Does Board Overlap Affect Firm Performance?

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Abstract: This study examines the relationship between board overlap and firm performance among firms listed on the Nasdaq OMX Stockholm Stock Exchange, using unbalanced panel data and linear regression models. It aims to further investigate if there is a relationship between directors serving on multiple boards simultaneously and firm performance. We use average directorships per director and Tobin's Q as main variables measuring board overlap and firm performance, respectively. Although our results are ambiguous and somewhat conflicting, they suggest that board overlap and firm performance are possibly interrelated. When including assignments in both listed and unlisted firms, we find a negative and significant relationship between average directorships per director and Tobin's Q.

TABLE OF CONTENTS

"If you want to get something done, ask a busy person."

Benjamin Franklin (1706-1790)

1 INTRODUCTION

The board of directors is often considered as one of the most important decision making bodies in an organization. How a board actually can add value to a firm has been subject to extensive research. Scholars and regulators have debated around the role of the board, however, both can agree that directors of corporate boards should offer their time and dedication to the assignment. Directors should act as effective monitors of firm management on the behalf of the shareholders, and contribute with their experience and expertise when developing the strategy of the firm, as stated by the Swedish Code of Corporate Governance (Swedish Corporate Governance Board 2010).

Some individuals take on many board assignments, in unlisted as well as listed publicly traded firms. In 2013, there were 1462 seats in the boards of the companies listed on the Nasdaq OMX Stockholm Stock Exchange, held by 1171 people. 222 of these had two or more board assignments in other listed firms. Swedish industrial magnate Anders Nyrén had, in 2013, no less than seven board assignments, making him the individual serving on the most boards in firms listed on the Nasdaq OMX Stockholm Stock Exchange. When taking unlisted firms into consideration, the results are more extreme; the director of a firm listed on the Nasdaq OMX Stockholm Stock Exchange serving on the most boards, both listed and unlisted in Sweden, has 212 board assignments. Additionally, 331 of the directors on the Nasdaq OMX Stockholm Stock Exchange serve on the boards of more than ten Swedish listed and unlisted firms in total.[1]

It is not without controversy that the boards of listed firms have directors who are simultaneously board members of other firms. The 2008 financial crisis brought along an intensified pressure on policymakers to regulate the corporate sector. Large banks and financial institutions were, as commonly known, at the center of attention. The European Commission argued that some of the board members of large banks did not fully commit to and understand the risks of the banks (Gripenberg 2014). Consequently, the European Parliament ratified a directive in 2013 restricting the number of other board assignments a board member of a systemically important financial institution can hold. In a Swedish context, the directive implies that a board

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[1] This data was retrieved from our compiled dataset, as further developed below.

member of a bank considered systemically important by The Swedish Financial Supervisory Authority (Finansinspektionen) cannot hold more than three other board memberships in listed firms (European Parliament and the Council 2013). The intention behind this regulation was to increase the commitment of directors of larger banks, making them more effective monitors on the boards they serve (Gripenberg 2014). However, many directors in listed firms were critical to the new regulation. The threatened possibility to occupy seats on multiple boards caused a fear of lack of competence within corporate boards among many of Sweden's most prominent directors (Hedelius 2013).

The phenomenon of board seats being occupied by directors who are also on the boards of other firms has been subject of previous research. Several scholars point to the fact that directors taking on many board assignments may become more busy and thus less effective monitors, in turn leading to weaker firm performance (e.g. Santos, da Silveira and Barros 2012; Loderer and Peyer 2002). However, on a different note, several other researchers make the case that there is a market for directors, that is, directors with great experience can be highly valued for their advisory role, and thus demanded more in corporate boards (Field, Lowry and Mkrtchyan 2013; Lee and Lee 2014). Lee and Lee (2014) claim that benefits and costs of overlapping directors is related to firm characteristics, and find that in firms with high advising and external financing needs, firm valuation is positively related to board overlap.

Many of the studies on this subject have been highly geographically concentrated; Adams, Hermalin and Weisbach (2010) conclude that the research of this phenomenon has to a large extent been focused on data from the United States, and that research on data outside the U.S. is scarce. Recently, studies such as Lee & Lee (2014), Santos *et al.,* (2012) and Andres, Van den Bongard and Lehmann (2013) have contributed to the international investigation of this phenomenon. However, they reach somewhat different conclusions, as further developed in the literature review section below.

What can be said about board overlap and firm performance in Sweden? Do Swedish board professionals speak mainly in self-interest when they refer to a limitation on the number of board assignments as something negative? The conflicting results of earlier research in other countries, along with the recent attention on board overlap following the 2013 EU regulation, creates an interest in investigating this phenomenon in a Swedish context. Using unbalanced panel data of directors of firms listed on the Nasdaq OMX Stockholm Stock Exchange from the years 2007, 2009, 2011 and 2013, our study investigates the relation between firm performance (as measured

by Tobin's Q) and board overlap in Swedish firms. Further, the study aims to shed light on the question if there is a relation between board overlap and firm performance. In a relatively small economy such as Sweden, board overlap is very likely to be present, and if and how it affects firm performance has not been explored to a large extent.

To test the relation between board overlap and firm performance we use linear regression models on unbalanced panel data for the years 2007, 2009, 2011 and 2013, respectively. We use the market value-based measure Tobin's Q as our main independent variable, and the operational profitability-based measure Return on Assets (ROA) in order to control for the consistency of our results.

The results are, even though ambiguous and sometimes conflicting, somewhat interesting and shed further light on the topic. When taking all board assignments into consideration, both in listed and unlisted firms in Sweden, a significant negative relationship can be found. When subsequently separating out assignments in listed and unlisted firms as well as the Chairman of the Board (COB), we find somewhat conflicting results; COBs taking on more board assignments in listed firms does not have a significant relationship with firm performance, while COBs taking on board assignments in unlisted firms has a significant positive relation to firm performance. This implies that we do not find any general support for either the busyness hypothesis or the reputational hypothesis.

1.1 Purpose

Our study aims to investigate the relationship between board overlap and firm performance on Swedish data. The Swedish business world is often accused to be run by a narrow elite with few people sitting on multiple chairs, potentially causing incentive problems. This would likely affect firm performance negatively, harming the shareholders and only being beneficial to a selected corporate elite. The corporate sector being run by a narrow elite can be harmful to society in many ways, when considering factors such as concentration of power and wealth and inequality. It is essential for society that large, public companies are effectively managed and use resources efficiently, since all members of society have various stakes in them. The general public's stakes in large, listed companies take various forms; some more direct, such as employee or shareholder, others more indirect such as supplier, customer or indirect shareholder through private or public pension savings.

Our study aims to investigate whether the phenomenon of board overlap has an impact on firm performance or not and, in extension, if it can be viewed as corporate mismanagement to have a

board with extensive overlap. Or, in contrast, if it could be that the supply of skilled board professionals is limited.

1.2 Literature Review

A number of scholars have investigated the phenomenon of board overlap. See Table I for a summary of previous studies on the subject, to further illustrate the different findings.

Table I

Summary of previous studies

Authors	Geography and time span	Studied variables (dependent variable, independent variable)	Findings
Ahn, S., Jiraporn, P. and Kim, Y. S. (2010)	U.S.1998-2003	Stock returns and directorships per outside director	Negative relationship after M&A's
Andres, C., van den Bongard, I. and Lehmann, M. (2013)	Germany 2003-2006	Tobin's Q and degree centrality	Negative relationship and more executive compensation
Core, J.E., Holthausen, R.W. and Larcker, D.F. (1999)	U.S. 1982-1984	CEO compensation and corporate governance structures	More executive compensation in firms with weaker corporate governance structures
Ferris, S.P., Jagannathan, M. and Pritchard, A.C. (2003)	U.S. 1993-1995	Market-to-book and directorships per outside director	Positive relationship
Fich, E.M and Shivdasani, A. (2006)	U.S. 1989-1995	Market-to-book and busy boards	Negative relationship
Lee, K-W. and Lee, C-F. (2014)	East Asia 2001-2007	Tobin's Q and busy boards	Positive relationship for firms with high advisory needs
Loderer, C. and Peyer, U. (2002)	Switzerland 1980, 1985, 1990, 1995	Tobin's Q and average directorships per non-COB director	Negative relationship
Santos, R.L., da Silveira, A.D.M. and Barros, L.A. (2012)	Brazil 2001, 2003, 2005	Tobin's Q and busy boards	Negative relationship

The independent variables shown in the table above are often only examples of examination variables used in the studies; for example, Loderer and Peyer (2002) not only uses average number of missions for non-COB directors in listed firms, but also number of seats held by the COB in unlisted firms, as well as the corresponding variables for non-COB directors. Due to the economy of space, we do not list all the findings in the table. We further develop the findings in the text below.

Ahn, Jiaporn and Kim (2010) argue that the fact that a firm's directors have other board assignments influences the quality of managerial oversight. They find that over a certain threshold, the number of outside board seats held by a firm's directors negatively affects the acquiring firm's returns. The theoretical intuition behind this, they argue, is that the more board assignments a firm's directors have, the more room there is for managers taking actions that benefit themselves at the expense of the shareholders, due to the reduced monitoring by the directors being busy with their other board assignments.

Ahn *et al.,* (2010) and Core, Holthausen and Larcker (1999) find further evidence that boards with directors serving on many other boards can be negative for firms. They show that in firms where board members are busy with other board missions, CEOs earn higher compensations. In a more general sense, their results suggest that firms with weaker corporate governance structures (with board of directors with many other missions as one indicator of this) have greater agency problems. One example of this is excessive CEO compensation.

Some of the previous studies can be broadly divided into two groups with regards to their methodology. Most articles prior to 2006 use a variable measuring the number of board assignments held by outside directors and compare this measure to some performance variable. Ferris, Jagannathan and Pritchard (2003) find a positive relation between market-to-book ratio and *the number of directorships held by outside directors*. They discuss the direction of causality on the view that boards with directors holding multiple assignments yields positive firm performance; on the one hand, if the market for directors works efficiently, the most skilled directors should receive the most assignments. On the other hand, it could be that the best performing firms are better able to attract more experienced directors. Furthermore, they find no evidence for the hypothesis that directors with multiple board assignments shirk their responsibilities to serve on board committees, i.e. just because a director has many other board assignments, it does not follow that she or he becomes more reluctant to participate on board committee meetings. They conclude that their results do not support the view that the number of board assignments held by an individual should be limited.

However, three years later, Fich and Shivdasani (2006) published a study in response to Ferris *et al.,* (2003), challenging their findings through providing critique of the measure directorships held by outside directors. They introduce a new measure, which they call *busy boards*, defined as

when a majority of the board's outside directors[2] holds three or more board assignments in listed firms. They find that the occurrence of a busy board is negatively related to firm performance as measured by Tobin's Q.

After this study, many scholars have focused on the measure busy boards and applied it to different data worldwide. For example, Santos *et al.,* (2012) also report a negative relation between Tobin's Q and busy boards on a set of firms listed on the Sao Paulo Stock Exchange (BMFBOVESPA). Furthermore, they also find evidence for a non-linear relationship; a high degree of interlocking directorships affects firm performance negatively, while a low degree of the same can be beneficial to firm performance.

In contrast, there is also evidence that busy boards could be beneficial to some firms. Lee and Lee (2014) report that for firms with high advising and high external financing needs, busy boards have a positive relation with Tobin's Q. Based on this, they claim that the relationship between busy boards and firm performance is conditional on firm characteristics. As their study includes multiple countries,[3] they are able to draw the conclusion that the beneficial effects of busy boards are on average stronger in countries with weaker shareholder rights. This also holds in firms with less concentrated ownership.

Loderer and Peyer (2002) confirm the view that the relation between board members' busyness and firm performance is more complex than taking an unambiguous negative or positive direction; they illustrate that when distinguishing between the COB and the rest of the board members, their results differ. Additional directorships in *listed* firms for COBs had a positive relation with firm value, while a valuation-neutral relation held for non-COB members of the board. As possible explanations, they suggest that the COB could be better able to attract seats among listed firms, have better monitoring skills, more experience in running larger firms, or more useful business contacts than other board members, which was also confirmed by their data.[4] However, the accumulation of seats in *unlisted* firms had a negative relation to firm value, regardless of whether the director was a COB or not.

There is also a third methodology used by Andres *et al.,* (2013) among others, who study directors' connections in social networks using a rather different mathematical approach. On a

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[2] According to Fich and Shivdasani (2006, p.696)), "Outside directors are those who are not a current or former employees of the firm, are not relatives of the CEO, have no business deals with the firm other than their directorship, and do not have interlocking directorships with the CEO."

[3] Countries investigated include Hong Kong, Indonesia, Malaysia, Philippines, Singapore and Thailand.

[4] The median COB in their study has between 10 and 14 seats in listed and unlisted firms (for the years 1980, 1985, 1990 and 1995), whereas the median non-COB board member has between 6 and 8 seats.

sample of German firms, they use the measure degree centrality, which is defined as the number of direct links incident to a director. This measure is useful for emphasizing the network dynamics of board overlap. Through a rather complex mathematical approach, using the eigenvector centrality, they conclude that a director's embeddedness in a social network of other directors effectively limits the director's monitoring ability.

1.3   Definitions

We choose to denote the phenomenon investigated in this study *board overlap*. It occurs when a director of one firm also sits on the board of another firm. A board with five directors where one director serves on another board would have an overlap measure of one. Since it is likely that a larger board experiences more overlap we normalize the measures by board size. The overlap measure divided by board size is the same as average directorships per director in the board, which is the base of our study.[5] As illustrated under the literature review section, various notions have been used by academia to describe this phenomenon. The notion *interlocking directorates* is widely used, especially in earlier studies with a sociological approach. Interlocking directorates has a broader definition were a board is interlocked also when an executive of one firm serves as director on another firm. I.e., if for example the Chief Executive Officer (CEO) of firm A sits on the board of firm B, firm A has an interlock with firm B and vice versa, even if the CEO is not on the board of firm A. We only study overlaps on a board-to-board level - that is, for an overlap to occur, at least one *director* of firm A has to be on the board of firm B. This definition of board overlap is in line with Loderer and Peyer (2002), which is preferable since we follow their method in other regards such as data and modeling. Santos *et al.,* (2012) use the notion board interlock, which is equal to the definition of board overlap.

When defining firm performance we assume a shareholder's perspective, using Tobin's Q as our main measure of firm performance. Tobin's Q is the ratio between firm market value and replacement cost of the firm's assets.[6]

For the sake of variation, we use the notions board assignment, board membership, board mission and directorship interchangeably.

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[5] A complete definition of the board overlap variables is presented in section 4.2.
[6] A complete definition of Tobin's Q presented in section 4.1.

1.4   Delimitations

The study will only focus on Swedish firms listed on the Nasdaq OMX Stockholm Stock Exchange, and no other marketplaces in Sweden or the rest of the world. Directorships in firms incorporated abroad are not taken into account. Nor does the study examine the overlap in unlisted firms, though data on directors in listed firms' board assignments in unlisted firms is included.[7]

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[7] An illustration of this can be found under section 4.2.

2 THEORETICAL FRAME OF REFERENCE

2.1 Board Work - a Swedish Perspective

The board of directors and the board work is regulated to a relatively low extent. The Swedish Limited Companies Act (SFS 2005:551) only dictates a broad framework for boards. Examples of this include their formal place in the chain of command in the company and their responsibility to hire, monitor and fire the CEO, as well as responsibilities such as submitting the annual report to the Annual General shareholder's Meeting (AGM). Regarding the board's responsibilities for corporate governance, The Swedish Limited Companies Act broadly defines that the board is responsible for the organization of the firm and the administration of the matters of the company. Regulations for public limited companies are more extensive; the board of a listed company must consist of at least three individuals, and the COB cannot also serve as CEO. They are also subject to audit and disclosure regulations to a greater extent (SFS 2005:551).

The responsibilities for boards of listed Swedish companies is more precisely defined by the Swedish Code of Corporate Governance, following the principle of *comply or explain* (i.e. companies obliged to apply the code do not always have to follow every rule in the code, provided that they explain the deviation and argue for the chosen solution instead of the one proposed in the code). The comply or explain principle enables the shareholders to evaluate the deviations from the norm, and is a tool for not exerting binding law on details of corporate governance while still applying pressure on board members to act in the interest of shareholders. According to the code, no more than one of the board members can be a member of executive management. In practice, it is usually the CEO who also serves as director if the executive management is represented in the board. Furthermore, a majority of the board members must be independent of the company and its management, and no less than two members must be independent of the company's major shareholders (Swedish Corporate Governance Board 2010). This opens up for the appointment of what is commonly referred to as *styrelseproffs* (board professionals) in Sweden - directors who are appointed for their skills as directors rather than merely representing the owners.

The responsibility of the COB is far more extensive than the rest of the directors; she or he has the responsibility to lead the board work and assure that the board meets its legal obligations. More specifically, the COB is, according to the Swedish Code for Corporate Governance, in charge of: (i) creating the best possible conditions for the activities of the board; (ii) organizing adequate training for new and existing board members; (iii) making sure the board is regularly updated on

the company and its operations as well as the views of the shareholders; (iv) ensuring the provision of sufficient information provided to the board in to be able to conduct its work; (v) draw up proposed agendas for the board's meetings in accordance with the CEO; (vi) verifying the implementation of the board's decisions and (vii) ensuring that the work of the board is evaluated on an annual basis (Swedish Corporate Governance Board 2010).

According to Lars-Erik Forsgårdh, Chairman of Styrelseakademien and former board member of the Swedish Corporate Governance Board, it is not unusual that the COB of a listed company commits three to four times more time on her or his directorship compared to the directorship of an ordinary board member (Styrelseakademien 2009). The implications of this could be concluded with the reasoning of Loderer and Peyer (2002, p. 183), who argue:

> All else being the same, the opportunity costs for a given firm of letting one of its directors take on an additional mandate are higher if the director in question is the COB than if it is someone else.

2.2   Board Overlap - Potential Causes

The causes of board overlap are like many phenomena observed in the social sciences a mixture of measurable and non-measurable reasons (Dooley 1969). Earlier studies of board overlap have had different approaches, which can be divided into the interorganizational and interpersonal approaches.

2.2.1   Interorganizational Approach

The interorganizational approach argues that board overlap is a result of relationships and connections in between firms, independently of what individuals these firms are represented by. This approach is taken by Dooley (1969). He finds significant relationships between board overlap and (i) the size of the corporation; (ii) the extent of management control; (iii) the financial connections of the corporation; (iv) the relationship with competitors and (v) the existence of local economic interests. This is an example of the interorganizational approach, since what is examined is firm-to-firm relationships and conditions, what matters is the firms, and not primarily the individuals they are represented by.

Another theory within the interorganizational approach is that board overlap occurs due to firms desire to reduce sources of uncertainty (Mizruchi 1996). Interfirm dependence is argued to be a common reason for board overlap. It could for example be a firm appointing an executive from one of its key suppliers as director to secure resources in the future. Another example is a heavily

indebted company that appoints a banker as director to improve chances of securing funding in the future. The bank can monitor the firm closely and surveil the bank's interests in the firm, e.g. avoid excessive risk-taking. This topic has been studied by Dooley (1969) and Allen (1974), among others. When appointing a director tied to a firm interdependent with the firm in question, uncertainty is reduced for both the firms. The result of increased monitoring should thus be increased firm performance.

2.2.2 Interpersonal Approach

The interpersonal approach argues that board overlap is created by the individuals in the firms rather than the firms they represent. Studies such as Mace (1971), Mills (1956) and Zajac (1988) support this approach.

Mizruchi (1996) sees career advancement among board members as a possible cause of board overlap. He discusses the theories of Zajac (1988), which imply that individuals join boards to gain prestigious contacts and financial remuneration. Zajac (1988) argues that board overlap is created by individuals on a person-to-person basis rather than on a firm-to-firm basis. Individuals are chosen as directors because of their personal characteristics, expertise and contacts rather than because of the firms they represent, i.e. their employers. Mace (1971) shows that firms want directors who add prestige and are known by reputation. Furthermore, they want directors with a specific skill set who can provide valuable insights to the firm. This narrows down the number of potential directors to a small range of people. Mizruchi (1996) argues that these people are most likely to be known by current directors and major shareholders, and possibly friends or acquaintances to them. This suggests that board overlap could be beneficial for both the individual being appointed board member, by getting more prestige and financial remuneration, and for the individuals already in the top layer of the firm by appointing people they know and trust, securing their position within the firm.

A more extreme view on the interpersonal approach is the theory on social cohesion. It suggests that individuals, often in the upper-class, are appointed to the boards of one another because of social ties in between them. Koenig, Gogel and Sonquist (1979) finds evidence on American data that board overlap does not generally occur due to interorganizational dependences but rather connect city-based corporate groups. He examines the replacement of interlocks after the death of an outside director, and finds that in general the interlocking director is not replaced by a new director from the same firm but rather by another director from the same city-based corporate

group. He argues that this would speak in favor for the interpersonal approach since the interlocks occur because of the connections between individuals rather than because of business connections between the firms. In short, the theory on social cohesion thus suggests that there is a corporate elite consisting of individuals who serve on each other's boards to maintain their power and wealth.

Although this approach does not yield a clear cut intuition whether board overlap should be positively or negatively related to firm performance, we include it to underpin the fact that there might be other potential causes for board overlap than those listed under the interorganizational approach.

2.2.3 *The Agent-Principal Theory*

The interpersonal approach can be associated with the agent-principal theory. In a large corporation, ownership and control is often separated. The owners are often a large and diverse group while the control lies in the hands of the managers of the firm. This gives rise to the agent-principal problem where the owners are the principal and management the agent. It is possible that management does not act in a value-maximizing way for the shareholders since acting differently may be to their personal benefit (Fama 1980; Fama and Jensen 1983). This can also be applied to the shareholders and the board of directors where the shareholders are the principal and the board is the agent. Even though the board of directors is appointed by the owners, their interests are not necessarily perfectly aligned. A board member might have personal interests such as career aspirations and status needs that may lead the board member to act in a non-value maximizing way. This applies to our study on board members who might act non-value-maximizing by taking on too many board assignments due to personal interests such as prestige, reputation etc., causing them to underperform relative to individuals with fewer board assignments. If this relationship exists it would be mirrored by the market value of the firm in relation to its degree of board overlap. Assuming that directors act in self-interest rather than in the interest of the shareholders, a firm with a higher degree of board overlap would then have a relatively lower value than a firm with lower degree of board overlap.

2.3   Board overlap - potential consequences

2.3.1 *Busyness Hypothesis and the Monitoring Role*

As stated by Ferris *et al.,* (2003), taking on additional board assignments and serving on multiple boards can overcommit an individual, leading to this person shirking her or his responsibility as

director, becoming less active in the role as monitors. Given that boards play an important role in firm performance, the hypothesis states that a highly overlapped and hence busy board leads to reduced managerial oversight and, in extension, reduced firm value. This hypothesis is confirmed through the findings of Fich and Shivdasani (2006), which imply that busy boards are not effective monitors, as their respective firms show lower market-to-book values, weaker profitability and lower sensitivity of CEO turnover. An example of this can be that overcommitted directors might attend fewer board meetings, and thus contribute less to the discussion about and the reasoning behind the different business decisions, which in turn hampers firm performance.

The busyness hypothesis refers to the supervising role of the directors; in their supervising role, directors monitor management and exert their power through taking actions such as hiring or firing the CEO.

2.3.2   *Reputational Hypothesis and the Advisory Role*

Fama and Jensen (1983) argue that the market for outside directorships incentivizes outside directors to develop a reputation of being experts in decision control. The human capital value of outside directors depends largely on their observed competences as internal managers in other organizations. They use their directorships in other organizations as a way to signal their expertise in decision-making, their understanding of the diffusion and separation of decision control and their ability to work with such systems of decision control (Fama and Jensen 1983). In other words, if a firm is successful, executives and board members of that firm can enjoy more offers of board assignment in other firms. Field *et al.,* (2013) argue that even though busy board members might be less effective monitors, their experience and contacts make them excellent advisors. They find that among firms with high advising needs, such as recently listed firms (which assumingly highly favors directors with experience of capital markets), board busyness contributes positively to firm value, arguably a consequence of having excellent advisors among the directors. This is also in line with the findings of Lee and Lee (2014). Through having achieved experience and various contacts, a director with multiple board assignments could thus contribute positively to firm performance.

This, in contrast to the busyness hypothesis, refers to the advising role of directors. The advisory role entails contributing to the corporate strategy and supporting management through knowledge and experience. Directors are assumed to be better advisors if they can signal that they are popular through multiple board assignments.

3 HYPOTHESIS

The ambiguity in the results from previous research, and the theoretical intuition behind both the fact that board overlap can have negative as well as positive effects on firm performance, lead us to a two-sided hypothesis:

H1: Board overlap and firm performance are interrelated.

If board overlap has negative impact on firm performance, this suggests that the busyness hypothesis prevails over the reputational hypothesis, i.e. directors become less efficient monitors, according to our assumptions.

If board overlap has a positive impact on firm performance, this suggests that the reputational hypothesis prevails over the busyness hypothesis, i.e. directors with multiple board assignments contribute positively to firm performance through their reputation and prestige, according to our assumptions.

4 METHOD

We use linear multiple regression analysis to carry out our study. When performing the Breusch-Pagan (1979) test for heteroskedasticity, we find that our data violates the underlying assumption of homoscedasticity, and hence robust regressions are performed in order to correct for this. Eight different models are used as described below. The models aim to measure the degree of board overlap for each company at each year and examine its effects on firm value and profitability.

4.1 Dependent Variables

We use Tobin's Q as primary dependent variable, which is defined as the ratio between each firm's total market value and its replacement cost. Tobin's Q is a ratio of how effectively the firm can use its assets and what shareholders are willing to pay for the firm to manage and use the assets. In line with general practice, we approximate the ratio between firm value and replacement cost by the ratio between market value of equity added by the difference between total assets and shareholder's equity (i.e. total liabilities) and total assets.[8] Market value of equity and book value of liabilities measure the market value of the firm, and the book value of assets is a proxy for the replacement cost.

$$Tobin's\ Q = \frac{Equity_{Market\ value} + Total\ assets - Equity_{Book\ value}}{Total\ assets}$$

A high Tobin's Q implies a higher market value in relationship to the value of the firm's assets. Since the ratio is scaled by size, a positive bias for larger companies is avoided. A higher Tobin's Q is assumed to indicate good management and governance. However, Tobin's Q might be misleading in the case of underinvestment, leading to a high marginal effect on Tobin's Q, since the asset base is depreciated without being replaced with new assets. Tobin's Q is widely used in previous research on this topic (Loderer and Peyer (2002), Fich and Shivdasani (2006) and Ferris *et al.*). By using the same measure we make our study comparable with earlier studies.

As measures are usually subject to some errors, we use ROA as dependent variable in subsequent models, which serve as robustness checks. ROA is defined as Earnings Before Interest and Taxes (EBIT) divided by average total assets.

$$ROA = \frac{EBIT}{Total\ assets}$$

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[8] All balance sheet and market capitalization measures are averages defined as opening value year t plus closing value year t divided by two.

ROA measures operational profitability as opposed to Tobin's Q that measures the market value of the firm. By using both a market value-based and a profitability-based dependent variable we can control for whether our findings are consistent and not dependent on the type of measure used. Also, consistent results between the models with different dependent variables would indicate a stronger and more stable relationship between board overlap and firm performance.

4.2 Independent Variables

Nine different variables are used to measure the degree of overlap. The most general variable is average directorships per director, which includes all directors' assignments in both listed and unlisted firms. Note that only the directors of listed firms are considered. The measure is scaled by board size, that is, a board with no overlap has an average number of directorships per director of one. The measuring of board overlap is illustrated in *Figure 1*.
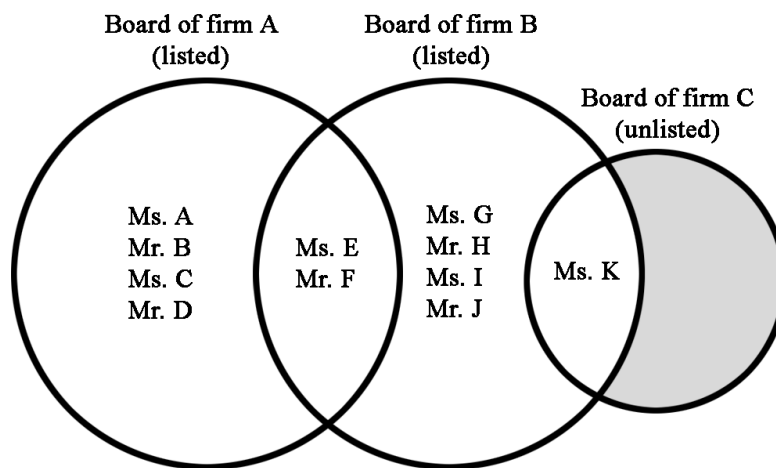
Figure 1. In this figurative example, the measure average directorships per director in Board A would be 8 (Ms. E and Mr. F are counted twice, as they serve on two boards each) divided by 6; 1.33. The equivalent for Board B is 10 divided by 7; 1.43. The average directorships per director in listed firms for Board A would be 1.33 again, as none of the directors have assignments in unlisted firms. The equivalent for Board B would be 9 divided by 7; 1.29. Average directorships per director in unlisted firms for Board A would be 0, as none of the directors have assignments in unlisted firms. The equivalent for Board B would be 1 divided by 7; 0.14. The measures capture the degree of board overlap and are normalized by board size.

One problem with the variables measuring board overlap is the difference of timing between the appointment of directors and the fiscal year. The board of directors is elected each year at the AGM, normally taking place in April-June. However, most companies have fiscal years stretching from January to December. This causes a discrepancy between when to observe board composition and

what accounting and stock market data to pair it with. Either we choose (i) to observe the board composition as of January 1st for year t, that is, the board elected in April-June year t-1, and pair it with accounting and stock market data for year t. The alternative (ii) would have been to pair board data observed January 1st year t with accounting and stock market data for year t-1. We chose method (i), in line with Santos *et al.,* (2012), due to assumed time lag between board decisions and impact on firm value and profitability. The board elected in April-June in year t-1 is assumed to have most impact on firm value and profitability in year t. Method (ii) would assume direct impact by board decisions. Method (i) is illustrated in *Figure 2*.
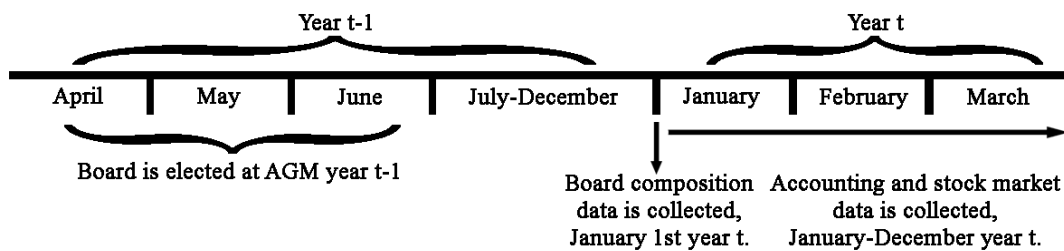
Figure 2. When collecting data on board overlap, there is a timing problem since the AGM and the fiscal years do not match. Here, the method used for our study is illustrated. The board composition data is collected at January year t (the year studied). The board was elected at the AGM, generally held in April-June the previous year. Any changes in board composition after the AGM but before January 1st year t is captured with our method.

4.2.1 Separating Assignments in Listed and Unlisted Firms

Next, we separate assignments in listed and unlisted firms, although still on an average basis using the same method as earlier when calculating the measures. This is to control for the different characteristics of assignments in listed and unlisted firms; a directorship in a listed firm is likely to be more prestigious than the unlisted equivalent. Also, a directorship in a listed firm is expected to be more time-consuming since listed firms usually are larger and have more regulatory burdens, which demands more supervising. However, one could argue that the negative effects of the busyness are lower than the positive prestige effects; firstly, many boards of listed firms choose to delegate parts of their duties to board committees, assumingly decreasing their workload. Second, and more importantly, board members of listed firms are more likely to appear in media and are likely on average better paid than board members in unlisted firms. This suggests that the assignments in listed firms are more desirable and prestigious. Hence, the directorships in listed firms are more likely to support the reputational hypothesis. This is also in line with the reasoning of Loderer and Peyer (2002).

4.2.2 Separating out the COB

As a way of further refining our models we distinguish between the COB and the other directors, due to the COBs special role in the board, as further developed above in section 2.1. The COB is expected to spend more time on board work than the other directors, but their assignment is also the most prestigious in the board. The effect of separating out the COB is arbitrary in its intuition; on the one hand, a busy COB might have negative impact on firm value according to the busyness hypothesis. On the other hand, a COB with many board assignments might have positive impact on firm value due to reputation, experience, visibility and valuable business contacts (Loderer and Peyer 2002). We follow the procedure used in the first models by firstly including assignments in both unlisted and listed firms, and then distinguishing between the two, using separate variables for assignments in listed and unlisted firms, respectively. To summarize, we use the least refined variable and then more refined variables in three subsequent steps, firstly separating assignments in unlisted and listed firms, then separating COBs and other directors and finally separating both assignments in listed and unlisted firms and COBs and other directors.

4.2.3 Factors Controlled for

We use the same set of control variables throughout all models (with an exception for ROA, which is omitted as control variable when it is used as dependent variable). The models control for various corporate governance and financial characteristics that are likely to affect Tobin's Q and ROA to isolate the effects of the board overlap measure in the model.

We control for firm size by including the natural logarithm of sales. Firm size is likely to affect Tobin's Q since larger firms are usually more stable and less likely to go bankrupt, hence they are expected to have a higher Tobin's Q compared to smaller firms. We expect this coefficient to be positive.

Profitability is controlled for by including ROA (as defined earlier). A higher profitability is expected to have a positive impact on Tobin's Q, thus the coefficient is expected to be positive.

We control for board size since Yermack (1996) shows significant negative relationships between board size and firm value in terms of Tobin's Q. If a large board size would worsen communication and encourage freeriding, the coefficient of this measure should be negative.

Debt-to-equity ratio is also included in the model to capture its effects on Tobin's Q. The effect of debt-to-equity is unknown since a high level increases return on equity due to tax shields and reduced agency costs, and hence has a positive effect on Tobin's Q. On the other hand, a company

with too high debt-to-equity ratio is more likely to go into financial distress or be forced into bankruptcy by its creditors. Debt-to-equity is defined as net interest bearing debt divided by total shareholders' equity. Even though the effect of the variable is unknown, it is expected to have a significant effect on our dependent variables.

Sales growth, defined as the sales year t divided by sales year t-1, minus 1, is included as a proxy for future growth opportunities that are likely to have a positive impact on Tobin's Q. Hence, the coefficient is expected to be positive. In other studies, either this measure or the depreciation-to-sales ratio has been used to capture future growth opportunities. However, depreciation might be more biased by different accounting policies than sales, and some investments, such as corporate mergers and acquisitions, are non-depreciable and hence not included in the measure depreciation-to-sales. This motivates our choice of using sales growth as proxy for future growth opportunities.

To capture yearly variations due to market conditions and other factors that are likely to affect the equity market and the economy as a whole, yearly dummies are included. We also control for industry fixed effects using the Standard Industry Classification (SIC) on the divisional level.[9] We choose to control for industry fixed effects instead of using a firm fixed effects model, as Loderer and Peyer (2002) follow the same method and our study is following theirs in terms of data and modelling.

4.3   Sample and Data Collection

Our sample consists of unbalanced panel data from firms listed on the Nasdaq OMX Stockholm Stock Exchange in the years 2007, 2009, 2011 and 2013 respectively, obtained through the Datastream database, yielding 854 observations. Through observing the firms listed at Nasdaq OMX Stockholm Stock Exchange each year respectively, we avoid the survivorship bias that would occur if we chose a balanced panel data set (i.e. firms going bankrupt during the years of our study are not omitted for the years prior to bankruptcy). With balanced panel data, we would also miss recently listed firms and firms that are unlisted due to other reasons than bankruptcy, e.g. buyouts or mergers. With our methodology, we avoid this measurement error.

Board member data were obtained for all companies listed on Nasdaq OMX Stockholm Stock Exchange for the years 2007, 2009, 2011 and 2013, respectively, using the Serrano database. Employee representatives were not included as board members, as they have a special interest in their board membership and are unlikely to be members of other boards. This is in line with

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[9] The SIC divisional level has 10 industry classes.

previous research, as employee representatives are not included in studies such as Loderer and Peyer (2002) and Fich and Shivdasani (2006).

The data retrieved from Serrano contained names and personal identity numbers of board members, when they served and what position they had on the board (director or COB). Data on the board members directorships in unlisted companies was also retrieved. Note that the firms included in the study are only firms listed on Nasdaq OMX Stockholm Stock Exchange. However, the board members of these firms' assignments in unlisted firms are included in order to further measure the degree of board overlap. We were then able to measure the overlap the listed firms have with both other listed and unlisted firms. A company listed on a Multilateral Trading Facility (MTF)[10] or other alternative marketplace, but incorporated in Sweden, is viewed upon as an unlisted firm since it is not listed on Nasdaq OMX Stockholm Stock Exchange.

The data on the board member level was grouped to create measures on the firm level. For each firm-year observation, the average directorships per director in listed and unlisted firms, respectively, was calculated. Also the number of directorships held by the COB in listed and unlisted firms, respectively, was added to the final firm level dataset.

The firm level data on board assignments was matched with the stock listing data from Datastream. We chose to exclude financial and insurance companies, due to the differing accounting standards, causing problems for accounting measures (such as ROA) used in our models. When doing this, the number of observations was reduced to 833.

Accounting and stock market data for the firms was obtained using the Orbis database. Discrepancies in the three databases used cause the number of observations to reduce to a final sample of 725 observations. Even though a fairly large number of observations were omitted due to missing data, no systematic bias could be found in the firm years that were missing, nor for industries or years. Except for financial and insurance companies, no industry was overrepresented in the observations omitted.

The measure average of directorships per director varied greatly and some companies were great outliers in terms of average directorships per director. For example, it is common for real estate companies to "package" real estate in second order subsidiaries in order to reduce capital gains taxes when selling the real estates, through selling the second order subsidiary instead of the real estate itself. Due to this common setup many directors in real estate companies serve on tens or

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[10] MTF or alternative marketplace such as First North, Aktietorget etc.

hundreds of boards in companies that do nothing else but own a real estate. These directorships are likely to take a minimum of time, whereas another directorship in an unlisted company might take considerable amounts of time from the director. Due to these extreme outliers we chose to winsorize all our main independent variables (i.e. those measuring board overlap) on the 0.90 level, so as to reduce the problems with the extreme outliers. That is, the data below the 5th percentile is set to the 5th percentile and the data above the 95th percentile is set to the 95th percentile. We chose winsorizing instead of trimming in order to not lose a considerable amount of observations, since trimming instead of replacing the data below and above the 5th and 95th percentiles, respectively, simply deletes the observations, which would not be preferable.

4.4   Limitations and Potential Errors

Earlier studies on the subject such as Fich and Shivdasani (2006), Ahn *et al.,* (2010) and Lee and Lee (2014) have put effort into separating inside and outside directors. Different definitions has been used but generally, inside directors are those who are directly or indirectly associated with the firm in other ways than being a board member, e.g. CEO or other present or former top level executives. This distinction is of particular interest since outside directors are more likely to hold several directorships and hence board overlap is more present among them. This type of additional data would have been of interest, however, we were not able to retrieve the data in an accurate way.

Fich and Shivdasani (2006) and others following them use the notion of busy boards as their main independent variable. We chose not to use this definition, as it did not apply well with our data. Firstly, our dataset did not include information whether directors are regarded as inside or outside directors, as discussed above. Second, and more importantly, when examining the total listed missions of board members of Swedish listed boards, not many board members in total had three assignments or more in listed firms. In fact, when retrieving the number of boards with a majority of its members with three or more assignments in listed firms, we obtain 27 company observations in total for all years, which is not likely to be sufficient in order to yield significant results in our models. Since we also had data on board assignments in unlisted firms, we could have constructed a busy board measure including all board assignments instead. However, with this measure, around 95 percent of all companies have boards that are busy. Creating a dummy variable and using it as the main independent variable when 95 percent of the companies yield the value 1 would not create very useful results.

It is possible to argue for creating an own busy boards measure through redefining the cutoff point for a board to be considered busy. In their study, Fich and Shivdasani (2006) were the first to introduce the notion of busy boards. They name three reasons for why they choose three board missions as their cutoff point; first, their mean and median number of directorships are both close to three. Second, the recommendation by the Council for Institutional Investors is that directors should not sit on more than two boards. Third, Core *et al.,* (1999) and Ferris *et al.,* (2003) also use three directorships as a benchmark. In light of this, it becomes somewhat arbitrary to construct an own busy boards measure based solely on the mean and median of our sample, as it is far above the value of three if we include unlisted firms (10.5 and 8.2) and well below three if we limit ourselves to listed companies (1.6 and 1.5). Consequently, although Fich and Shivdasani (2006) have set the standard of using the busy board measure in many studies following theirs, we do not find this to be applicable to our data. Therefore, we choose to comply with the studies that use a less refined measure of board overlap, such as Loderer and Peyer (2002), Ahn *et al.,* (2010) and Ferris *et al.,* (2003), and use the average directorships per director as our main research variable.

Furthermore, having access to data on board meetings and the occurrence of board committees such as audit and remuneration committees could potentially have been of value for our study. Fich and Shivdasani (2006) control for this in their models. We have not succeeded in retrieving data on board meetings, and the data we were able to retrieve on board committees had a considerable amount of missing values, which is why we chose not to include it. Even though we regard this as a limitation of our study, Vafeas (1999) argues that the occurrence of board committees is ambiguous, and hence the marginal value of including it in a model might be questioned. He finds significant evidence that boards having delegated some tasks to committees actually meet more often, contrary to the intuition that committees can reduce the workload of a board. This indicates that the coordination and supervision of committees can increase the workload of a board. Although it is not clear whether this relationship holds in our data, it remains a fact that even if we would have been able to retrieve data on board committees, there would not have been an unequivocal intuition on what the presence of these does to a board's busyness.

Our dataset only contains the directors' board assignments in Swedish firms. A director could potentially have multiple board assignments in firms abroad, causing extensive overlap that we are unable to measure. We have not retrieved data on directors' board assignments in foreign firms.

As for the methodology used in our models, one could theoretically criticize the use of double-sided hypothetical tests when there is an intuition of whether the coefficient of the main

independent variables should take on a positive or negative value. However, previous studies on the same subject have performed double-sided tests, and we find that even though the theories that we bring up might yield an intuition regarding some of the variables, the intuition is not sufficiently unambiguous for us to consider single-sided tests.[11] Thus, as the previous research has shown ambiguous results, we choose to be precautious and stick to the methodology of the double-sided test.

Finally, the assumption of the lag between the AGM and the board's impact on accounting and stock market data used in our study might be violated if board decisions are made public shortly after they are taken, and therefore has an immediate effect on firm market value and Tobin's Q. This might cause error to our matching between board composition and stock market and accounting data. However, the alternative is to include data from before the board was elected and the potential errors are likely greater in that case. Some stickiness in board composition is assumed; board composition is rarely changed entirely at one AGM. This reduces the potential errors of our assumption.

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[11] One example of an intuition like this: board missions in listed companies are more prestigious than in unlisted and thus the reputational hypothesis should be more important than the busyness hypothesis, which would imply that the positive effect of the reputational hypothesis would outweigh the negative effect of the busyness hypothesis.

5 EMPIRICAL RESULTS

5.1 Descriptive Statistics

Table II displays descriptive statistics for all variables used in our models. Note that all variables are not used in all models.

Table II

Descriptive statistics

Variable	Mean	Median	St. dev.	Min	Max
Avg. directorships per director	10.5	8.2	8.4150	1.8	84.4
Avg. directorships in listed firms per director	1.7	1.6	0.5980	1.0	4.6
Avg. directorships in unlisted firms per director	8.8	6.4	8.4110	0.8	82.8
Avg. directorships per non-COB director	10.0	7.8	9.3490	2.0	96.5
No. of directorships COB	12.9	10.0	14.8500	1.0	230.0
Avg. directorships in listed firms per director excl. COB	1.6	1.5	0.5730	1.0	4.2
Avg. directorships in unlisted firms per director excl. COB	8.4	6.1	9.3360	1.0	95.0
No. of directorships in listed firms COB	2.2	2.0	1.5740	1.0	7.0
No. of directorships in unlisted firms COB	10.7	8.0	14.6600	0.0	226.0
Tobin's Q	1.9	1.3	1.9380	0.5	20.5
ROA	0.0	0.1	0.1610	-0.9	0.6
Debt-to-equity	0.3	0.2	0.8370	-6.6	6.3
LN Sales	21.2	21.1	2.0927	13.8	26.5
Sales growth	0.2	0.0	1.4480	-1.0	29.7
Boardsize	6.5	6.0	1.4660	3.0	13.0

The COB with the most directorships has no less than 230 board assignments, and the overall busiest board has on average 84.4 directorships per person.

We then split the average directorship measure into listed and unlisted firms. The separation of the two makes the measures less noisy, but the variation in average directorships per director in unlisted firms is still substantial. This is likely because one could assume that many of these are assignments in small firms that take a minimum of time, while some of the assignments in unlisted firms take considerable amounts of time. E.g., imagine a director running a family business while serving as director in a listed firm. The fact that a firm is unlisted does not automatically imply that it is smaller with less need for advising and monitoring. The spread in how time-consuming assignments in listed firms is likely to be less than in unlisted firms. However, the amount of time each director spends on one assignment is likely to vary greatly also in listed firms.

5.2 Models 1-4: Directors in Listed and Unlisted Firms

Table III displays the estimated regression coefficients for models (1) to (4). The robust standard errors are shown in parenthesis below the reported coefficients. Table III shows the estimated coefficients for models (1) to (4). Robust standard errors are presented in parenthesis below the coefficients.

Table III

Models 1-4

Reported are estimated coefficients and robust standard errors in parenthesis underneath. The symbols *, ** and *** refer to significance levels with confidence greater than 0.90, 0.95 and 0.99, respectively.

Model	(1)	(2)	(3)	(4)
Dependent variable	Tobin's Q	Tobin's Q	ROA	ROA
Avg. directorships per director	-0.0091*		0.0016**	
	(0.0050)		(0.0008)	
Avg. directorships in listed firms per director		0.0776*		0.0035
		(0.0452)		(0.0070)
Avg. directorships in unlisted firms per director		-0.0098**		0.0016**
		(0.0049)		(0.0008)
ROA	1.5610***	1.5430***		
	(0.1440)	(0.1430)		
Debt-to-equity	-0.2280***	-0.2220***	-0.0222***	-0.0225***
	(0.0263)	(0.0263)	(0.0041)	(0.0041)
LN sales	-0.0003	-0.0127	0.0163***	0.0160***
	(0.0136)	(0.0148)	(0.0019)	(0.0020)
Sales growth	0.0765***	0.0749***	0.0049**	0.0050**
	(0.0137)	(0.0136)	(0.0021)	(0.0021)
Board size	-0.0104	-0.0168	-0.0073***	-0.0074***
	(0.0163)	(0.0165)	(0.0025)	(0.0025)
Time fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	725	725	725	725
R^2	0.3360	0.3330	0.1720	0.1730

Model (1) is the least sophisticated, using only average directorships per director in both listed and unlisted firms as main independent variable. The coefficient is negative, but only with confidence 0.90. As observed by the descriptive statistics, this measure varies considerably (a mean

of 10.5 and standard deviation of 8.4). Serving as a COB in a large listed company is arguably, on average, more time consuming than serving as a COB in a small, unlisted company.[12] Both these are treated equally with non-COB missions and not separated from these in this model. The result yielded by this model is a negative relationship, though with low significance. This would imply that in our sample, a board with more members serving on other boards is disadvantageous for firm performance. The model has explanatory power in line with previous studies on the subject with an R^2-value of 0.3360.[13] The control variables are showing expected signs and are mostly significant with satisfying confidences. However, as this model aggregates both listed and unlisted firms and COB and non-COB members of the boards, it lacks nuance. In order to further investigate the relationship between board overlap and firm performance, and achieve a richer picture, we choose to refine the model.

Model (2) separates average directorships per directors in listed and unlisted firms, respectively. The variable average directorships per director in listed firms yields a positive coefficient with a confidence of 0.90. The equivalent for unlisted firms yields a negative coefficient with 0.95 confidence. The conflicting signs of the two variables used in models (2) might be seen as an ambiguous result, however, there are also interesting conclusions to draw from this. This implies that a board where the directors hold more directorships in listed firms would on average affect Tobin's Q positively. On the contrary, more directorships in unlisted firms would on average contribute negatively to Tobin's Q. The coefficients and standard errors of the control variables and the R^2-value of the model do not change to a great extent compared to model (1), in line with expectations, as the same control variables are used.

Models (3) and (4) are identical to models (1) and (2), respectively, except the fact that ROA is used as dependent variable and, naturally, ROA itself is not used as a control variable. Models (3) and (4) serve as robustness checks for the first two models, and the expectation according to the methodology used should be to yield somewhat consistent results. However, this is not the case. Model (3) conflicts with model (1) since in model (3), the variable average directorships per director has a positive coefficient with confidence of 0.95. Model (2) and (4) also conflicts, where the variable average directorships per director in listed firms in model (3) has a positive but insignificant coefficient. The equivalent variable for unlisted firms has a conflicting and significant

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[12] A more developed discussion on this can be found under section 2.1.
[13] For example, in their main models, reported R^2-values are, respectively: 0.260 for Loderer and Peyer (2002), 0.3753 for Fich and Shivdasani (2006) and 0.24 for Santos *et al.,* (2012).

coefficient. This limits the inference to be drawn from our results. Even though we expected the results to be rather consistent, Tobin's Q and ROA are two different measures where Tobin's Q is market value based, derived from the firm's expected future earnings, and ROA is based on past operational profitability. A firm with low current profitability but high expectations on future earnings might have a high Tobin's Q but a low or negative ROA, which can in turn explain the conflicting results.

5.3 Models 5-8: Separating out the COB

Table IV shows the estimated coefficients for models (5) to (8). Robust standard errors are presented in parenthesis below the coefficients.

Table IV

Models 5-8

Reported are estimated coefficients and robust standard errors in parenthesis underneath. The symbols *, ** and *** refer to significance levels with confidence greater than 0.90, 0.95 and 0.99, respectively.

Model	(5)	(6)	(7)	(8)
Dependent variable	Tobin's Q	Tobin's Q	ROA	ROA
Avg. directorships per director excl. COB	-0.0172***		0.0017**	
	(0.0050)		(0.0008)	
No. of directorships COB	-0.0066**		0.0003	
	(0.0027)		(0.0004)	
Avg. directorships in listed firms per director excl. COB		0.0971**		0.0074
		(0.0483)		(0.0075)
Avg. directorships in unlisted firms per director excl. COB		-0.0197***		0.0014*
		(0.0051)		(0.0008)
No. of directorships in listed firms COB		-0.0141		-0.0027
		(0.0142)		(0.0022)
No. of directorships in unlisted firms COB		0.0085***		0.0006
		(0.0027)		(0.0004)
ROA	1.5880***	1.5540***		
	(0.1440)	(0.1440)		
Debt-to-equity	-0.2250***	-0.2080***	-0.0232***	-0.0215***
	(0.0264)	(0.0268)	(0.0040)	(0.0041)
LN sales	-0.0030	-0.0154	0.0164***	0.0160***
	(0.0136)	(0.0150)	(0.0019)	(0.0021)
Sales growth	0.0803***	0.0770***	0.0050**	0.0050**
	(0.0137)	(0.0136)	(0.0021)	(0.0021)
Board size	-0.0091	-0.0096	-0.0074***	-0.0066**
	(0.0163)	(0.0167)	(0.0025)	(0.0026)
Time fixed effects	Yes	Yes	Yes	Yes
Industry fixed effects	Yes	Yes	Yes	Yes
Observations	725	725	725	725
R^2	0.3460	0.3430	0.1760	0.1790

The models (5) to (8) are further refined, as the COB is separated from the rest of the board due to the special role of the COB, as discussed above. The coefficients for the control variables remain stable across models (5) to (8), and the R^2-values are close those of the previous models.

In line with model (1), model (5) shows a negative and significant coefficient for average directorships per non-COB director and for number of directorships of the COB. The relationship is stronger and more significant for non-COB directors with confidence greater than 0.99. Model (6) is the most sophisticated, where assignments in listed and unlisted firms are separated for the COB as well as for the other directors. The coefficients of the variables measuring average directorships per director excluding the COB are in line with those in model (2). The variables measuring the effects only for the COB show differing coefficients for listed and unlisted firms. Number of directorships for the COB in listed firms has a negative but insignificant coefficient, and the equivalent in unlisted firms is positive and significant with 0.99 or better confidence. Contrast this to the coefficients of the variables measuring average number of directorships per director, excluding the COB, in listed and unlisted firms, respectively.

As in the models (3) and (4), using ROA as the dependent variable, models (7) and (8) also yield unexpected and conflicting results, compared their equivalents using Tobin's Q as dependent variable. This implies that as robustness checks, these models do not support the results from our models (1) and (2), with Tobin's Q as dependent variable. Models (7) and (8) yield either conflicting or insignificant results.

It could be the case that a director of a listed firm also serves on boards of subsidiaries to the listed firm. The board assignments in subsidiaries might be less time consuming than board assignment in other unlisted firms. In any case, the characteristics of a board assignment in a subsidiary might differ systematically from board assignments in other unlisted firms, causing our results to be misleading if not controlling for this. To control for this we refined the models (2) and (4) to (8), respectively, both separating and excluding subsidiary firms. The results did not differ significantly from the tabulated results of models (2) and (4) to (8), and hence the results of the models controlling for subsidiary firms are not tabulated.

5.4   Summary of Results

When only considering the models using Tobin's Q as dependent variable the results point towards a negative relationship between board overlap and firm performance, even though the relationship seems to differ for unlisted and listed firms as well as for COBs and other directors. The robustness checks, using ROA instead of Tobin's Q, indicate a rather unstable and possibly ambiguous relationship between board overlap and firm performance.

To conclude, we find some support for the hypothesis *H1*. However, it is difficult to draw any inference to a greater extent due to the ambiguity of the results. In the models using Tobin's Q, almost all estimated coefficients are significantly different from zero, with some tilt towards a negative relationship. Though there are some limitations for COBs and assignments in listed firms. In the models using ROA, no support for the hypothesis *H1* is found since many coefficients do not significantly differ from zero.

6 ANALYSIS

In general, the results of our study are difficult to interpret, even though some of them fit well into our theoretical frame of reference. Some interesting conclusions can be drawn from the results. However, they should be interpreted with caution, as mentioned above. We begin this analysis by commenting on the results of our models, followed by general remarks about our study and research in this area.

6.1 Model-Based Analysis

6.1.1 Models 1-4: Directors in Listed and Unlisted Firms

The results from model (1), in which assignments in listed and unlisted firms are not separated, show that there is a net negative effect when comparing the reputational and busyness hypothesis. That is, when directors take on more missions, they tend to become busier, and thus have less time to monitor the firms of which they serve as board members, which in turn leads to worse performance. It is also implicitly assumed that the reputational hypothesis plays a role, but as the net effect is negative, our model, data and assumptions imply that the busyness hypothesis overshadows the reputational hypothesis in this aggregated case (i.e. when not separating out listed or unlisted firms, nor the COB or other directors of the board). Even though the relation is negative, the coefficient is small, and the model does not suggest that board overlap affects firm value to a great extent.

The results of model (2), which separates between listed and unlisted firms, can also be interpreted using both the busyness and reputational hypothesis. As argued in section 2.3, assignments in listed firms are likely to be more prestigious than those in unlisted firms. Hence, they have a bigger impact on the reputation of the director, and could thus work in a positive direction for firm performance. Serving on many boards in listed firms is assumed to be prestigious, and having a board with renowned directors is assumed to be positive for the firm's performance. This would explain the positive coefficient for the average directorships per director in listed firms. Assignments in unlisted firms are usually not as prestigious, but they might, however, take up a considerable amount of time, in line with the busyness hypothesis. Thus, the net effect of the positive effect caused by the reputational hypothesis and the negative effect caused by the busyness hypothesis is negative for unlisted firms, which means that the busyness hypothesis is prevailing, as a result of model, our data and our theoretical assumptions. This would explain the negative sign

of the coefficient for average directorships per director in unlisted firms. Model (2) shows support for our hypothesis *H1* and can be interpreted using both the busyness and reputational hypothesis. Nevertheless, it is worth mentioning that whether directorships in unlisted firms are time consuming or not is highly arbitrary, and likely to vary substantially on a case-by-case basis, as the category unlisted firms is very broad and includes both large multinational companies as well as small- and medium sized enterprises (SMEs). The economic impact is greater for additional assignments in listed firm than in unlisted firms. The model shows that additional directorships in listed firms have some economic impact on firm value while the coefficient for additional board assignments in unlisted firms has negative but very limited impact. This is in line with our other findings where the reputational effect seems to be dominating when considering listed firms.

In model (3), where ROA is used as dependent variable, the result is significant with 0.95 confidence and conflicting with the results of model (1). This suggests that an increase in the average directorships per director in the board would lead to an increase in ROA, supported by the reputational hypothesis. One could expect somewhat consistent results when using ROA as dependent variable, though this was not the case. The economic impact is, even though with conflicting sign compared to model (1), trivial, as it has a coefficient of 0.0016.

Model (4), which uses ROA instead of Tobin's Q and separates listed and unlisted firms, shows, again, conflicting results and the estimated coefficients suggests low economic impact.

6.1.2   *Models 5-8: Separating out the COB*

Model (5) shows that regardless if the board member is the COB or not, the relationship when not separating out assignments in listed and unlisted firms is negative. This suggests that the busyness hypothesis overweighs the reputational hypothesis also in this case, in line with the results of model (1). The coefficient for average directorships per director of a non-COB director is almost three times as large as the coefficient measuring the number of directorships of the COB, the economic impact is thus greater for the non-COB directors. The impact is negligible for the number of board assignments for the COB. The result might be the effect of the extra reputational effect the COB of a listed firm enjoys. She or he might be regarded as an artefact for the corporation, amplifying the reputational effects and possibly increasing the value of the firm. It can also be argued that a COB as an artefact can seriously harm the value of the company if she or he is subject to corporate scandals etc. In that case, if the COB is a well-known and previously respected business person, the reputational effects might be acting in the opposite direction. However, such COBs are likely

to be discarded from their assignments. The reputational effects are hence more likely to be positive. The results of model (5) show that the effect of the reputational hypothesis is stronger for the COB (since the coefficient is less negative), but also that the busyness hypothesis still outweighs the reputational hypothesis for both the COB and other directors. When taking the results of model (7) into consideration, the analysis is limited since the results when changing the dependent variable to ROA are conflicting and insignificant, and the economic impact is small. The relation between ROA and board overlap could, according to this model, be close to neutral.

Model (6) shows further conflicting results according to the theories presented. Although the results for the non-COB members of the board are in line with those reported under model (2), with listed and unlisted firms as the only distinction, the results for the COB conflicts with earlier theories presented. The model shows a negative and insignificant relation for additional board assignments for the COB in listed firms and the opposite in unlisted firms, contrary to earlier theories used where the additional reputational effects for the COB is assumed to make the relationship between number of board assignments in listed firms for the COB and firm performance positive. According to our descriptive statistics, COBs hold on average more board assignments, which would speak of their popularity and reputation. Despite this, we do not find any significant evidence for either the busyness- or reputational hypothesis. When comparing our results to those of Loderer and Peyer (2002), we find little congruence, as illustrated below in Table V.

Table V

Our results compared with the results of Loderer and Peyer (2002)

	Relation to Tobin's Q	
Board overlap measure	*Our results*	*Loderer and Peyer (2002)*
No. of directorships in listed firms COB	Negative, not significant	Positive, significant 0.95
No. of directorships in unlisted firms COB	Positive, significant 0.99	Negative, significant 0.95
Average directorships per director in listed firms excluding COB	Positive, significant 0.95	Negative, not significant
Average directorships per director in unlisted firms excluding COB	Negative, significant 0.99	Positive, significant 0.99

Here, we see that the results of model (6), our most refined model, clearly differs on all measures as compared to the measure of Loderer and Peyer (2002). This can be due to the fact that they use other controlling variables, such as dummies for bank managers in the board and bank directors in the board, where we use ROA and debt-to-equity. The focus of their study is on banks, which is of particular interest in Switzerland as the boards of banks are often accused of tightly overlapping with the boards of other firms (Loderer and Peyer 2002). Another important remark is that our results do not differ as much when it comes to listed firms, the variables treating missions in unlisted firms thus illustrate the most differing results. This can be due to the classification of unlisted firms; as this is a broad category, some firms that count as unlisted limited companies in Sweden may not fall under the same category in Switzerland. Our data also show that both the COB and non-COB members of the board have more unlisted missions in Sweden, which might speak for a relationship close to that found by Santos *et al.,* (2012), namely that the relationship between board overlap and firm performance can be nonlinear. That is, a certain board overlap is not harmful for firm performance, but as directors take on more directorships in other firms (in this case unlisted firms), the busyness hypothesis prevails, and board overlap negatively affects firm performance. However, as there might be a large number of other factors explaining the differences between our results and those of Loderer and Peyer (2002) (such as regulatory differences in the classification of unlisted limited companies in the two countries and, general regulation regarding board work, culture etc.), we choose to apply precaution and not draw any general conclusions from this.

Moreover, we find no sufficient indications that could support the interorganizational approach, discussed under the theoretical frame of reference. As this theory implies that board overlap would lead to increased firm performance, it is not unequivocally supported by our data, models and assumptions. One could argue that it is supported in the case of listed firms in model (2) and non-COB members in listed firms in model (6), but as neither the models (4) and (8) using ROA as dependent variable, nor the results for the COB in model (6) can support this, we do not find this to be a correct inference.

6.2   Comments on the Research of Board Overlap

Additionally, one could argue that there is a measurement problem when measuring both the busyness and reputational hypothesis (or directors' advisory and monitoring role) simultaneously. As mentioned above, the reputational hypothesis is assumed to yield a positive effect and the

busyness hypothesis is assumed to yield a negative effect. If the coefficient would take on the value of zero, this would according to our assumptions mean that the reputational effect and the reputational effect would net out each other. The fact that these two cannot be measured separately thus limits the explanatory power of our study, and we are forced to make assumptions of which one is prevailing under certain conditions based on preconceived ideas. However, earlier studies have also faced this same problem, which indicates that this is not a limitation of our study relative the earlier work in this field, but rather a general limitation of the research of this phenomenon.

Interestingly enough, earlier scholars have not discussed and problematized this measurement problem to a great extent; studies such as Santos *et al.,* (2012), Lee and Lee (2014) and Fich and Shivdasani (2006) - that all find negative relations between busy boards and firm performance - refer to the busyness itself as being the explanation for lower firm performance, while not accounting much for whether the advisory role could affect firm value negatively as well; one could argue that when boards are overlapping intensively, directors could be faced with conflicts of interest and be forced to choose to supply one or the other with his or her limited resources *other than time*. The point of this reasoning is that as directors take on multiple board assignments, their marginal supply of *all* limited resources for board work should tend to decrease, not only their time, which in theory could reduce their marginal contribution to firm performance. Directors with a good reputation could, for example, be recruited for their valuable contacts within a specific field, but as they take on multiple board seats, their available contacts per firm could be reduced while their image as directors with many valuable contacts will remain intact, and thus their contribution to firm performance could become lower than expected, meaning that the reputational effect becomes weaker than expected. This is only a figurative attempt at trying to explain a more general problem: as the term *busyness* refers only to the limited resource of time, the rest of the directors' limited resources - such as their contacts - will refer to the advisory role. Therefore, it might not be the busyness itself that unequivocally explains a why a high board overlap would lead to worse performance - the reputational effect could be lower than expected, which would lead to lower firm performance. As with social sciences in general, it is always difficult, if not to say impossible, to find unequivocal evidence for one theory or the other, but we believe this is an important consideration to make - busy boards is not an unproblematic notion, as it assumes that time is the only limited resource. At a first glance, time might be the most important resource a director has to offer, but in some cases, valuable contacts within a specific field could for example be the most

important reason for firms to recruit some of their board members. Therefore, one could argue that it is reasonable to question this underlying assumption of earlier studies' inferences.

Another implicit assumption of earlier research is that busyness only comes from having other board missions. This assumption contains a potential fallacy; it ignores the fact that a director might be occupied by matters other than board assignments. A more accurate, albeit difficult to measure, definition of busyness would be one that accounts for other professional occupations, side-projects, family situation etc. The view that the only source of busyness is other board assignments is highly unrealistic. However, being able to retrieve data on other sources of busyness might be close to impossible. Nevertheless, it is an important consideration to make with regards to the validity of the results. This measuring problem makes the generalizability of studies in this field limited.

6.3   Suggestions for Further Research

Several studies have been carried out on adjacent topics to that of board overlap (or busy boards). One of the most prominent studies we base our study upon is the one made by Fich and Shivdasani (2006), who aside from investigating the busy boards phenomenon also include an event study; upon the announcement of a busy director leaving the board of several firms when being appointed labor secretary in the United States, the companies for which she served as a board member received positive abnormal returns on average. Carrying out an event study on the reaction of investors after the announcement of a newly appointed busy director could shed further light on the subject of board overlap, especially in connection to the reputational hypothesis. An event study could for example compare investors' reactions to the appointment of board members with different backgrounds with regards to other board missions; if the board member is engaged in many other companies, how do shareholders react to the news of this individual serving on the board of their company? Are there any differences between industries? How do investors react when a board member within a specific industry chooses to take on a mission in a different industry?

Another interesting subject could be to map out if there exists any cartel-like behavior among Swedish firms in connection to the occurrence of board overlap. Other studies, such as Loderer and Peyer (2002), find that board overlap discourage hostile takeovers. They study a sample of Swiss companies, and as Switzerland is a relatively small country with only a limited amount of board professionals, information - or hints - about the plans of companies are more likely to spread to other individuals of the corporate elite. The lack of hostile takeovers could be a consequence of

this. As Sweden shares the characteristic of being a small country with relatively few individuals serving at corporate boards, the occurrence of hostile takeovers could be interesting to investigate using this perspective. One way of doing this could be to look into industries that generally have more board overlap and compare the number of takeovers to industries with less board overlap.

7 CONCLUSION

Even though we find some support for our hypothesis *H1: Board overlap and firm performance are interrelated*, the results are not unequivocal, and thus, the relationship between board overlap and firm performance remains uncertain.

On an aggregated level, we find some evidence for both the busyness and reputational hypothesis in our data. In the less sophisticated model, not separating either the unlisted and listed companies or the COB and non-COB members of the board, we find evidence for the busyness hypothesis. If taking listed and unlisted companies into consideration, our results show that there is support for the busyness hypothesis when it comes to unlisted firms, and support for the reputational hypothesis when it comes to listed firms. However, when further refining the model, separating between the COB and non-COB members of the board, we find conflicting and confusing results, especially when compared to the earlier study done by Loderer and Peyer (2002).

In conclusion, we find no unambiguous support for neither the reputational nor the busyness hypothesis. Whether board overlap can be viewed as corporate mismanagement or if the supply of skilled directors is limited is thus impossible to unequivocally conclude, based on our findings. As a result of our study, it can be said that board overlap is undoubtedly present in the Swedish business world, but little can be stated on a general level about its effects on firm performance.

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