also sits on the board.
Natural Log of Size	The natural logarithm of size is taken in order to make the interpretaion meaningful.
Return on Assets 2004	The return on assets is calculated as the earnings before interest expences (EBIE) over total asses in 2004.
Scaled Research & Development	Research and Development expenses over the sales in 2007.
Young Company	A dummy variable which takes the value of one if the company is considered young, otherwise it takes the value of zero. The definition to be considered a young company is that it has been established before 1997.
Industry Dummies	
Electricity, gas, steam and air conditioning supply	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Water supply; sewerage, waste management etc	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Human health and social work activities	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Professional, scientific and technical activities	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Accommodation and food service activities	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Mining and quarrying	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Financial and insurance activities	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Construction	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Education	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Information and communication	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Transportation and storage	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Administrative and support service activities	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Manufacturing	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Wholesale and retail trade; repair of motor vehicles	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Agriculture, forestry and fishing	Taking the value of one if the company is in the industry, otherwise it takes the value of zero.
Robustness Variables	
Natural Log of Sales	The natural logarithm of total sales during 2007 to proxy for the size of the company.
Natural Log of Nr. of Employees	Thenatural logarithm of number of employees within a company to proxy for the size of the company.
Operating Margin 2004	The operating margin for the company calculated as the earnings before interest expenses over total sales in 2007, to proxy for the performance of the company.
Company age	The age of a company in years.

Table 17. Summarized Variable Description

Table 18. OLS Regression Model Assumptions[‡]

Assumption MLR 1. Linearity in parameters

The model in the population can be written

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k + u,$$

where $\beta_0, \beta_1, ..., \beta_k$ are the unknown parameters (constants) of interest and *u* is an unobservable random error or disturbance term.

Assumption MLR 2. Random sampling from the population

We have a random sample on *n* observations, $\{(x_{i1}, x_{i2}, ..., x_{ik}, y_i): i = 1, 2, ..., n\}$, following the population model in Assumption MLR 1.

Assumption MLR 3. No perfect Collinearity

In the sample (and therefore in the population), none of the independent variables are constant, and there are no exact linear relationships among the independent variables.

Assumption MLR 4. Zero conditional mean

The error term u has an expected value of zero given any values of the independent variables. In other words,

 $\mathbf{E}\left(u|\mathbf{x}_{1},\mathbf{x}_{2},\ldots,\mathbf{x}_{k}\right) = \mathbf{0}$

[‡]Wooldridge (2009)

Table 19. Model Specifications for Simple Regressions

For each independent variable we specify the model as

$$y = \beta_0 + \beta_1 x + u,$$

where y is the dependent variable, x is the independent variable, β_0 is the intercept, β_1 is the slope parameter which measures the effect of one increase of the independent variable and finally u is the error term.

The specific models are as follows:

 $\begin{aligned} & \text{Mean Directorships} = \beta_0 + \beta_1 \text{Natural Log of Size} + u \\ & \text{Mean Directorships} = \beta_0 + \beta_1 \text{Nr. of Board Members} + u \\ & \text{Mean Directorships} = \beta_0 + \beta_1 \text{Return on Assets 2004} + u \\ & \text{Mean Directorships} = \beta_0 + \beta_1 \text{Mean Tenure} + u \\ & \text{Mean Directorships} = \beta_0 + \beta_1 \text{Mean Age} + u \\ & \text{Mean Directorships} = \beta_0 + \beta_1 \text{Young Company} + u \\ & \text{Mean Directorships} = \beta_0 + \beta_1 \text{Female Ratio} + u \\ & \text{Mean Directorships} = \beta_0 + \beta_1 \text{CEO Director} + u \\ & \text{Mean Directorships} = \beta_0 + \beta_1 \text{R&D Scaled} + u \end{aligned}$

Table 20. Model Specifications for Multivariate Regressions

In the multivariate regression we specify the model as

$$y = \beta_0 + \beta_1 x_1 + \beta_2 x_2 + \dots + \beta_k x_k + u,$$

where y is the dependent variable, x_1 through x_k are the independent variables and u is the error term. β_0 is the intercept and β_1 though β_k are slope parameters measuring the effect on the dependent variable of one increase in the independent variable, keeping the other variables constant.

Multivariate regression without controlling for industries:

Mean Directorships

 $= \beta_0 + \beta_1 Natural Log of Size + \beta_2 Return on Assets 2004$ $+ \beta_3 Young Company + \beta_4 Nr. of Board Members + \beta_5 CEO Director$ $+ \beta_6 Mean Tenure + u$

Multivariate regression when controlling for industries:

Mean Directorships

 $= \beta_0 + \beta_1 Natural \ Log \ of \ Size + \beta_2 Return \ on \ Assets \ 2004$ $+ \beta_3 Young \ Company + \beta_4 Nr. \ of \ Board \ Members \ + \beta_5 CEO \ Director$

 $+ \beta_6 Mean Tenure + Industry Control Dummy Variables + u$