



EKONOMIHÖGSKOLAN  
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# **Board size and firm value**

**Masters thesis in finance**  
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## **Abstract**

<b>Title:</b>	Board size and firm value
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<b>Problem:</b>	<p>The board is responsible for monitoring managers and protecting shareholders interests. The board's effectiveness in its monitoring role is determined by its <i>independence, size and composition</i>. A survey from McKinsey shows that some investors are willing to pay more for a share in a company that has a well governed board. Research shows that the board's capacity for monitoring increases with the board size but the benefits can be outweighed by such costs as slower decision-making, less-candid discussions of managerial performance, and biases against risk-taking. Is there any relation between firm value and board size in Sweden?</p>
<b>Purpose:</b>	<p>The purpose of this thesis is to investigate whether the size of the board has any impact on firm value, which is represented by Tobin's q. The study is limited to Swedish firms listed on the A-list and Attract 40. The purpose is also to augment the understanding of the financial analysts' valuation process with respect to board size.</p>
<b>Conclusions:</b>	<p>We find a negative relation between firm value represented by Tobin's q and board size. As boards grow larger and hence gain more competence, it does not necessarily imply that the control function improves. We find that financial analysts in Sweden do not consider board size at all in their valuation process. Instead they focus on the people having a chair on the board, if they consider the board at all. Our final conclusion is that board size has an impact on firm value and investors should take it into consideration when deciding on an investment.</p>
<b>Key words:</b>	Board size, Tobin's q, firm value, regression

## Foreword and acknowledgements

Since both of us find the field of finance interesting, the selection of the field came naturally when we were faced with the choice. Even though the interest in the field was ever present, the selection of a subject became obscurely more difficult than we ever could imagine. After numerous meetings and brainstorming sessions, our choice finally fell on firm value and the board. *The subject and the goals were set which was of most importance to us* (if you don't know where you are going, how are you going to get there?) and we started our journey. The journey was from the beginning to the end both enjoyable and instructive but many difficulties were encountered as well. Stress and numerous sleepless nights became common to us during the course of our work. We came to realize two things during this journey. First, that we were not the super heroes that we thought we were and second, to write a master's thesis is a lot harder than we previously assumed. At the end of the day we gained new knowledge and plenty of experience.

First and foremost we would like to acknowledge and thank our tutor Susanne Arvidsson. Without her guidance and contributions, this thesis would never be what it is today. Second we are grateful to our friends and family that stood by us and supported us through the (endless) difficult periods that we were subject to. We would also like to thank the analysts that were kind enough to spare us their valuable time and let themselves be interviewed.

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## 1. Introduction

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*This first chapter aims to introduce the objective of this thesis and to give a basic understanding for the subject. A discussion is made of the problem and the purpose is described. The chapter ends with a short disposition that describes the chapters of the thesis.*

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### 1.1 Background

In today's media rich society, corporations are under constant supervision from their stockholders and stakeholders. With the introduction of the Internet, information is easier and faster to gather and share than ever before. The financial markets have also evolved with technological breakthroughs and innovations. Due to deregulations and further integration of financial markets there is increasing demand for information from stockholders. (Oxelheim, 1996) The big wave of Mergers & Acquisitions during 1980 and 1990 has also increased the focus on corporations and their board composition both internationally and domestically (Ross et al, 2002).

Much debate and light has been put on the corporate boards and the role they play in the theatre of the business society. Accounting scandals in multinational American corporations such as Enron and WorldCom have led to frustration and mistrust among shareholders and politicians around the world, who demand that board members take responsibility for their actions (Dagens Nyheter, 2004-01-13, 2002-09-08, 2002-07-06). This has led to cases of dismissal and the dissolving of boards and management. Currently in Sweden the board has been widely debated because of irregularities taking place within large Swedish firms. The list can be made long but the most recent and debated one is the Swedish insurance giant Skandia AB (Dagens industri, 2003-12-01, 2003-12-02, 2003-12-23). To cite but a few examples, Bengt Braun, board chairman for Skandia, and the CEO for a big Swedish firm Bonnier, have been forced to resign as the chairman of the board from Skandia AB (Dagens industri, 2003-12-01). The Skandia case is about gigantic bonus compensations to the top management, and the board of directors in Skandia is held responsible for not stopping the removal of the bonus limit. The consequence of their action resulted to top management earning up to hundreds of millions Swedish Krona in bonus.

Systembolaget, the Swedish state-owned alcohol monopoly firm is involved in a bribery scandal. This has put much pressure on the board and its chairman. Hence it can be stated that corporate board members and managers are evaluated and supervised by the public today more than ever before. In Sweden politicians are now calling for stricter laws for board members. (Dagens Industri, 2003-11-17, Dagens Nyheter, 2003-11-14).

Research on corporate boards is focused on gender, composition and compensation for board members (Zahra & Pearce 1989, Baysinger & Butler, 1985). Recent research has been for example focused on the presence of foreign nationals as board members (Oxelheim & Randøy, 2001). The Swedish researchers Gabrielsson and Winlund (2000) examined the effects of boards' working style on board task performance. Focus on competence, diversity, compensations is rather common but no light is being put on the board size and its impact on company valuation.

## 1.2 Problem discussion

To be able to have a good problem discussion it is useful to put light on what functions a board has and what value it is expected to create for its shareholders. It is important to investigate and discuss how groups function.

### 1.2.1 The function of a board

For a company to function a board is required. A board often consists of a chairman and a number of board members. Often a vice chairman is also appointed. In a limited liability company it is the stockholders that elect the board members. Elections take place at the annual stockholders' general meeting. In Sweden a board should consist of a minimum of 3 members (Rothe and Skog, 2002). There is no upper limit for the size of the board but it is required that a limit must be specified in the article of association. This gives the company an option to compose and alter its board membership if necessary. This option is a form of flexibility that Swedish companies enjoy.

The function of the board is further to appoint a CEO. The function of the board is also to set the company strategies and to follow up on those strategies, while the roll of management is to implement these strategies on a daily and operational basis. This means that the board is responsible of monitoring; following up and rewarding the CEO. The board's objective and responsibility is also to protect and safeguard the shareholders (principal) interests against managers' (agent) who serve their own interests at the expense of the principals (Berle and Means, 1932).

Zahra & Pearce, (1989) have identified three sets of interrelated roles played by boards. First, the duties include the formulation and dissemination of corporate goals and policies (including the restructuring of the organization) as well as defining the resources that are necessary to implement board's concerns and priorities. These duties are referred to as the *strategic function* of the board (Treichler, 1995). The second role of the board is the corporate control. This role includes monitoring and rewarding executive actions and executive performance, the selection of the chief executive committee and the protection of the shareholders' interests. According to Baysinger and Hoskisson (1990), under a system of strategic control "*managers are evaluated on the basis of how strategically desirable their decisions were before implementation (ex ante) and on the basis of financial performance of*



*the firm after the decisions were implemented (ex post)*” (Baysinger and Hoskisson 1990:78), under a system of financial control “*managers are evaluated and rewarded primarily, if not solely, on the basis of their success (ex post) in meeting performance criteria*” (Baysinger and Hoskisson 1990:78). In his research paper Treichler (1995) states that an important part of this control function is the responsibility for an effective and efficient financial planning and control in the organization. The role of corporate control was referred to here as the *governance function* of the board. According to Treichler (1995:190), “*an important requirement of this function is that corporate governance mechanisms bring the interests of managers and shareholders in to congruence*”.

Thirdly the service role includes representing the firm’s interest in the community, linking the firm with its external environment and securing critical resources (Pearce & Zahra, 1992).

### **1.2.2 Value of a board**

A survey performed by McKinsey (2000) has given us an insight of what good corporate governance is. The McKinsey survey is very much in line with Patterson’s (2000) findings. According to Patterson (2000), the results from academic studies tend to be somewhat inconclusive as to whether corporate governance adds value to a company. However, corporate governance is perceived as adding value to a company according to the widely cited *Investor Opinion Survey on Corporate Governance* (McKinsey, 2000). This survey of institutional investors found that, over 80 percent of institutional investors are willing to pay more for the shares of a company that is well governed. According to the McKinsey survey, the actual premium investors say they would be willing to pay for a well-governed company ranges from 18 percent for a well-governed UK company to 27 percent for a Venezuelan or Indonesian company.

The McKinsey (2000) survey defines a well-governed company as having the following qualities:

- ◆ a majority of outside directors on the board with no management ties;
- ◆ holding formal evaluations of directors;
- ◆ being responsive to investor requests for information on governance issues;
- ◆ In addition, directors hold a significant stockholding in the company and a large proportion of directors’ pay is in the form of stock options.

Some investigations have been conducted on the effectiveness of boards and their sizes. Some researchers claim that if there are too many people involved in a discussion then it may not be effective (Lipton and Lorsch, 1992). This can have the effect that monitoring of the management team becomes ineffective. There are different arguments that smaller boards have better monitoring capacities on the CEO and their results (Weisbach, 1988). If operating results do not match the company strategy then a smaller board is more likely to dismiss the CEO because of better monitoring (Jensen, 1993). This can inevitably lead to higher productivity and thus better results in the long term.

From this perspective, boards' failure to fulfill their roles is often explained by the fact that boards have long been considered "creatures of the CEO" (Patton & Baker, 1987). CEO:s are thought to play a most significant role in designing and leading the board. Accordingly it is argued that most CEO:s do not want a strong board that will challenge their power and authority (Rosenstein, 1987). As a result, loyalty to the CEO- not competence- becomes a major criterion in selecting, retaining and compensating directors.

The composition of the board can therefore be of importance for the company for several reasons. As Pearce and Zahra (1992) noted:

*"Board composition is important because it influences the quality of directors' deliberation and decisions, the ability of directors to exercise controls over top management and the directors' ability to provide strategic direction and performance"* (Pearce and Zahra, 1992:411)

Pearce and Zahra (1989:309) also noted that:

*"Larger boards are not as susceptible to managerial domination as their smaller counterpart. They are also more likely to be heterogeneous in member background, values and skills. Thus they are likely to resist managerial domination and present shareholder interest. Therefore these, boards will be more actively involved in monitoring and evaluating CEO and company performance, normally through specialized committees"*.

### 1.2.3 Why study the size of a board

The board's effectiveness in its monitoring role is determined by its *independence, size and composition* (Kose and Lemma, 1998). According to Forbes & Milliken (1999), boards require a high degree of specialized knowledge and skills to function effectively. With the functions of the board described above, the board can be considered the life-wire of the firm.

Lipton and Lorsch (1992) argue that the norms and behavior in most boardrooms are dysfunctional. Lipton and Lorsch (1992) blame directors for rarely criticizing the policies of top managers and for not holding candid discussions about corporate performance. Believing that these problems increase with the number of directors, Lipton and Lorsch (1992) recommend limiting the membership of boards to ten people, with a preferred size of eight or nine. The proposal amounts to a conjuncture that even if boards' capacities for monitoring increases with the board size, the benefits are outweighed by such costs as slower decision-making, less-candid discussions of managerial performance, and biases against risk-taking.

Jensen (1993) takes up this discussion, where he accused directors of putting much emphasis on politeness and courtesy at the expense of truth and frankness in the boardrooms. Jensen (1993) also stated that when boards get beyond seven or eight people, they are less likely to function effectively and becomes easier for CEO to control. It is therefore interesting to ask the questions: Does board size matter at all in Sweden? Does a smaller board govern more effectively in Sweden than a board with many people? Or is the opposite? Is there a relation between firm value and the size of the board in Sweden?

Some evidence shows that reducing board size has become priority for institutional investors, dissident directors and corporate raiders seeking to improve troubled companies. As mentioned earlier in the beginning of this paper, a McKinsey survey shows that institutional investors are willing to pay a higher price for a well-governed company. (McKinsey, 2000)

When companies grow they tend to increase their board size because they believe their governance function will improve. The interesting question is if it does. Yermack (1996) found that firms with smaller board are valued higher in the USA and that if the board size increases value tends to diminish. Does the same situation hold for firms listed in Sweden? Does the size matter when analyst make valuations?

The above discussion shows that there are different views and results on the issue of the relation between board's efficiency and size. With much attention in the literature and research on this subject, it is deemed important to conduct a research on the size of the board.

### **1.3 Hypothesis**

This discussion above has led us to investigate the following hypothesis.

- ◆ The size of the board has no impact on company valuation.
- ◆ The analysts do not consider board size in their valuation process.

### **1.4 Purpose**

The purpose of this thesis is to investigate the impact of board size on firm market value of listed Swedish firms. The purpose is also to augment the understanding of the financial analysts' valuation process with respect to board size.

### **1.5 Delimitations**

We limit our study to the impact of board size and firm value. Control variables like board composition, foreign board membership, outsider board directors, company profitability and firm size were tested against firm value.

The choice of companies in the study is also limited to companies listed on the Stockholm stock exchange's A- and Attract 40 list. Perhaps the results of the study would have been different if all Swedish firms that are listed the Stockholm Stock Exchange were included in the study. We further demarcate the investigation to companies that have been listed for 3 years. The interviews are limited to 6 financial analysts from 3 different business sectors.

## 1.6 Disposition

This thesis is mainly directed to scholars and university students at bachelor and masters level. The thesis is divided into 6 different chapters, to make it easier for the reader. A introduction is made to resume every chapter.

### *Introductory chapters:*

#### *Chapter 1 - Introduction*

This chapter aims to introduce the reader to the purpose of the study and to give him a basic understanding for the subject and the problem.

#### *Chapter 2 - Methodology*

In the methodology chapter descriptions are given on the choice of the subject, the investigation method, the theoretical framework, demarcations and finally the chapter ends with source criticism.

### *Chapter on Theory:*

#### *Chapter 3 – Theory*

The third chapter will describe the theoretical ground for our investigation.

### *Chapter on empirical Analysis:*

#### *Chapter 4 – Empirical Analysis*

The empirical results of the study are presented in this chapter.

### *Concluding chapters on analysis and results:*

#### *Chapter 5 - Analysis*

In chapter five, the results of the study are analysed and related to theories and previous studies on the subject.

#### *Chapter 6 - Conclusions*

In the sixth and final chapter we discuss and reflect around our findings. The chapter ends with proposals for further studies.

## **2. Methodology**

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In this chapter a description of how the study was conducted is given. Further a description is made of the theoretical framework. The chapter is ended by a description of how the data collection process was conducted and finally the source is analyzed and criticized.

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To be able to achieve the goals which are set in the research process, methodology is a useful tool for the researcher. In other words one can say that methodology is a way of solving problems and can be considered as the key to new knowledge. According to Holme & Solvang (1997) an active and conscious choice of methodology is a necessary prerequisite to be able to conduct a serious research.

### **2.1 Choice of subject**

During our master's course, International finance, we read a paper written by Professor Lars Oxelheim and Trond Randøy (2001) "The impact of foreign board membership". The article discusses the impact of foreign board membership on firm value. This article raised our interest for the board and firm value. During a brainstorming-meeting with our tutor the issue of the board was raised. After some literature review and discussions we came to the conclusion that the impact of board size and firm value is quite an unexplored research area in Sweden. Thus, with the aim of studying a subject that is currently debated, our choice finally fell on the importance of the board size to the value of the firm.

### **2.2 Investigating method**

#### ***2.2.1 Approaches of a problem***

There are two different ways to approach a problem. These are the deductive approach and the inductive approach. We have chosen to use a hypothetical-deductive method in our investigation because there are existing research and theoretical base in the area. Even though they are mainly from the United States, we find them useful in our study of Swedish companies. The hypothetical-deductive method is the most common way of developing a theory (Holme & Solvang, 1997). We have made use of existing theories within this field of research; we have developed out of the existing theories some hypotheses about the phenomenon we are studying, which is later tested empirically through interviews. The

approach we adopt in this study is in line with the hypothetical-deductive method. The model below indicates how we approach the problem.

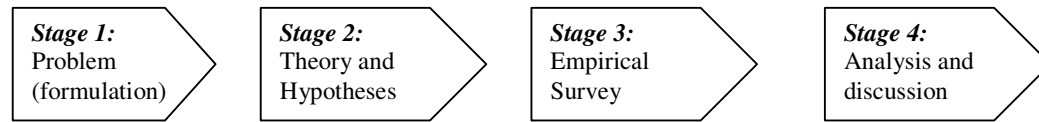


Figure 2.1: Approach for investigations according to the hypothetical-deductive method.

### 2.2.2 Quantitative and qualitative approach

We have used a quantitative method which is focused on large amounts of data where statistics play central role. This approach is more formalized and structured and has therefore enabled us to have control of the study to a larger extent. The method defines which relationships are of special interest bearing in mind the questions chosen. The structure and planning process is characterized by selectivity and distance in relation to the source of information. All this is necessary to be able to conduct formalized analysis, to compare and to judge the results of the study (Holme & Solvang, 1997).

We find the combination of the two methods appealing because it increases the objectivity of the study and creates a deeper understanding of the analysis. The quantitative method in form of an empirical study is used to prove a potential connection between board size and company values where we use a regression analysis. We also conduct a qualitative study by interviewing 6 financial analysts. The use of the two methods enables us to increase our understanding for the subject at hand and our results.

### 2.3 Choice of theory and previous studies

To be able to analyze our problem presentation in this study we have searched for theories that are relevant for this purpose. Most of the theories originate from research journals within the chosen subject. Most of the articles that were used in this study have been taken from financial and managerial journals like, *Academy of management review*, *Journal of banking and finance* and *Journal of financial economics*. This means that research concerning board composition was our guideline.

Agency theory, board interlocks, board effectiveness, board composition and cognitive theories are some of the theories that support our arguments in this study. As we want to

investigate if the size of the board is related to firm value, all of these theories are found to be relevant to our study.

## **2.4 Choice of empirical material and data**

It is not sufficient to just compare secondary based data to understand how the board influences a firm's performance. To be able to get a good comprehension of the results of the secondary data, primary data can be used to gain further understanding. However studies based on secondary data can give valuable contributions to research concerning boards (Kärreman, 1999). Based on this argument our empirical material is a combination of both primary and secondary nature.

As we intend to investigate if the board size has any influence on firm value a proper measure for firm value is necessary. There are different ways to measure performance. One way is to deduct the book value of assets from the market value of the firm; hence the remaining value is a measure of the firm's intangible assets. To be able to make good comparison of relations between companies, Tobin's q is a more appropriate measure because it compares the market value and the replacement cost of assets (Ross et al, 2002). Tobin's q, which is defined in 4.1, was originally developed as a measure of the firm's value but it has also proved to become a very good measure for the firm's intellectual capital. We have followed the method of recent similar studies (Yermack, 1996, Hermalin and Weisbach, 1991) and use Tobin's q as a measure for performance.

### **2.4.1 Definition of variables**

The dependent variable *Tobin's q* or *firm value* is measured at 31 December in 2000, 2001 and 2002. To reduce heteroskedasticity, we use the natural logarithm of the q-value. In addition to board size our regressions include controls for other variables that we expect either to affect Tobin's q directly or indirectly.

We follow Yermack (1996) and Carter et al (2003) and use the natural logarithm for the *board size* variable. We also include a dummy variable to control for performance and size, *dummy variable for board size*; if the board size is 8 or larger then the variable is 1 otherwise it is 0.



Like Yermack (1996) we include *return on assets* (ROA). This variable is important to control for because a firm's profitability has a significant impact on its market value (Yermack, 1996). We calculate ROA as operating income divided by total assets, measured at the close of each year.

Smith and Watts (1992) argue that firm value depends on future investment opportunities. This argument motivates the inclusion of the ratio of capital expenditure over sales in our regression. Capital expenditure is defined as investments in property, plant and other equipment. In other words it is a measure for the investments in tangible assets.

We further check for possible investment opportunities by including a variable that controls for the number of business segments that a firm has. Berger and Ofek (1995) show that diversified firms were valued less highly in the American capital markets during the period 1984-1991. To control for diversification we include a variable that counts the *number of business segments* that a firm has reported in its annual report. Yermack (1996) argues that diversified companies are likely to have larger boards because many boards grow in size when acquisitions occur or when boards seek outside expertise.

*Outside directors* are included in the regression because Baysinger and Butler (1985) suggest that boards with majority of outside directors monitor managers more effectively. Outside directors exclude current officers of the firm, employee or union representatives and non-employee directors who have personal or business relationships with the company.

Just like Yermack (1996), Randøy & Oxelheim (2001) and Carter et al (2003) we control for *firm size*. Carter et al (2003) uses the natural logarithm of total assets. We choose the method used by Randøy & Oxelheim (2001) and measure *firm size* by taking the natural logarithm of total revenues, as the size alone is not normally distributed. The main reason for this choice is that total assets are represented in the ratio between *debt and assets*.

Randøy & Oxelheim (2001) find that a firm value is higher for firms with outsider Anglo-American board membership. We also include a variable that tests for the number of foreigners in our sample firms.

### ***2.4.2 Other possible variables***

Our choice of variables for the regression analysis it was based on variables used in other similar studies, mainly Yermack (1996), Randøy & Oxelheim (2001) and Carter et al (2003). Beside the variables mentioned above, Yermack (1996) includes variables such as officer and director stock ownership to better control for efficient monitoring, ROA with two year lagged values. Randøy & Oxelheim (2001) also include a variable for Firm age as a general variable, and also check for if the firms are listed on a foreign market. Further controls are made for industry effects. Of these variables a few of them are worth including in our own regression. For example it may be interesting to further examine stock ownership and governance structure, a more descriptive board composition and compensation. However we have chosen not to do this because our data collection would have taken a considerably longer period.

### ***2.4.3 Primary data***

Our primary data consists of telephone interviews with a number of financial analysts. To be able to achieve an in depth picture of the qualitative study we have interviewed 6 financial analysts from 3 different business sectors to get as diversified and unbiased answers as possible. The interviews can be found in appendix 5.

### ***2.4.4 Secondary data***

Data is being collected from companies listed on the A-list and the Attract 40 for the period 2000 – 2002. The choice of companies is based on the fact that the A-list and Attract 40 display higher liquidity than other lists on the Stockholm Stock Exchange. To achieve an efficient market one condition is that there should be high liquidity; this is an important criterion according to Ross et al (2002). The information for variables concerning the board and some financial information was collected from annual reports, while other financial information such as stock prices was gathered from the Six Trust Database. Companies belonging to all industries except finance, insurance and utility, are included. We omit these companies because they have unusual reporting methods and because of concerns that government regulations leads to more limited roles for their boards of directors (Yermack, 1996). Further criterion is that the chosen companies are listed at least from the beginning of the year 2000. The three year requirement represents an attempt to balance a sampling issue: collecting several observations for each company so that econometric panel data techniques can be used.

## **2.5 Source criticism**

### **2.5.1 Validity and reliability**

In research the question is always raised on how valid and reliable the source of data is. An augmentation is desirable of the degree between the theoretical base and the empirical variables. Validity and reliability are two yardsticks that can be used to judge these factors (Andersen, 1998).

Validity is the level at which we measure what we intend to measure, that is to measure what is relevant. Validity can be said to consist of two different concepts: inner and outer validity (Weidersheim-Paul & Eriksson, 1991). According to Andersen (1998) the inner validity concerns consistency between the models concepts and the operational definitions, i.e. the relevance of the empirical concepts- or variable choice for the present presentation of the problem. When an investigation is done in accordance with the hypothetical-deductive method, the variable choice is adapted to be able to answer the stated hypothesis. We are aware of the risk that our in choice of the explanatory variables maybe we have missed to measure relevant aspects that could have increased the validity of our study. By doing a quantitative investigation there is also a risk that “in depth information” can be lost. We are aware of this risk and we accept these flaws as we instead want to take advantage of the ability to generalize and to make comparisons that quantitative studies offer.

Reliability is decided by how the measurement is undertaken and how careful we are in handling this information (Holme & Solvang, 1997). The reliability is considered to be high when a different and an independent measurement of one and the same phenomenon produce the same or almost the same result. The reliability of our study can be considered to be high because we have measured the size of a board as was intended from the beginning of the study. We have also asked exactly the same questions to all financial analysts we interviewed. Standardized questions are considered to impact the reliability positively since we aspire to generalize as much as possible.

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This chapter will describe the theoretical ground for our investigation. The chapter begins with Tobin's q followed by agency theory, board interlocks, effectiveness and cognitive group theories. The chapter ends with prior research on this subject.

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### 3. Theory

#### 3.1 Tobin's Q

Tobin's q is a measure of a company's value. It is defined as the ratio of the market value of a firm to the replacement cost of its assets (Chung and Pruitt, 1994).

To understand what Tobin's q can indicate, Hermalin and Weisbach (1991) write that in the absence of market power, a divergence of q from 1 represents the value of the asset *not* included in the denominator of q, such as the value of internal organization or the value of agency costs. A q above 1 indicates that the market views the firm's internal organization as exceptionally good or the expected agency costs as particularly small.

Tobin's q can be defined in several ways. There are three main measures of Tobin's q. The original and most difficult form by Lindenberg and Ross (1981) can be calculated by the following formula:

$$q = \frac{\text{PREFST} + \text{VCOMS} + \text{LTDEBT} + \text{STDEBT} - \text{ADJ}}{\text{TOTASST} - \text{BKCAP} + \text{NETCAP}} \quad (1)$$

Where,

PREFST	Liquidating value of a firm's preferred stock
VCOMS	Price of the firm's common stock multiplied by the number of outstanding shares at the close of the year (December 31)
LTDEBT	The value of the firm's long-term debt adjusted for its age structure
STDEBT	The book value of the firm's current liabilities
ADJ	Value of the firm's net short-term assets
TOTASST	The book value of the firm's total assets
BKCAP	The book value of the firm's net capital stock
NETCAP	The firm's inflation-adjusted net capital stock

The above mentioned calculation is though very costly both in terms of data requirements as computational effort. Chung and Pruitt (1994) have therefore developed and tested a less data and computational demanding calculation that is an approximation of Tobin's q. In Chung's and Pruitt's method at least 96.6 % of the total variability in Lindenberg and Ross (1981) Tobin's q is explained by the approximate q. The approximate q is defined as follows:

$$\text{Approximate } q = \frac{\text{MVE} + \text{PS} + \text{DEBT}}{\text{TA}} \quad (2)$$

Where,

MVE	The product of a firm's share price and the number of common stock shares outstanding
PS	The liquidating value of the firm's outstanding preferred stock
DEBT	The value of the firm's short-term liabilities net of its short-term assets, plus the book value of the firm's long term debt
TA	The book value of the total assets of the firm

The primary difference between the Lindenberg and Ross (1981) Tobin's q (1) and the approximate q (2) is that the replacement q assumes that the replacement values of a firm's plant, equipment and inventories are equal to their book values. Another difference between the models is the manner in which the market value of the firm's long term debt is developed. The approximate q the book value of long term debt is used, while the original q adjusts for the age structure. Both techniques assume that market and book values for short-term debt are identical.

A third model is presented by Randøy and Oxelheim (2001). This model is a simplification of Chung and Pruitt (1994) approximation. The q here is defined as the relation between the firm's market value against its book value of total assets.

$$q = \frac{\text{MV} + \text{TS}}{\text{TA}} \quad (3)$$

Where

MV	Sum of the stocks' market value
TS	Book value of total debt

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TA                      Book value of total assets

The last approximation by Randøy and Oxelheim (2001) is followed for the empirical part in this thesis.

### 3.2 Agency theory

Agency theory can be defined as a contract where a party (principal) engages another party (agent) to take and fulfill actions where the decision making authority has been delegated to the agent from the principal (Jensen and Meckling, 1976). The board of directors (agents) which has the power to hire, fire and compensate senior management serves to resolve conflicts of interest among decision makers and residual risk bearers (principal) (Baysinger and Butler, 1985).

The role of the board of directors is to ameliorate various classes of agency problems arising from conflicts of interests between managers and equity holders, equity holders and creditors, and capital contributors and other stakeholders to the corporate firm (John and Senbet, 1998). With these words agency theory is considered to be of relevance as a theoretical base for the study of the board's importance. An effective board should help eliminate the conflicts that arise between different stakeholders. Time spent to solve agency problems can instead be used to conduct board assignments that can be of value to the firm.

The agency theory assumes that motivation problems appear when parties (agents and principals) have different interests and risk attitudes. Common examples are the relationships between stockholders and the board and between stockholders and credit providers. The basic assumption of the theory is that separate ownership and management leads to conflicts of interest as it is an incompatible goal that both parties shall achieve a maximum return. A conflict of risk taking also arises between the parties because the shareholders are the ones that are compensated last if a bankruptcy should occur. Therefore the shareholders are more dependent of the board's decisions than the rest of the firm's stakeholders. According to the agency theory a board should be seen as the highest hierarchical level in the firm, and how it is appointed should not influence the hierarchical order (Jensen and Fama 1983).

### 3.2.1 Agency problems

*“Agency problems arise because contracts are not costlessly written and enforced”  
(Fama & Jensen 1983a:2).*

Residual claims are claims to net cash flows that result from differences between inflows and promised payments to other claimholders. Jensen and Fama (1983a) discuss the role of the board of directors and argue that the common top of the decision control systems of organizations, large and small, in which decision agents do not bear a major share of the wealth effects of their decisions is some form of board of directors. *“Exercise of these top-level decision control rights by the board helps to ensure separation of decision management and control even at the top of the organization”* (Jensen and Fama, 1983a:14).

Jensen and Meckling (1976) define agency costs as the sum of the out-of-pocket costs of structuring, administering and enforcing contracts (both formal and informal) plus the residual loss. They further explain the enforcement cost to include both monitoring and bonding costs. The agency costs come in different forms. It can be in form of contracting costs, transaction costs, moral hazard costs, and information costs. Jensen and Meckling (1976) argue that, to be able to understand the agency problem one has to recognize that the parties to a contract bear the agency cost of a relationship. Therefore, for any given skill of activity, self-interested maximizing agents minimize the agency costs in any contracting relationships. Agency costs also include the value of output lost because the costs of full enforcement of contracts exceed the benefits. An efficient board has the task to serve and protect the interest of the shareholders and to avoid these agency costs.

### ***3.2.2 Sources of conflict***

Three sources of conflict of interest between the firms' managers and other claimholders arise because other managers are risk-averse individuals who invest in significant firm-specific capital that must be amortized over their careers. (Jensen and Smith, 1985) (1) Choice of effort- additional effort by the manager generally increases the value of the firm, but to the manager effort is a "bad." (2) Differential risk exposure-managers typically have a nontrivial fraction of their wealth in firm specific human capital and thus are concerned about the variability of total firm value, including that portion of firm risk that can be eliminated through diversification by the firm's stockholders. (3) Differential horizons-the manager's claim on the corporation is generally limited to his tenure with the firm. The corporation, on the other hand, has an indefinite life, and stockholders claims are tradable claims on the entire future stream of residual cash flows. Managers therefore have incentives to place lower values on cash flows occurring beyond their horizon than is implied by the market values of these cash flows (Jensen and Smith, 1985).

Devices for separating management and control include (1) hierarchical structures in which the decision initiatives of lower level agents are passed on to agents above them in the hierarchy, first for ratification and then for monitoring; (2) boards of directors that ratify the organization's most important decisions and hire, fire and compensate top-level decision managers; and (3) incentive structures which encourage mutual monitoring among decision agents (Jensen and Smith, 1985).

### ***3.2.3 Control of the conflict between managers and stockholders***

Many aspects of the administration of the corporation and the structures of monitoring managerial decisions are consistent with recognition and use of mutual monitoring to control conflicts between managers and the firm's other claimholders. For example, managers other than the president or CEO often serve on the board of directors. Competition among vice-presidents for recognition and advancement provides an important source of information to the board level control mechanism and reduces the likelihood that top level managers will take actions in conflict with maximization of firm value. The general administration of executive compensation plans reflects the separation of this decision management and decision control, thereby enhancing the corporation's chance of survival. Executive compensation plans are administered by the compensation committee of the board of



directors. Membership to this committee is typically restricted to outside members of the board and inside members covered by the plan. The committees primary function is to monitor and evaluate the inside board members' compensation (Fama and Jensen, 1983b, Fama, 1980).

### **3.3 Resource dependency theory**

Resource dependency theory is based on organizational theory that discusses the dependence level of a company and the efficiency level when it utilizes its resources.

Studies conducted by Pfeffer (1972) and Pfeffer & Salancik (1978) have been considered as the basis for resource dependence theory. This theory regards the board as an important instrument that management may use to facilitate access to resources that are critical to the success of the firm (Johnson et al., 1996).

#### **3.3.1 Board interlocks and access to capital**

Board interlocks can be defined as the personal and or business contacts, special knowledge, membership of a special network etc that board of directors possess and can be used to the advantage of the firm. It can for example be a bank director who is a director on the board of a manufacturing firm who uses his influence or knowledge from the financial markets to help the company get easier access to capital. Outside directors often have external contacts which enable them to enhance management's ability to secure scarce resources and to align the company with its external environment (Kesner and Johnson, 1990). This is grounded on the theory that such relationship makes it easier for the firm to get access to cash. Mizruchi and Stearns (1988) find evidence that supports this theory. They find that the appointment of representatives of financial institutions is reliant on both organizational performance and general economic conditions. They also found that the types of financial institutions represented on the firm's board influenced the types and amounts of financing the firm obtained.

Kaplan and Minton (1994) notice a direct relation between poor stock performance and the appointment of corporate and financial directors to the board. The presence of financial directors on the board led to weaker performance. Their conclusion is that directors are

initiators in the interlocks and sought out seats in order to impose some control over the organization.

Apart from financial institutions, competitors are considered to be very vital external actors. When there is an interlock between competitors, this can enable the board to monitor the activities of their primary rivals, something that is to the benefit of shareholder and management.

Research has shown that resource dependence theory also plays an important role for firms facing possible bankruptcy or firms emerging from it. Gales and Kesner (1994) find that bankrupt firms often have smaller board. They also noted that bankrupt firms experience a decline in the board size two years prior to bankruptcy. Also daily (1995) found similar results but with a time horizon spanning five years instead of two. Furthermore Daily (1995) found that the proportion of outside directors was positively related with successful Chapter 11 bankruptcy reorganizations, and negatively related with liquidation.

### 3.4 Board composition

The most common measures of board composition have been the number of directors and the insider/outsider ratio of the board (Johnson et al. 1996).

#### 3.4.1 Why board diversity increases performance

Pearce and Zahra (1992) find several factors that influence the composition and size of a board. Among these factors are environmental uncertainty, the strategy of the firm and the firm's financial performance. Board composition is important because it influences the quality of directors' deliberation and decisions, the ability to provide strategic direction and performance (Pearce & Zahra, 1992). The same study (Pearce & Zahra, 1992) found that the composition and size of the board is positively correlated to future performance.

When a CEO nears retirement, there is always a risk that he is replaced by an insider. A discussion by Leif Edvinsson in the article "*Byt ut ordförandeklubban mot en kompass!*" (Lindberg, 2003) he suggests that the board should contain different age groups. Different age groups have different levels of experiences which may contribute to effectiveness of the board's work. He further argues that young and elderly persons often possess the power of innovation more than the middle-aged. The youth has a stronger willpower, courage and imagination, while the middle-aged is characterized by carefulness. At a higher age the experiences acquired becomes a positive factor. He therefore calls for a board that comprises of different ages, nationalities, gender and cultures. Two heads are better than one was his argument.

Researchers such as Goodstein et al. (1994), make a contribution to this area of research by finding a useful differentiation that can be made between demographic and cognitive diversity of board members. *Demographic diversity* is referred to as differences such as age, sex, race and nationality. (Goodstein et al., 1994) refer to *cognitive diversity* as the differences in the cognitive bases of board members. The cognitive base of an individual according to (Goodstein et al., 1994) comprehends the individual's knowledge and skills, needs and motives and individual beliefs and values.

Goodstein et al. (1994), also argue that group problem solving is better than individual problem solving. Katzenbach & Smith (1993) also contributes by stating that several well-

known phenomena explain why teams perform well. The argument is based on the following three points:

- ◆ Firstly, groups bring together complementary skills and experiences that exceed those of an individual's on the team.
- ◆ Secondly, teams establish communications that support real time problem solving and initiative.
- ◆ Thirdly, teams provide a unique social dimension that enhances the economic and administrative aspects of work.

Watson et al. (1993) in their study of group problem-solving effectiveness also found that in the short-run, culturally homogenous groups have significantly more effective problem-solving processes.

Forbes and Milliken (1999) have argued both for and against demography diversity. They maintain that demography is *“very likely to be a significant predictor of board behavior but that its effects are too fine grained to be revealed by tests of phy- performance relationships”* (Forbes and Milliken 1999: 497).

Forbes and Milliken (1999) discuss the issue of Job-Related Diversity. According to them, forms of diversity that are job-related in the context of board work include functional and educational backgrounds. Boards show a considerable degree of diversity on these dimensions. Further explanation was given to support their argument that contemporary *“boards include CEOs who represent different types of industries and functional background as well as significant numbers of lawyers, investment bankers, academics and non-profit executives who represent diverse educational and industry backgrounds”* (Forbes and Milliken 1999: 497)

Forbes and Milliken (1999) point out that diversity of this type enhances the promotion of functional area knowledge and skills on the board.

### 3.4.2 Why board diversity can be an impediment

Milliken & Martins (1996) argue that board members have different educational, functional and industry backgrounds, they are more likely to experience different ways in which they perceive, process and respond to issues they confront on the board. In addition, according to Milliken and Martins (1996), diverse board members may have difficulties understanding one another because of differences in jargons or terminology.

*“Because board members comprise part-timers who interact only periodically, board members have few opportunities to diminish or smooth over the differences that separate them”* (Milliken and Martins 1996:498).

The contributions of other researchers to this topic have contrasting results. Milliken and Martins (1996) note that diversity is a “double-edged” sword for groups: although it increases the aggregate level of resources at the group’s disposal, it is also associated with higher levels of conflicts, interaction difficulties and lower levels of integration. These double-edged consequences according to Milliken and Martins (1996) are likely to be particularly pronounced in board settings. *“Thus, consistent with findings of studies on the effects of diversity in organizational groups, diversity can be expected to increase the level of cognitive conflicts present on the board and to decrease the board’s level of cohesiveness and its use of knowledge and skills”* (Forbes and Milliken 1999: 498).

Group with diverse backgrounds are more likely to have access to information and perspectives that are drawn from outside the group. (Ancona & Caldwell, 1992) and attempts to pool together and integrate these contributions is likely to lead to a higher levels of cognitive conflicts. Diverse boards are also more likely to experience communication and coordination problems that distract the effective use knowledge and skills, because their members may be unaware of each others’ expertise or unable to appreciate its applicability to issues facing the board.

### **3.4.3 Board's composition and performance of the strategic function**

Researchers argue about the effect of boards' composition on performance. According to Lant et al (1992: 591) *"the heterogeneity of a top management team is likely to influence strategy formulation through its effect on the diversity of perspectives brought to bear on strategic questions.... specifically, the diversity of backgrounds and ages represented on a top management team have been hypothesized to affect the likelihood of innovation and likelihood of strategic change"*

### **3.4.4 Insiders/outsideers**

Board members can be classified as either outsiders or insiders. As an employee of the firm, an insider or management director usually holds a high-level executive position and devotes substantially full time and attention to the affairs of the corporation or one of its subsidiaries (Kesner & Johnson, 1990). According to Kesner & Johnson (1990) the directors are described as insiders because of their direct involvement in day-to-day organizational activities. This enables them to bring specialized knowledge and experience with them to the board.

Patton & Baker (1987) state that board membership for insiders may also serve an educational and developmental role for younger managers and be used as an incentive or reward for managerial performance. Patton & Baker (1987) argue that outsiders may not be able to understand each business well enough to be truly effective but they can bring a wide functional product or market knowledge of different industries and companies to the board.

### 3.4.5 Outside directorship and board independence

The standard view in empirical finance, and in practice, is that the degree of board independence is closely related to its composition (Kose and Lemma, 1998). In their research about the effectiveness of the board, Kose and Lemma (1998) argue that the board is presumed to be more independent when the number of outside directors increases proportionately. Kose and Lemma continue their argument that corporate governance in America has increasingly shifted toward “independent” boards with a majority of outsiders (independent) directors. Other researchers in the field like Bhagat and Black (2000) report that half of the 100 largest American public corporations surveyed in 1996 had only one or two inside directors. Likewise, the impact of board independence, and hence the effect of outside directorship on shareholder wealth and the discipline of CEO, has received much attention in empirical literature. Kose and Lemma (1998) express their disappointment about the different nature of results that are produced on this subject. Kose and Lemma (1998) state that the available evidence has come up *mixed*; according to them it becomes very difficult to make firm conclusions on optimal board composition in policy debates.

Research on this topic has however given different findings in the United States. Studying board composition, Hermalin and Weisbach (1991) on the one hand find no relation between firm performance and the fraction of outside directors. Basinger and Butler (1985) on the other hand find some evidence that companies perform better if boards include more outsiders.

Other studies find that boards dominated by outsiders are more likely to behave in shareholders’ interest. Weisbach (1988) argues that board monitoring effectiveness may manifest itself in managerial hiring and firing decisions. Weisbach (1988) tests the hypothesis that inside and outside directors behave differently in their decisions to remove the CEO. The inside directors are likely to remove the CEO because their career is tied with the CEO but outside directors can easily remove an ineffective CEO. According to Weisbach, (1988) outside directors have reputation incentives to remove ineffective board. Weisbach (1988) mentions CEO turnover as one possible way of measuring how effective a board is.

### 3.5 Board effectiveness

*“To form an effective group it has been argued that not only capable individual directors are required but also a capable group of directors”* (Demb and Neubauer, 1992: 130).

Many researchers argue that an effective and well functioning board can have positive effects on the performance of the firm (Zahra and Pearce, 1989). However, due to poor board structures, inappropriate composition or the domination of the CEO, some boards do not always perform well (Zahra and Pearce, 1989).

Forbes and Milliken (1999) have developed a model for successful board processes. In this model they combine board theory with group dynamic theories and working group efficiency. The theory deals with two criteria that influence the board’s effectiveness. One criterion is *Board task performance*, which means the board’s ability to exercise its control and its tasks effectively, that has a direct consequence on the company’s result. The other called *Cohesiveness of the board* refers to the degree to which board members are attracted to each other and are motivated to stay on the board. The company’s result is indirectly affected depending on the motivation of the board members to stay on the board and how well they like their work. Other researchers who conduct research on workgroups have found that when group members are attracted to each other, they realize higher levels of member satisfaction.

*“Bringing the board to the point where the individual directors accept a common responsibility and working style is no simple matter, yet it is a necessity to form an effective group of directors that can contribute to the board’s tasks”* (Demb and Neubauer 1992: 130).

Forbes & Milliken (1999) further argue that on boards with very low levels of cohesiveness, members may choose not to stand for re-election or in extreme cases, members may resign from the board. A certain amount of turnover can be considered healthy according to Forbes and Milliken, but they warn that higher levels of turnover are likely to reduce the presence of firm-specific knowledge on the board.



### 3.5.1 Cognitive conflict

Cognitive conflict means that different opinions between the directors can improve the role of the board as a supervisor of the company's operations. Jehn (1995) defines cognitive conflict as *"disagreements about the content of the tasks being performed, including differences in viewpoints, ideas and opinions"* (1995:258). Dutton and Jackson, (1987) argue in favor of cognitive conflict, they state that cognitive conflict is likely to arise in groups that, like boards, are independent and face complex decision-making tasks. Because the issues facing boards are complex and ambiguous, board members are liable to characterize issues differently and hold different opinions about what the appropriate responses to these issues are.

The presence of disagreement and critical investigation on the board may require CEOs to explain, justify and possibly modify their positions on important strategic issues and to entertain alternative perspectives and courses of action.

*"Moreover, the existence of cognitive conflicts on the board can serve to remind management of the power and role of board and of the importance of considering shareholder interests in the formulation of strategy even beyond the boardroom."*(Forbes & Milliken, 1999: 494)

There is however other studies that have found negative results about cognitive conflict. In spite of the beneficial effects of cognitive conflicts mentioned above, cognitive conflict also can arouse negative emotions that diminish interpersonal attraction among members. Likewise, Jehn (1995) show that members of groups with high levels of cognitive conflict experience lower levels of satisfaction with the groups and express less desire to remain with the group.

### 3.5.2 Presence and use of knowledge and skills

Presence and use of knowledge and skills means that a board can have so much knowledge but this does not necessarily mean that the knowledge is really used. As Jackson (1992) puts it *"an implicit assumption often made in management literature is that expertise will be used, assuming it is present, psychological research clearly indicates that the availability of expertise in a group does not guarantee the use of that expertise"* (Jackson 1992: 359). The

above statement thus calls for the presence and use of knowledge and skills with two separate constructs: (1) an “input” variable that represents the knowledge and skills present on the board and (2) a “process” variable that represents the way these resources are used. Boards require however a high degree of specialized knowledge and skills to function effectively (Forbes & Milliken, 1999).

### **3.6 Corporate governance**

The importance of studying board behavior directly is underscored by evidence that practitioners – in some cases the board themselves – are also beginning to pay more attention to what boards do. In previous decades boards of directors could be characterized as essentially formal and passive institutions that seldom came under public scrutiny, boards today are increasingly finding their actions closely monitored by institutional investors, McKinsey (2000).

### **3.7 Prior research**

#### ***3.7.1 Prior research on board size***

As the study of Yermack (1996) on American companies is of importance to our study, a summary of Yermack’s findings is accounted for below.

Yermack observed 452 large US corporations over the period 1984 to 1991. In his result he found an inverse relation between firm market value, as represented by Tobin’s Q, and the size of the board of directors. The association appears in both cross-sectional analyses of the variation within individual companies. Yermack state that the negative relation between the board size and firm value attenuates as boards become large, implying that the greatest incremental costs arise as boards grow in size from small to medium. According to Yermack’s study, the loss in firm value when boards grow from 6 to 12 members, for example, is estimated to be equal to the value lost when boards grow from 12 to 24. Very few boards in his study have fewer boards than six or more than 24 directors.

A range of additional evidence is consistent with the finding that companies achieve the highest market value when the boards are small. Several measures of operating efficiency and profitability are negatively related over time to board size within firms. Smaller boards are

likely to dismiss CEOs following periods of poor performance. According to Yermack (1996) evidence shows that CEO compensation exhibits greater sensitivity to performance in companies with small boards.

*“Stock returns for a sample of companies announcing significant changes in the board size show that investors react positively when boards shrink and negatively when board size increases.”* (Yermack, 1996: 187)

Yermack (1996) introduces variables to control for firm size, industry, board composition, inside stock ownership, company age, the presence of growth opportunities, diversification and different corporate governance structures. However none of these modifications changes his conclusion that companies with small boards are valued more highly in the capital markets. Another interesting discovery from Yermack’s (1996) paper is that, after conducting a range of tests to obtain insight in to the direction of causation between board size and firm value, Yermack (1996) finds that while the rate of director turnover increases following poor performance, board size remains quite stable over time with little sensitivity to performance.

Finally, Yermack (1996) finds results that have negative bearing on the role of outside directorship, since the average fraction of outside directors is found to increase gradually with board size. He finds that firm market valuation is largely unaffected by the number of insider directors on the board.

### ***3.7.2 Prior research on board structure***

Criticisms and proposals for the reform of boards of directors have proliferated in recent years. Monks and Minow (1995) present a discussion on this literature, which relies upon a premise that monitoring by the board can improve the quality of managers’ decisions. Many commentators urge that boards have large fraction of outside directors and that directors own large amounts of company stock, that CEOs have only limited power to set board agendas and appoint new directors, and that rigorous CEO performance reviews take place regularly. As noted above, limiting board size has begun appearing on some agendas for reform, although only Lipton and Lorsch (1992) and Jensen (1993) identify board size as a high priority.

After studying a larger sample of Swedish companies, Gabrielsson and Winlund’s (2000) research on board size in medium size enterprises shows the following result. The survey was

designed to collect data about corporate governance and innovation in privately owned firms. The original survey was targeting Swedish industrial firms between 50 and 1000 employees in 1997. They have two findings in their study (1) the board members' involvement, and (2) the board's formal structures are important for the board's ability to perform its tasks effectively. Gabrielsson and Winlund (2000) came to the conclusion by criticizing the approach used in this study. They argue that as research about boards of directors has leaned heavily on archival data, often using samples of large US firms, this approach may not be appropriate for an increased understanding of board behavior, especially of the board's working style in small and medium size firms. As the study of Gabrielsson and Winlund was conducted among small and medium-sized firms in Sweden, they (Gabrielsson and Winlund, 2000) warned that their findings should be taken with caution when making comparison with other countries, industries and firm sizes. The result of Gabrielsson and Winlund point out that, the working style variables explain considerably more than the traditional board composition variables when studying variations in how the board performs its tasks. With regard to the creation of a well-functioning board, Gabrielsson and Winlund argue that, it may not be sufficient just to demand changes in the demography of the boards. They call for the creation of a good and clearly defined working style.

*"The future development of corporate governance and boards of directors in small and medium-sized firms should thus be to give attention to the working styles of the boards."* (Gabrielsson and Winlund, 2000: 328).

With respect to board stock ownership, Mørck, Shleifer and Vishny (1988) find significant, though nonmonotonic associations between different levels of director stock ownership and Tobin's Q, suggesting that some levels of board stock ownership have systematic advantages.

Lipton and Lorsch (1992), Jensen (1993), and other advocates of small boards contend that board size affects corporate governance independent of other board attributes. As noted above, their arguments focus on productivity losses that arise when work groups grow large.

According to Jensen (1993), when groups increase in size they become less effective because the coordination and process problems overwhelm the advantages from having more people to draw on. Jensen's (1993) argument is very much in line with our hypothesis that boards with a

smaller size have higher market valuation than boards that consist of larger number of directors.

### 3.7.3 The impact of Foreign Board Membership on Firm value

After studying a larger number of companies listed on the Oslo and the Stockholm Stock Exchange to investigate the impact of foreign board membership, Oxelheim and Randøy (2001) argue that recruitment of an outsider Anglo-American board member can be seen as an alternative avenue to reduce cost of capital that complements the traditional route of seeking foreign listing. Oxelheim and Randøy (2001) further argue that Anglo-American board membership enhances the international orientation of the firm, and serves as a catalyst for further globalization of a corporation. The basis for this argument is that *“Having an Anglo-American citizen on the board is a value statement that signals openness to foreign investors and a commitment to corporate transparency, i.e., adherence to the Anglo-American corporate governance model”* (Oxelheim and Randøy, 2001: 25).

The study of Oxelheim and Randøy also finds that Anglo-American board membership has a significantly positive impact on both small and large exchange-traded firms. The study shows that the effect mentioned above appears to be stronger in the case of firms larger (more than SEK 1 billion in market capitalization), and older (more than 30 years old), and in manufacturing, IT & Telecom and Media & publishing industries.

The main recommendation from Oxelheim and Randøy (2001), for corporate policy is that firms based in small or emerging equity markets should consider the potential gains of breaking away from their domestic corporate governance system, either by including one or more Anglo-American board members or by listing on an Anglo-American stock exchange. Oxelheim and Randøy (2001) finally state that *“The long-term value arising from the inclusion of an Anglo-American outsider board member seems to exceed that of a cross-listing on an Anglo-American market. Hence the inclusion of an outsider Anglo-American board member should be seen not only as a low -budget alternative for firms that regard cross-listing as too big a venture, but also as an important complement for firms where cross-listing already exists”* (Oxelheim and Randøy, 2001: 25).

## 4. Empirical findings

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*In the fourth chapter a statement of the procedure on the empirical part of the thesis is given. The chapter starts with a description of data, followed by a description of the procedure of the regression analysis. The chapter ends with a summary of the results.*

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The thesis' hypothesis is to examine whether the board's size has an impact on firm value. An examination can therefore be made whether firm value depends on the quality of monitoring and decision making of the board. We estimate a model of the relation between firm value and board size. We follow the methods of several recent related studies such as Oxelheim and Randøy (2001) and Yermack (1996) by regressing a set of explanatory variables against an estimate of Tobin's  $q$ .

### 4.1 Data description

We use a panel of firms drawn from the Stockholm stock market's A- and Attract 40 list. A sample of 74 traded firms with 222 observations is included in the final regressions.

Figure 1 on the next page shows a diagram of the means and the medians of the sample firms in the study. The diagram should be read cautiously with the consideration that the sample firms with a board size above 15 are not represented by the same number of observations as for instance board size 8. Considering this fact our regression results can be biased and are for instance not as reliable as if a larger population of board sizes over the number 15 would be analyzed.

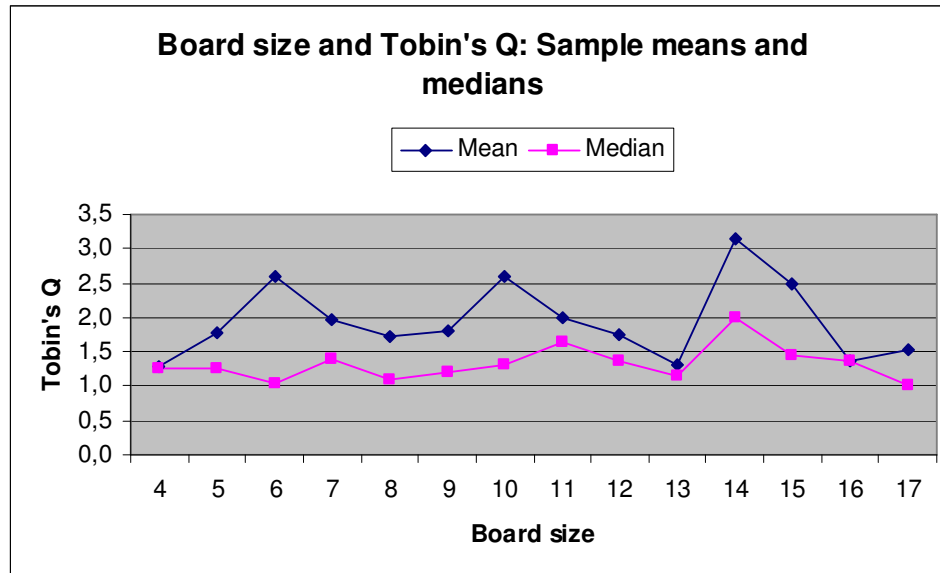


Figure 4.1: Board size and Tobin's Q: Sample means and medians

## 4.2 Regression analysis

To investigate whether board size has a significant association with firm value we have followed regression models used by Randøy & Oxelheim (2001), Carter et al (2003) and Yermack (1996). By using ordinary least-squares regression (OLS), where a set of explanatory variables is regressed against an approximate Tobin's q to test our hypothesis. The dependent variable Tobin's q is measured for each company at the close of each fiscal year. The regression analysis is performed on a panel data, a data combination of time series cross sectional.

To test our hypothesis we perform 2 regressions. The reason why we use Randøy & Oxelheim's (2001) approximation of Tobin's q is that we do not have to define the firm's short term assets, something that simplifies our data gathering and our calculations. We use a number of different explanatory variables for control such as the Debt/Asset ratio, firm size, return on assets, number of business segments, percentage of outsiders, number of business segments and capital expenditure divided by sales.

Board size ranges from 4 to 20 for sample firms, with a mean of 10,5 and a median of 11.

Models:

(1) *Tobin's q* =  $\alpha + \beta_1 \text{Log of Board size} + \beta_2 \text{Total Debt/Asset} + \beta_3 \text{Log of total turnover} + \beta_4 \text{ROA} + \beta_5 \text{No. of foreign board members} + \beta_6 \% \text{Outsiders} + \beta_7 \text{No. of Business segments} + \beta_8 \text{Capital expenditure / Sales} + \varepsilon$

(2) *Tobin's q* =  $\alpha + \beta_1 \text{Dummy variable for board size} + \beta_2 \text{Total Debt/Asset} + \beta_3 \text{Log of total turnover} + \beta_4 \text{ROA} + \beta_5 \text{No. of foreign board members} + \beta_6 \% \text{Outsiders} + \beta_7 \text{No. of Business segments} + \beta_8 \text{Capital expenditure / Sales} + \varepsilon$

#### 4.2.1 Multicollinearity problems

Multicollinearity arises when the independent variables are highly correlated with each other, i.e. one variable captures the effect of the others. Changing the model by omitting or adding a variable can drastically alter the results, ultimately making the interpretation of the estimates more difficult (Ramanathan, 2002). A commonly used rule of thumb is that a correlation coefficient between two explanatory variables greater than 0.8 or 0.9 indicates a strong linear association and a potentially harmful collinear relationship (Hill et al, 2001). As we can see by the correlations matrix below a multicollinearity problem is present between the log of board size and the dummy variable; however this does not cause a problem because they are not used simultaneously. There is also a multicollinearity problem between the number of outsiders on a board and the size of the board and also between the dummy variable.

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
1.Lg bd size	1,000								
2.Dummy 8	<b>0,828</b>	1,000							
3.D/A	<b>-0,169</b>	-0,087	1,000						
4.Lg tot sales	<b>0,453</b>	<b>0,382</b>	<b>0,230</b>	1,000					
5.ROA	0,006	0,051	0,118	0,119	1,000				
6.Nr foreign	<b>0,151</b>	0,101	<b>0,141</b>	<b>0,339</b>	-0,115	1,000			
7.%Outsiders	<b>-0,752</b>	<b>-0,723</b>	<b>0,161</b>	<b>-0,202</b>	0,041	<b>0,146</b>	1,000		
8.Nr Bseg	<b>0,341</b>	<b>0,297</b>	0,113	<b>0,357</b>	-0,085	<b>0,155</b>	<b>-0,267</b>	1,000	
9.Cap exp./Sales	<b>-0,203</b>	<b>-0,252</b>	-0,037	<b>-0,355</b>	<b>-0,192</b>	-0,104	<b>0,224</b>	<b>-0,148</b>	1,000

*In bold, significant values (except diagonal) at the level of significance alpha=0,050 (two-tailed test)*

Table 4.1: Correlation matrix



### 4.3 Regression tests

The principle of Ordinary Least Regression (OLS) is that the explanatory variables' coefficients are found by minimizing the residual variance. Some general underlying assumptions must be met in the OLS method (Forssbaeck, 2003). Thus it is necessary to conduct statistical tests before the results can be interpreted with confidence. These tests enable us to examine if these assumptions are valid or shall be rejected.

#### 4.3.1 Normality

One of the phenomena that we test for in the models used is normality. We look at what is called the normality assumption. When the errors are not normal, our statistical tests are no longer strictly valid. We lose our efficiency property of minimum variance, but asymptotic efficiency still holds (Hill et al, 2001). There are four common ways to test for the normality assumption. We have chosen the Jarque-Bera test. The Jarque-Bera test is based on the two measures *skewness* and *kurtosis*. *Skewness* refers to how symmetric the residuals are around zero. Perfectly symmetric residuals have a *skewness* of zero. *Kurtosis* refers to the “peakedness” of the distribution. In the test  $H_0$  = normality and  $H_1$  = no normality, where  $H_0$  is ignored if the JB-value > critical value. The results from the test are shown in the table below.

Model	1	2
JB (observed value)	1017,319	1017,319
JB (critical value) 1%	9,210	9,210
JB (critical value) 5%	5,991	5,991
DF	2	2

Table 4.2: Jarque bera- values

As both regressions have Jarque Bera-values that have observed values that are larger than the critical values, we have problems with kurtosis and skewness in our models. The normality problem can be adjusted by having a larger sample. A larger sample would probably not do any good to our own models because stock prices and firm specific data are seldom normally distributed due to its many extreme values. (Hill et al, 2001).

#### 4.3.2 Heteroskedasticity

An underlying assumption of the OLS is that homoskedasticity should be present, i.e. the variance for all observations is constant. If the variance is not constant then heteroskedasticity is present and then the regressions are no longer “best linear unbiased estimator”. The

residuals can be incorrect and confidence intervals and hypothesis tests that use these standard errors may be misleading. The existence of heteroskedasticity is often encountered when using cross-sectional data, for example firm specific factors such as costs, outputs and inputs. As firms grow in size it becomes more difficult to explain the variation in an outcome variable, by the variation in a set of explanatory variables (Hill et al, 2001). As we use panel data in our regressions we have with large probability problems with heteroskedasticity.

To test for heteroskedasticity we use a double regression test (Langeryd, Barkstedt, Fahlström, 2003). The double regression test is preformed by using the squared residuals from the original model as the dependent variable against the original explanatory variables. In the test the hypothesis is  $H_0$  = Homoskedasticity and  $H_1$  = heteroskedasticity, where  $H_0$  = is rejected if any of the explanatory variables can explain the residuals variation. Heteroskedasticity can be found by a t-test or the p-value and also F-test can be used to show that several variables together explain the residuals variation. If heteroskedasticity is found, the model is transformed by dividing the explanatory variables with the square root of the variable that has the highest significance.

*“Transformation of the variables should be regarded as a device for converting a heteroskedastic error model into a homoskedastic error model not as something, not as something that changes the meaning of the coefficients”* (Hill et al, 2001:243).

We use a t-test combined with the p-value to investigate which variables affect the models for heteroskedasticity. For model 1 we find that the total debt / assets ratio has the highest significant effect on the residuals, whereby we transform the model with regard to this variable. For model 2 we find that the dummy variable for board size has a significant effect on the residuals. The dummy variable has the highest significance but we reject it because division with zero is mathematically impossible. This leads us to choose the variable that has the next highest significance, which is the debt / asset ratio as in the first model. The results from the double regression test are shown in appendix 2.

### 4.3.3 Endogeneity

Endogeneity is present if the dependent variable has an influence on any of the explanatory variables.

*“poor performance leads to changes in board composition, so any cross sectional regression of performance on board composition will be biased because of changes in board composition resulting merely from past performance”* (Hermalin and Weisbach, 1991:102).

Just like for Hermalin and Weisbach (1991) endogeneity can be present in our regressions, i.e. firm value can have an influence on board size. Following the methods of carter et al (2003) we test for endogeneity by using board size in model 1 and the dummy variable on board size in model 2 as the dependent variable against the explanatory variables and the original dependent variable. We use the transformed variables after the double regression test as heteroskedasticity can be a problem in the new equations which looks like the following:

(1a) *Log of Board size* =  $\alpha + \beta_1 \text{Tobin's } q + \beta_2 \text{Total Debt/Asset} + \beta_3 \text{Log of total turnover} + \beta_4 \text{ROA} + \beta_5 \text{No. of foreign board members} + \beta_6 \% \text{Outsiders} + \beta_7 \text{No. of Business segments} + \beta_8 \text{Capital expenditure / Sales} + \varepsilon$

(2a) *Dummy variable for board size* =  $\alpha + \beta_1 \text{Tobin's } q + \beta_2 \text{Total Debt/Asset} + \beta_3 \text{Log of total turnover} + \beta_4 \text{ROA} + \beta_5 \text{No. of foreign board members} + \beta_6 \% \text{Outsiders} + \beta_7 \text{No. of Business segments} + \beta_8 \text{Capital expenditure / Sales} + \varepsilon$

The results from the endogeneity test can be found in appendix 3 and in the table 4 below:

Model	Independent Variable	Value	Pr > t
1a	Tobin's q	-0,015	0,014
2a	Tobin's q	-0,084	< 0,0001

Table 4.3: Endogeneity results

The endogeneity results show that with 5 % significance, there is a negative relation between Tobin's q and board size. For the relation between the dummy variable and Tobin's q the significance is slightly lower and is 1 %. This implies that Tobin's q has a statistically secured effect on board size.

#### **4.4 Regression Results**

The results from the final regressions can be found in table 5 below and also in appendix 4. The final regressions are transformed in order to reduce the effect of heteroskedasticity. Table 5 shows the regression coefficients, the standard deviation (in parentheses) and the level of significance. The significance level is attained by t-test and the p-value, where the critical values in the t-test are 1,971 for a 5 % confidence interval and 2,595 for a 1 % confidence interval.

As table 5 shows in the next page, we use two models to capture the relationship between board size and company value. The regression estimates for both models show an inverse and significant relationship between firm value and board size. In model 1 we use the log of board size as the explanatory variable. The coefficient is negative which indicates that when the size of the board increases then firm value will decrease at a significance confidence level of 95 %. The dummy variable in model 2 for board size, where a board size of 7 or below is 0 and a board size of 8 or above is 1, is also negative. This explanatory variable has a level of confidence of 99 % which is higher than the explanatory variable in model 1. This relationship indicates that if the size of the board increases more than 8 then Tobin's q is affected negatively. Yermack (1996) demonstrates that a negative relation can be economically significant for a firm. A similar convex relationship emerges when Tobin's q is regressed against the two board size variables which the endogeneity test provided. The results from the endogeneity tests can be found in appendix 3.

Regression model	1	2
Tobin's q (Firm value)	0,785 (1,509)	0,444 (1,398)
Log of board size	-1,849** (0,745)	
Dummy variable		-1,247*** (0,249)
Total Debt / Assets	-1,556* (0,965)	-1,213 (0,928)
Log of total turnover (Firm size)	0,251* (0,149)	0,246*** (0,099)
ROA	0,114* (0,071)	0,144** (0,068)
No. of foreign boardmembers	0,109** (0,055)	0,120** (0,052)
% Outsiders	0,472 (0,566)	-0,957 (0,636)
No. of Business Segments	0,110** (0,054)	0,123** (0,052)
Capital expenditure / Sales	-0,018 (0,068)	0,004 (0,061)
Observations	<b>222</b>	<b>222</b>
Adjusted R-square	<b>0,138</b>	<b>0,207</b>
Durbin-Watson	2,080	2,040

Table 4.4: Regression results

\*\*\* Significant at 1%

\*\* Significant at 5%

\* Significant at 10%

Coefficient estimates for other explanatory variables are generally significant in the expected direction.

The relationship between *debt and assets* has a negative impact on firm value. A possible explanation for this fact can be that theoretically the firm's value should decrease when debt increases due to an increased bankruptcy risk.

*Firm size* as measured by the log of total turnover has a positive coefficient which implies that when the firm grows, so does firm value along with it.

*ROA* which measures the company's profitability has a positive relation with firm value.

*Number of foreign board members* has a positive relation with firm value. This is in line with Oxelheim and Randøy's (2001) findings that Anglo-American board membership increases firm value.

For the explanatory variable *number of outsiders* we find two different coefficients. For model 1 we find a positive relationship between the number of outsiders and firm value and a negative relation ship in model 2. But in both cases they have p-values over 10 %, so we find the coefficient estimates insignificant.

The explanatory variable number of business segments has a positive relation with board size. Diversified firms seem to be valued more highly than other companies.

This is also the case for *capital expenditure* the variable we use to measure investment opportunities, which has very high p-values.

#### 4.5 Qualitative results

To have clear view if financial analysts consider board size in their valuation process two questions were asked.

- ◆ The first question is: Do you consider the size of the board when evaluating a firm?

A unanimous answer to the first question is that financial analysts do not consider board size in their company valuation process. According to Mattias Eriksson, financial analyst at Human securities, board size is of no practical importance for the valuation. One analyst said "In my experience board size is not considered when company valuations are done". A common thought from the financial analysts is that when companies grow in size, the size of the board increases as well. One analyst said that is could be of interest, but only if it is surprisingly small or big. According to one analyst an increase in size from 5 to 10 is not as interesting as an increase from 10 to 20.

- ◆ The second question: Which factors is of importance when considering the board?

A general and recurring answer throughout the interviews to this question is that if the board is considered, it is the people having a chair on the board and their competence that is taken into consideration. A lot of the analysts only start to consider the board when scandals start occurring. One analyst said that the companies they follow are in general terms well

governed, i.e. there are no scandals. According to Johannes Grunselius, financial analyst at Carnegie, the stock market works in a way that in the short term the board is sometimes of importance. Often the board is given more attention and becomes interesting when scandals start appearing. At least half of the analyst interviewed mentioned Skandia as an example. The board is also considered when the company is not performing well and when there are signs of bad governance. Anders Bruzelius, financial analyst at Swedbank markets, argued that for example the people sitting on Eriksson's board were more interested in the power that the job entails. In other words it is a question about power rather than competence.

## **5. Analysis**

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This chapter analyses the board and its role. To be able to augment the understanding of our empirical result, we compare our empirical findings to other empirical findings in this subject. We further make use of board theories to explain our result.

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### **5.1 General analysis of the board**

The board of directors has the ultimate responsibility for the administration of the firm. Therefore it is becoming more important for the board to have diversified members who has different experiences and different background (Forbes & Milliken, 1999). Our quantitative result shows that when boards are diversified with regard to outsiders and foreigners on the board the firm value increases. The board is supposed to protect the interest of shareholders and other stakeholders that is why it is essential that the board is as resourceful as possible.

To be able to function properly the board should possess a high level of competence. To achieve this, many researchers have made their contribution on how to make boards effective. Our results show that when board size increase firm value decreases. This could be interpreted that when groups become larger they become less effective. Forbes & Milliken (1999) discuss cognitive conflicts that have both positive and negative effects on the board. They argue that different views from the board of directors may help improve the control function of the board. As the result in model 2 shows number of outsiders has a negative relation with firm value. According to Milliken and Martins (1996), diverse board members may have difficulties understanding one another because of differences in jargons or terminology. This could be the source of the negative result of number of outsider in model 2. Pearce and Zahra (1992) discuss the effectiveness of the board. Demb and Neubauer (1992) argue that if the individual directors of a board are ready to accept a common responsibility and working style, then it will improve the grounds for forming an effective group of directors that can contribute to the board's tasks. As our board size variables indicate smaller groups may be a useful tool to avoid such problems.



## **5.2 Empirical Findings**

In order to avoid any single year specific events that could affect our regression result, we have based our empirical research on data covering a three-year period. However our observation period covering the years 2000 – 2002, has been characterized by turbulent activities that have impacted stock markets in the western world. As the Stockholm stock market is characterized by closely following the US markets, it has not gone unnoticed from these events. There is a potential risk that market value of firms registered on the Stockholm Stock Exchange between this period can be misleading. Our regression result should therefore be interpreted with caution.

### **5.2.1 Board size and firm value**

The main objective of this thesis has been to find out how the size of a board affects a firm's value. Our regression result implies that when the size of a board increases, the value of the firm decreases. The regression estimates for both models show an inverse and significant relationship between firm value and board size. The coefficient in model 1 is negative with a value of  $\beta_1 = -1,849$ . This indicates that at a confidence level of 95 percent that the size of the board has a negative relation with firm value. The dummy variable in model 2 for board size is also negative with a coefficient of  $\beta_1 = -1,247$ . This explanatory variable has a level of confidence of 99 % which is higher than the explanatory variable in model 1. This relationship indicates that if the size of the board increases more than 8 then Tobin's q is affected negatively. As the results from both our regressions show, larger board size is negatively related to firm value. Our results indicate that smaller boards are valued more highly on the Swedish market. Jensen's (1993) argument could be a possible explanation for our result.

According to Yermack (1996) stock prices for a sample of U.S companies change when announcements are made on significant changes in board size. Changes are positive when board size decreases significantly and negative when board size increases significantly. This could be a possible explanation of our quantitative findings. On the contrary our qualitative analysis shows that financial analysts in Sweden do not consider firm size in their firm valuation process. In our interviews with six financial analysts, they all surprisingly

responded that they do not consider the size of board in their valuation process. For those who consider the board at all, competence is mentioned as an important characteristic.

Our finding that a smaller board increases the valuation of a firm is consistent with Yermack's (1996) results. Jensen (1993), Yermack (1996), Lipton and Lorsch (1992), Monks and Minow (1995) all advocate for a smaller board. Their advocacy is in line with our regression result. Our empirical findings can therefore be linked to the words of Jensen (1993). His argument for this positive relation between smaller boards and the market valuation of the firm is based on his assumption about how groups function. He argues that as the size of a group increases, it becomes less effective because coordination and process problems arise. According to Jensen (1993) these problems outweigh the advantages that an extra group member adds to the group. This can be a possible explanation in our model 2 where the  $\beta_1 = -1,247$  if board size is larger than 8.

Our regression result should though be interpreted with caution because other variables like firm size could have an effect on the result. A firm's value depends on so many factors; it can be the size of the company, the demand and the efficiency and competence of management. The smallest board among our observations is 4 and the biggest 20. It is therefore unwarranted to make a general conclusion that all small boards have higher market valuation. Our comparison with Yermack's (1996) results should also be interpreted with caution because his study includes a larger sample of observations. In his sample there are more firms with board size ranging between 4 and 34. Our sample of boards does not display such large sizes and in our sample there are very few boards with a size between 17 and 20.

The effectiveness of a board in its monitoring role depends on the independence, size and composition of the board (Kose & Lemma, 1998). This argument can be associated with our finding that smaller boards have a higher market valuation. In addition, researchers, such as Lorsch and Lipton (1992) also propagate for smaller boards. Their argument, which supports our result, enlightens the issue that when boards become larger, they cease to criticize the policies of top management. If the board is not able to criticize top management then its control function which is in the interest of the shareholders is lost. Hence there is likelihood the board becomes ineffective with rising agency costs and weaker firm performance as a result. Lorsch and Lipton (1992) therefore recommend that the size of boards should be limited to ten people, with a preferable size of eight or nine. Lorsch and Lipton (1992) further

argue that even though the ability of the board to perform its monitoring role increases with the board size, the benefits are outweighed by such costs as slower decision- making and biases against risk taking. Our regression result leads us to assume that it is easier to coordinate and have constructive discussions in smaller groups than in larger groups.

Another research finding proves that our findings are not just a coincidence. This is from Jensen (1993). His research result shows that when boards get beyond seven or eight people they are likely to function less effectively and therefore becomes easier for CEOs to control. This problem then leads to the fact that board members become polite instead of being frank and truthful. We find our regression result to be consistent with most of the theories that advocate for a smaller board.

Forbes and Milliken (1999) argue for the increment of diversity on the board. Considering the use of “*presence and use of knowledge and skills*” on the board, we argue in favor of Forbes & Milliken’s (1999) theory that a board can have so much knowledge but it does not necessarily mean that the knowledge is really used. Inevitably a board can be large but still control the firm ineffectively, which our board size variables indicate.

Just like the Yermack (1996) we find that companies with small boards of directors attain higher values in the capital markets than their counterparts who have large boards. We follow Yermack’s (1996) way of reasoning, that the findings might be interpreted in two ways. Yermack’s (1996) idea is that small boards could contribute to better performance, or companies might adjust board size in response to past performance. According to Yermack (1996), if companies expand their boards in the aftermath of bad performance, the causation of the board size – firm relation may run in the opposite direction.

Yermack (1996) finds evidence that supports the interpretation that past board size influences current firm value, rather than the opposite. Even though we have not performed such an advanced test we see no reason why our results can not follow the same pattern like Yermack’s (1996).

Finally resource dependence theorists like Gales and Kesner (1994) find that bankrupt firms often have smaller boards. Gales and Kesner (1994) also note that bankrupt firms experience a decline in the board size two years prior to bankruptcy. This is contradictory to our results and

can imply that there are also disadvantages of having a smaller board. Throughout our theory, prior research and our empirical findings all results show a positive relation between a smaller board and higher value. The findings of Gales and Kesner (1994) can be an indication that smaller boards may lack competence.

### ***5.2.2 The Effect of Foreign board membership on firm value***

A one-sided board or a board that do not want to bring in new ideas, new brains, new ways of thinking is likely not to perform very well in the long run. As a contribution to board diversity, Oxelheim and Randøy (2001) argue that an Anglo-American board membership can be considered as an alternative way to reduce the firm's cost of capital.

We find a positive relationship between the presence of foreign board member and good firm performance. The regression result shows that when the number of foreign nationals on a board increases, the value of the firm increases as well. Our result can be seen as confirmation of Oxelheim & Randøy's (2001) findings that a firm that has an Anglo-American citizen on its board is signaling to the outside markets that it is not afraid of a foreign take over . It can though be questioned whether the value increase that an extra foreign board member adds will be significantly larger than the negative impact that another board member will add. A potential explanation of our empirical finding can be associated with Oxelheim and Randøy's (2001) argument that Anglo - American board membership strengthens investor confidence, and that this signal will eventually lead to an increase in firm value. Our analysis is in line with Oxelheim and Randøy's underlying assumptions that the foreign board members of the country of their citizenship also bring with them the specific features of that system.

Our result of a positive relationship between foreign board membership and firm value is also in line with agency theorists like Jensen (1993) who states that board of directors should be neutral in order to be able to protect shareholders' interests. Our argument here is that a foreign board member may be more neutral to protect the interest of shareholders than the local members who stand the risk of forming for example an "old boys' network".

### **5.2.3 Board Composition**

Our regression result in model 1 shows that when the number of outsiders on a board increases, the value of the firm increases as well. In the two different regressions that we ran, one has a negative effect on firm value while the other has a positive effect on firm value. The results are therefore ambiguous.

Our result reminds us of Hermalin and Weisbach's (1991) findings on the relationship between board composition and performance. They explain their findings in connection with agency problems, saying that since residual agency problems are all that matters for firm performance, variation in performance will be uncorrelated with mechanisms used. Our assumption is that a good board composition can help to reduce these underlying problems. Jensen and Fama (1983) are also advocates who want the percentage of outsiders on boards to increase. The argument of Jensen and Fama (1983) that agency problems can arise between managers and residual claimants when risk bearing is separated from management supports our regression result. Just like Jensen and Fama (1983), we find in model 1 that when the number of outsiders increase, the value of the firm increases. A possible explanation for this result can depend on the fact that in the absence of agency problems of conflict, the board uses energy and resources at their disposal to conduct their board tasks and this leads to an increase in the firm value in the long term.

We can further make assumptions that the positive relationship between outsiders and board performance is a result of the benefits that accrue from diversity. Boards achieve diversity by adding different groups like insiders and outsiders, different age, different culture etcetera. Competence, innovation and better ways of problem solving are just some of the benefits that accrue from diversity. Researchers like Yermack (1996) tested the effect of outsiders on the size of the board but his results were ambiguous and sensitive due to the inclusion of firm effects in his models.

Weisbach (1988) finds evidence that is in line with our regression result in model 1. They motivate their result by stating that inside directors are most likely not to remove a bad performing CEO, because they want to protect their own carrier. This is the reason why Leif Edvinsson in an article by Lindberg (2003) is advocating against the traditional way of hiring

board members. His argument is that when a CEO retires from his post he is almost always replaced with an insider. Leif Edvinsson's argument is considered to be in favour of our result in model 1, that the board should be composed of a high number of outsiders.

The board is presumed to be more independent as the number of outsider directors increase (Kose and Lemma, 1998). To better understand the positive relationship that we find between outside directors and board performance, we follow Kose and Lemma's (1998) argument that outside directorship makes the board more independent. They claim that corporate governance in America has increasingly shifted towards independent boards with a majority of outside directors. Kose and Lemma (1998) further argue and came to the conclusion in their study that, performance measures play a very important role in firing the CEO if the board is outside-dominated. Our finding on the impact of outside board members in model 1 is also consistent with the findings of Baysinger and Butler (1985) that companies perform better if boards include more outsiders.

Finally on the issue of the positive impact that we find between outside directors and board performance, we argue that our regression result can be related to the theory of board interlocks. With the presence of outside directors who possess a special knowledge and contacts, being it personal or business can add value to the board and thereby adding value to the firm as well. In most cases board interlocks makes it easier for the firm to gain access to capital.

## **6. Conclusions**

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In the final chapter we present a summary of our findings and along with our reflections and end the chapter with a proposal for further studies.

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### **6.1 Final discussion**

This thesis examines the impact of board size on the firm's market valuation. We find in our empirical study that the size of the board has an effect on firm value. Our regression results show that if the size of a board grows then firm value decreases. This has made us come to the conclusion that firm value increases when the board shrinks. When the  $\beta_1$  coefficients from our final regressions are compared with the  $\beta_1$  coefficients from the endogeneity test we find that both are negative. This implies that a negative relation prevails between the firm value and the board size. The  $\beta_1$  coefficients in final regressions are higher than the ones in the endogeneity test which establishes that our hypothesis can be rejected.

Throughout this thesis we have argued that smaller groups have a better cooperation and coordination ability, in other words, the control function of the board becomes more effective. This is line with what agency theorist like Jensen (1993) advocates for. Logically a larger board has a higher level of competence and this ought to help increase the efficiency of the board and hence lead a higher firm value. Our regression results prove the opposite. This could be associated with Jensen's (1993) finding that when groups get larger they become less productive.

We should still consider the basic driving forces in business. At the end of the day it is competence of the people, the synergy effect of a group and the products and services offered by a firm that determines its profitability and survival. It can not be taken for granted that a small board is automatically better and raises firm value. Though our regression results are consistent with what various researchers such as Jensen (1993), Yermack (1996) and Lipton and Lorsch (1992), we compare our findings with theirs with reservations as they have worked with larger samples and more in-depth.

Firm value has been a key word throughout this thesis. Investors are concerned about firm performance and value in their investment decisions. The qualitative part of our study has the purpose of finding out if board size is considered when valuating a company. The surprising results from 6 financial analysts from 3 different sectors tell us that at least in Sweden, the size of a board is not connected to creation of firm value. The qualitative aspect of the study, even though meager can be regarded as an insinuation that the evaluation process is old and needs to be updated in order to make it a more useful and effective tool. As shown by Yermack (1996), investors react positively in the United States when a firm's board size decreases. Our regression results indicate that when board size increases, value is destroyed. We therefore argue that investors in Sweden should consider the size of the board in there investment decision, where the firm has a board with a large number of directors. A problem that arises in our findings is that the valuation process for the board size is virtually impossible to perform practically for both the common and professional investor. Our results and argument should be seen as more a recommendation for investors rather than an argument for new valuation tools.

## **6.2 Proposals for further studies**

As our research has been conducted under a limited time period, it has been impossible for us to answer all interesting questions that came up during the course of the thesis. We conducted a study that gives room for further and more advanced studies. For example it might be interesting to examine a larger sample of companies. We suggest that a similar study be conducted in a broader context. We propose the Scandinavian market because the corporate governance system is similar there.

Due to the current debate in Sweden on compensation programs, it might be interesting to study if a higher compensation to board members leads to a higher market value.



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## Appendix 1 First regressions model 1

### Model 1

Confidence interval (%): 99,00

Modeling variable Tobins q:

Summary for the dependent variable:

Variable	Observations	Sum of weights	Mean	Standard deviation
Tobins q	222	222	2,036	1,863

Goodness of fit coefficients:

R	0,430
R <sup>2</sup>	0,185
R <sup>2</sup> adj.	0,155
SSR	624,991

Evaluating the information brought by the variables ( $H_0 = Y = \text{Moy}(Y)$ ):

Source	DF	Sum of squares	Mean square	Fisher's F	Pr > F
Model	8	142,074	17,759	6,052	< 0,0001
Residuals	213	624,991	2,934		
Total	221	767,065			

Model parameters:

Parameter	Value	Standard deviation	Student's t	Pr > t	Lower 99 %	Upper 99 %
Intercept	11,138	2,242	4,967	< 0,0001	5,310	16,965
Log of board size	-4,364	1,516	-2,878	0,004	-8,305	-0,423
Total Debt / Total Assets	-2,998	0,579	-5,175	< 0,0001	-4,504	-1,492
Log of total turnover	-0,273	0,184	-1,486	0,139	-0,751	0,205
ROA	0,162	0,088	1,842	0,067	-0,067	0,391
Nr of foreign boardmembers	0,316	0,085	3,740	0,000	0,096	0,536
% Outsiders	-2,274	1,267	-1,795	0,074	-5,566	1,018
Nr of Business Segments	0,180	0,073	2,457	0,015	-0,010	0,371
Capital expenditure / Sales	-0,092	0,162	-0,568	0,571	-0,514	0,330

Durbin-Watson:  $d =$  2,132

## Appendix 1 First regressions model 2

### Model 2

Confidence interval (%): 99,00

Modeling variable Tobins q:

Summary for the dependent variable:

Variable	Observations	Sum of weights	Mean	Standard deviation
Tobins q	222	222	2,036	1,863

Goodness of fit coefficients:

R	0,468
R <sup>2</sup>	0,219
R <sup>2</sup> adj.	0,190
SSR	598,850

Evaluating the information brought by the variables ( $H_0 = Y = \text{Moy}(Y)$ ):

Source	DF	Sum of squares	Mean square	Fisher's F	Pr > F
Model	8	168,215	21,027	7,479	< 0,0001
Residuals	213	598,850	2,812		
Total	221	767,065			

Model parameters:

Parameter	Value	Standard deviation	Student's t	Pr > t	Lower 99 %	Upper 99 %
Intercept	8,661	1,729	5,010	< 0,0001	4,168	13,154
Dummy variable 8	-1,652	0,390	-4,236	< 0,0001	-2,666	-0,639
Total Debt / Total Assets	-2,728	0,548	-4,982	< 0,0001	-4,151	-1,305
Log of total turnover	-0,324	0,169	-1,913	0,057	-0,764	0,116
ROA	0,180	0,086	2,090	0,038	-0,044	0,405
Nr of foreign boardmembers	0,316	0,081	3,912	0,000	0,106	0,526
% Outsiders	-2,845	1,127	-2,524	0,012	-5,775	0,085
Nr of Business Segments	0,176	0,072	2,455	0,015	-0,010	0,362
Capital expenditure / Sales	-0,161	0,157	-1,022	0,308	-0,569	0,248

Durbin-Watson:  $d =$  2,088

## Appendix 2 Double regression test model 1

### Model 1

Confidence interval (%): 99,00

Modeling variable r2:

Summary for the dependent variable:

Variable	Observations	Sum of weights	Mean	Standard deviation
r2	222	222	2,815	9,414

Goodness of fit coefficients:

R	0,234
R <sup>2</sup>	0,055
R <sup>2</sup> adj.	0,019
SSR	18513,098

Evaluating the information brought by the variables ( $H_0 = Y = \text{Moy}(Y)$ ):

Source	DF	Sum of squares	Mean square	Fisher's F	Pr > F
Model	8	1071,089	133,886	1,540	0,145
Residuals	213	18513,098	86,916		
Total	221	19584,187			

Model parameters:

Parameter	Value	Standard deviation	Student's t	Pr > t	Lower 99 %	Upper 99 %
Intercept	16,534	12,203	1,355	0,177	-15,183	48,250
Log of board size	-15,774	8,253	-1,911	0,057	-37,223	5,676
Total Debt / Total Assets	-7,745	3,153	-2,457	0,015	-15,940	0,449
Log of total turnover	0,502	1,001	0,502	0,616	-2,099	3,104
ROA	0,618	0,479	1,291	0,198	-0,626	1,863
Nr of foreign boardmembers	0,625	0,460	1,359	0,176	-0,570	1,821
% Outsiders	-3,086	6,894	-0,448	0,655	-21,005	14,833
Nr of Business Segments	0,545	0,399	1,364	0,174	-0,493	1,582
Capital expenditure / Sales	0,879	0,884	0,994	0,321	-1,419	3,176



## Appendix 2 Double regression test model 2

### Model 2

Confidence interval (%): 99,00

Modeling variable r2:

Summary for the dependent variable:

Variable	Observations	Sum of weights	Mean	Standard deviation
r2	222	222	2,698	8,658

Goodness of fit coefficients:

R	0,264
R <sup>2</sup>	0,070
R <sup>2</sup> adj.	0,035
SSR	15415,858

Evaluating the information brought by the variables (H0 = Y=Moy(Y)):

Source	DF	Sum of squares	Mean square	Fisher's F	Pr > F
Model	8	1151,682	143,960	1,989	0,049
Residuals	213	15415,858	72,375		
Total	221	16567,541			

Model parameters:

Parameter	Value	Standard deviation	Student's t	Pr > t	Lower 99 %	Upper 99 %
Intercept	6,991	8,771	0,797	0,426	-15,805	29,787
Dummy variable 8	-5,482	1,979	-2,770	0,006	-10,627	-0,338
Total Debt / Total Assets	-6,015	2,778	-2,165	0,031	-13,236	1,205
Log of total turnover	0,298	0,859	0,347	0,729	-1,934	2,530
ROA	0,691	0,438	1,579	0,116	-0,447	1,829
Nr of foreign boardmembers	0,534	0,410	1,301	0,195	-0,532	1,600
% Outsiders	-4,954	5,719	-0,866	0,387	-19,819	9,911
Nr of Business Segments	0,503	0,363	1,385	0,168	-0,441	1,446
Capital expenditure / Sales	0,484	0,797	0,607	0,544	-1,588	2,556

## Appendix 3 Endogeneity test model 1a

### Model 1a

Confidence interval (%): 99,00

Modeling variable Log of board size:

Summary for the dependent variable:

Variable	Observations	Sum of weights	Mean	Standard deviation
Log of board size	222	222	1,419	0,528

Goodness of fit coefficients:

R	0,957
R <sup>2</sup>	0,915
R <sup>2</sup> adj.	0,912
SSR	5,235

Evaluating the information brought by the variables ( $H_0 = Y = \text{Moy}(Y)$ ):

Source	DF	Sum of squares	Mean square	Fisher's F	Pr > F
Model	8	56,334	7,042	286,495	< 0,0001
Residuals	213	5,235	0,025		
Total	221	61,569			

Model parameters:

Parameter	Value	Standard deviation	Student's t	Pr > t	Lower 99 %	Upper 99 %
Intercept	-0,667	0,129	-5,172	< 0,0001	-1,003	-0,332
Tobins q	-0,015	0,006	-2,482	0,014	-0,031	0,001
Debt / Assets	0,120	0,088	1,367	0,173	-0,108	0,348
Log of total turnover	0,167	0,007	22,514	< 0,0001	0,147	0,186
ROA	-0,002	0,006	-0,387	0,699	-0,019	0,014
Nr of foreign boardmembers	0,000	0,005	-0,058	0,954	-0,013	0,013
% Outsiders	-0,321	0,046	-6,926	< 0,0001	-0,442	-0,201
Nr of Business Segments	0,009	0,005	1,732	0,085	-0,004	0,021
Capital expenditure / Sales	0,041	0,005	7,566	< 0,0001	0,027	0,055

## Appendix 3 Endogeneity test model 2a

### Model 2a

Confidence interval (%): 99,00

Modeling variable Dummy variable 8:

Summary for the dependent variable:

Variable	Observations	Sum of weights	Mean	Standard deviation
Dummy variable 8	222	222	1,000	0,770

Goodness of fit coefficients:

R	0,835
R <sup>2</sup>	0,697
R <sup>2</sup> adj.	0,686
SSR	39,658

Evaluating the information brought by the variables ( $H_0 = Y = \text{Moy}(Y)$ ):

Source	DF	Sum of squares	Mean square	Fisher's F	Pr > F
Model	8	91,403	11,425	61,364	< 0,0001
Residuals	213	39,658	0,186		
Total	221	131,061			

Model parameters:

Parameter	Value	Standard deviation	Student's t	Pr > t	Lower 99 %	Upper 99 %
Intercept	-1,134	0,355	-3,192	0,002	-2,057	-0,210
Tobins q	-0,084	0,017	-5,006	< 0,0001	-0,128	-0,041
Total Debt / Total Assets	0,339	0,241	1,405	0,162	-0,288	0,966
Log of total turnover	0,240	0,020	11,770	< 0,0001	0,187	0,293
ROA	0,028	0,018	1,584	0,115	-0,018	0,074
Nr of foreign boardmembers	0,015	0,014	1,109	0,269	-0,020	0,051
% Outsiders	-1,555	0,128	-12,174	< 0,0001	-1,886	-1,223
Nr of Business Segments	0,028	0,014	2,100	0,037	-0,007	0,064
Capital expenditure / Sales	0,073	0,015	4,902	< 0,0001	0,034	0,112

## Appendix 4 Final Regression model 1

### Model 1

Confidence interval (%): 99,00

Modeling variable Tobins

q:

Summary for the dependent variable:

Variable	Observations	Sum of weights	Mean	Standard deviation
Tobins q	222	222	2,036	1,863

Goodness of fit coefficients:

R	0,412
R <sup>2</sup>	0,170
R <sup>2</sup> adj.	0,138
SSR	636,972

Evaluating the information brought by the variables ( $H_0 = Y = \text{Moy}(Y)$ ):

Source	DF	Sum of squares	Mean square	Fisher's F	Pr > F
Model	8	130,093	16,262	5,438	< 0,0001
Residuals	213	636,972	2,990		
Total	221	767,065			

Model parameters:

Parameter	Value	Standard deviation	Student's t	Pr > t	Lower 99 %	Upper 99 %
Intercept	0,786	1,509	0,521	0,603	-3,137	4,708
Log of board size	-1,849	0,745	-2,482	0,014	-3,786	0,088
Debt / Assets	-1,556	0,965	-1,612	0,108	-4,064	0,952
Log of total turnover	0,251	0,149	1,685	0,093	-0,136	0,639
ROA	0,114	0,071	1,621	0,106	-0,069	0,298
Nr of foreign boardmembers	0,110	0,055	2,011	0,046	-0,032	0,251
% Outsiders	0,473	0,566	0,836	0,404	-0,997	1,943
Nr of Business Segments	0,111	0,054	2,049	0,042	-0,030	0,252
Capital expenditure / Sales	-0,018	0,068	-0,273	0,785	-0,194	0,157

## Appendix 4 Final Regression model 2

### Model 2

Confidence interval (%): 99,00

Modeling variable Tobins

q:

Summary for the dependent variable:

Variable	Observation	Sum of weights	Mean	Standard deviation
Tobins q	222	222	2,036	1,863

Goodness of fit coefficients:

R	0,485
R <sup>2</sup>	0,236
R <sup>2</sup> adj.	0,207
SSR	586,389

Evaluating the information brought by the variables ( $H_0 = Y = \text{Moy}(Y)$ ):

Source	DF	Sum of squares	Mean square	Fisher's F	Pr > F
Model	8	180,677	22,585	8,204	< 0,0001
Residuals	213	586,389	2,753		
Total	221	767,065			

Model parameters:

Parameter	Value	Standard deviation	Student's t	Pr > t	Lower 99 %	Upper 99 %
Intercept	0,445	1,398	0,318	0,751	-3,188	4,077
Dummy variable 8	-1,248	0,249	-5,006	< 0,0001	-1,895	-0,600
Total Debt / Total Assets	-1,214	0,928	-1,308	0,192	-3,626	1,199
Log of total turnover	0,247	0,099	2,488	0,014	-0,011	0,505
ROA	0,145	0,068	2,133	0,034	-0,032	0,321
Nr of foreign boardmembers	0,120	0,052	2,303	0,022	-0,016	0,256
% Outsiders	-0,957	0,636	-1,505	0,134	-2,610	0,696
Nr of Business Segments	0,123	0,052	2,370	0,019	-0,012	0,258
Capital expenditure / Sales	0,005	0,061	0,075	0,940	-0,153	0,162

## Appendix 5 Interview with financial analysts

### Consumer Durable industry

Anders Bruzelius, financial analyst at Swedbank markets covering Electrolux, 2004-01-15, tel. 08-58591288

1) Tar ni hänsyn till styrelsens storlek när ni värderar ett företag?  
Tänker aldrig på storleken!

2) Vilka faktorer är viktiga när det gäller styrelsen?  
Vilka som sitter där och vilken kompetens dom har att tillföra.

3) Övriga svar

Anders är mycket kritisk till Ericssons styrelse för att det är så mycket maktkamp. Med andra ord är det fråga om makt snarare än kompetens. När en styrelse ökar från 10 till 20 ledamöter så reagerar man, men en ökning från 5 till 10 är inte så intressant.

Mattias Eriksson, financial analyst at Human securities covering Electrolux, 2004-01-15, tel. 08-50652062

1) Tar ni hänsyn till styrelsens storlek när ni värderar ett företag?  
Ingen hänsyn, ser ingen praktisk betydelse för företagets värdering.

2) Vilka faktorer är viktiga när det gäller styrelsen?  
Se ovan

### Industri Skog

Johannes Grunselius, financial analyst at Carnegie covering SCA, 2004-01-15, tel. 08-6768697

1) Tar ni hänsyn till styrelsens storlek när ni värderar ett företag?  
Tar ej hänsyn till storleken på styrelsen.

2) Vilka faktorer är viktiga när det gäller styrelsen?  
Lite fokus. Dom företag jag analyserar är i regel välskötta, med andra ord så finns det inga skandaler. Aktiemarknaden fungerar så att det kan vara aktuellt kortsiktigt, då det till exempel blir flera skandaler. Vid till exempel fallet Skandia, då styrelsen blir intressant.

3) Övriga svar

Han tror att detta problem kan bli aktuellt på mindre bolag, då stora företag har ofta kända namn med hög kredibilitet.

Klas Rasmuson, financial analyst at CAI Cheuvreux covering SCA, tel 2004-01-15, 08-7325114

1) Tar ni hänsyn till styrelsens storlek när ni värderar ett företag?  
Nej absolut inte.

2) Vilka faktorer är viktiga när det gäller styrelsen?

Ibland, men ofta är det sekundärt och i så fall analyserar man kunskapen som ledamöterna besitter.

Hampus Brodén, financial analysts at Hagströmmer & Qviberg covering Drott, 2004-01-15,  
Tel. 08-6962043

1) Tar ni hänsyn till styrelsens storlek när ni värderar ett företag?

Nej, absolute inte

2) Vilka faktorer är viktiga när det gäller styrelsen?

Man kan titta på styrelsen bara om den är påfallande små eller stora antal ledamöter på en styrelse.

Hans Derninger, financial analysts at Handelsbanken Equities Research covering Drott, 2004-01-15, Tel. 08-7013872

1) Tar ni hänsyn till styrelsens storlek när ni värderar ett företag?

Min erfarenhet är att man inte tittar på styrelsens storlek vid värdering av ett företag. Man tänker allmänt att ju större företaget är, desto större blir dess styrelse.

2) Vilka faktorer är viktiga när det gäller styrelsen?

Vi tittar på styrelse bara i special fall, tex, den det går dåligt för företaget eller när det finns tecken på dålig styrning. Man tittar extra på Skandia's styrelse efter alla skandaler.