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BOARD BUSYNESS IN NORDIC COMPANIES: EVALUATION OF FIRM PERFORMANCE

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Abstract

This study investigates how directors with concurrent board seats in the Nordic countries impact the performance of public and private firms over the sample period of 2009-2017. In addition the research also examines the effect of busyness on public firms only. The analysis is done by employing a quantitative natural experiment research design which uses merger events as a shock on the amount of workload of a board member. The study does not find significant evidence that concurrent board appointments affect firm performance. Public and private board effects on firm's performance were also found to be insignificant. Therefore, the study comes to the conclusion that Nordic firm shareholders should not be concerned about the board of directors who have concurrent board appointments.

1. Introduction

Corporate governance and its reform have been a topic of widespread debate in light of the Great Financial Crisis of 2008 and multiple corporate scandals around the world involving accounting fraud and executive greed. The importance of corporate governance stems from the fact that it is at the foundation of decision-making at the company, and serves as a system of direction and control for companies (Cadbury, 1992). As good decision-making is of leading importance for the success of a company, there is a pertinent motive to find the most optimal corporate governance mechanism.

Much discussion has revolved around the effectiveness and responsibilities of the key governing body of a corporation - the board of directors. The board of directors is a governing body elected by the shareholders to select, advise, monitor and compensate the management team, and holds a fiduciary duty to represent the interests of the shareholders (Shivdasani and Yermack, 1999). One might be surprised, however, to hear that the impact of boards of directors on company performance is still a controversial topic. One example of this controversy could be the research studying the link between the board size and firm performance, where researchers have consistently found conflicting results (Guest, 2009; Elsayed, 2011). In addition to this inconclusive link, another source of controversy has been the popularity of holding concurrent directorships, which approximately 20% of directors of Standard and Poor's 1500 companies hold despite the heavy workload that a directorship imposes on a person (Hauser, 2018). The exact workload a board seat imposes on a director varies, but different sources estimate that 160-200 hours of work per year are needed per directorship at a minimum in a public company (Kelley, 2014; Hauser, 2018). Sahlman (1990) even asserts that there is a substantial additional time spent by the director on activities such as researching the company and its industry, evaluating the performance and procedures of the company and travelling that does not get compensated or recorded.

On the other hand, some studies (Kiel & Nicholson, 2006; Pfeffer and Salancik, 1978; Zahra and Pearce, 1989) come to the conclusion that concurrent directorships can have several benefits for a firm. A director could have advantageous connections for better capital access, directors that are insiders in other companies can duplicate and implement value-adding policies seen in other firms, raise legitimacy of new companies. Moreover, Kiel & Nicholson's (2006)

research did not find evidence of multiple directorships impacting Australian listed companies' performance, discussing that the reason for lacking evidence could be "a sound regime of board-as-a-whole" (p. 28).

The researchers, however, broadly agree that there is obviously a limit to how many commitments a single director can take on before their duties cannot be properly completed (Kiel & Nicholson, 2006). This combined with aforementioned assertions of substantial director workloads brings into question the viability of directors holding concurrent board appointments and how it may impact their contribution to the company. We define concurrent board appointments ("board busyness") as instances where a director holds two or more directorship positions in different companies in the same year, in line with Hauser's (2018) definition of board busyness.

While the discussions about the effectiveness of a board persists, Nordic countries stand out as researchers and experts (Lekvall, 2014; Thomsen, 2016; Schøler & Holm, 2013; Fæste et al., 2016) agree that the Nordic corporate governance model has a better structure to create conditions for superior firm performance compared with the Anglo-American model. The key differences are the board having an entirely non-executive role and being more active in guiding the firm whilst being directly subordinate to the shareholders who evaluate their performance. Lekvall (2016) argued that the Nordic board of directors are more integral. Therefore, based on a strictly non-executive nature of the boards, Kiel & Nicholson's (2006) findings and discussion about "sound boards", and other benefits of multiple board membership, it is possible that individual overcommitted board members might not have as strong impact on Nordic firm performance as the evidence in the United States (Hauser, 2018) showed. This raises interest to further investigate concurrent board appointment effects in yet not researched Nordic countries which have a better refined corporate governance model.

In addition to taking place in a region with a unique corporate governance model, our research will also focus on studying the effect of board busyness on both public and private firms, specifically what happens in both types of companies after a director is shocked with free time following a merger event ("merger-shock"). Previous concurrent board appointment research has exclusively focused on public firms, thus additional analysis of only public firms is also conducted to obtain results which would be more comparable to the previous research. The

importance of researching the effects of merger-shocks lies in the fact that the merger-shocks will reveal to us whether and to what extent the board of directors can impact firm performance, although without making determinations about the underlying mechanism of the effect (Hauser, 2018). We expect that the positive effect of the merger-shock will be greater in public firms due to increased ability to contribute to firm performance stemming from more comprehensive monitoring and assessment duties as compared to directors in private firms.

We intend to study the link between concurrent board appointments ("board busyness") and firm performance in public and private firms in the Nordics. Taking into account the gap in the existing literature and the importance of the given topic we have formulated our research question and supporting hypotheses as follows:

Research question: How do concurrent board appointments affect firm performance in public and private companies in the Nordics?

Hypothesis 1: Merger-shocks affect firm performance in private Nordic companies positively

Hypothesis 2: Merger-shocks affect firm performance in public Nordic companies positively

Hypothesis 3: Merger-shocks affect public firm performance more positively than private firm performance in Nordic countries

To answer our research question we employ a quantitative natural experiment research design based on the methodology devised by Hauser (2018), where we study what happens to firm performance when directors of a firm are shocked with free time as a result of being relieved of their duties following a merger event. The methodology allows us to separate exogenous variation of board memberships from the endogenous factors that usually surround board appointments, thus granting us a valid means to observe the effects of concurrent board appointments on firm performance. We found no significant effect linking merger-shocks and firm performance in both private and public, nor only public Nordic companies, which can be interpreted as the board of directors having no impact on firm performance. We did not discover any significant effect of concurrent board appointments on firm performance in Nordic

companies, which leads us to conclude that there should not be any restrictions or apprehension towards directors serving on multiple boards in the Nordics.

Our thesis starts with a comprehensive review of literature of topics that are relevant to our research. It continues with a detailed description of the methodology and data set. After the methodology and data description chapters, we detail the results of our study and discuss their implications. The paper ends with a concluding chapter.

2. Literature Review

2.1 The role and value of the board of directors

The board of directors is arguably one of the most important management structures in the modern corporation. The main reason for this is the fact that the board of directors of a company is an organizational body that is tasked with selecting, advising, monitoring and compensating the management team, and is selected by and bears a fiduciary responsibility to the shareholders (Shivdasani and Yermack, 1999), in effect standing as the body with ultimate control of the company. The construct of the board of directors and the separation of ownership and control evolved as a response to the impracticality of collective decision-making in companies with widely dispersed ownership, and is considered to be at least in broad terms successful in driving business growth and improving financial performance (Hirst, 2011).

This success is often reflected in assumptions about the board of directors and their impact. Nicholson and Kiel (2007) state that there is a widely held belief on all levels of the global business system that boards of directors should be accountable for the financial performance of their company, a belief which contains in itself an implicit assumption that boards can have first order and direct impact on the financial performance of the company. The link between the board of directors and their impact on financial performance is crucial to understand as our study linking board busyness to firm performance implicitly also tests connection.

The question about whether and to which extent corporate boards have first-order impact on the operating results of a company is still a decidedly controversial topic in financial literature, which is surprising given the salient nature of this problem. Most of the studies trying to identify board importance to firm performance and its determinants are conducted using large samples, quantitative methods which directly examine firm performance and various demographic attributes a board possesses, such as board size or board independence (Nicholson and Kiel, 2007). With regards to board size, the literature suggests that a link between board size and firm value and performance exists, however the direction and magnitude of the effect is still unclear. Nguyen, Rahman, Tong and Zhao (2015) and Yermack (1996) found that board size and firm value have a negative relationship, with Guest (2009) adding to the evidence by discovering

a negative relationship between board size and firm performance. On the other hand, Mohapatra (2017) and Elsayed (2011) found conflicting evidence with board size affecting firm value and corporate performance positively.

The same pattern of inconclusiveness follows when examining the importance of the board of directors via the link between its independence and financial performance. Board independence is defined by Cavaco, Challe, Crifo, Reberioux and Roudaut (2016) as the fraction of board members that are from outside the company, i.e. not serving as both directors and executives of a given company. Cavaco et al. (2016) found a significant negative relationship between board independence and the accounting performance of French companies, whereas other studies have found conflicting evidence (Uribe-Bohorquez, Martinez-Ferrero and Garcia-Sanchez, 2017; Liu, Miletkov, Wei and Yang, 2015). Our study seeks to add to the existing research and clarify whether and to what extent the board of directors influence the financial performance of a company.

2.2 The role of board busyness in firm performance

A recent perspective for studying the link between the board of directors and firm performance have been various studies where researchers study the link between events and factors that affect the workload of the directors and attempt to link that with the following financial results of the company, in essence trying to link 'board busyness' and the financial results of the company. It developed in response to the controversy surrounding multiple directorships and the effect multiple directorships had on the ability of board members to adequately monitor the company (Ferris, Jagannathan and Pritchard, 2003). The study by Ferris et al. (2003) discovered no evidence that directors serving on multiple boards serve on fewer board committees in comparison to directors with one board seat. In addition, the study also found no proof that directors with concurrent board appointments cause companies to face increased litigation.

The aforementioned study mentioned the busyness hypothesis, which stipulates that serving on multiple corporate boards at the same time overcommits an individual. The supposed result of overcommitment is a reduced membership in company committees and less capacity to advise and oversee management, which should decrease the financial results and value of the

company. A study by Kiel et al. (2006) focused on finding the link between multiple directorships and firm performance in Australian public companies had similar findings to Ferris et al. (2003), with multiple directorships having no observed effect on firm performance. While Ferris et al. (2003) and Kiel et al. (2006) found no significant effect of multiple directorships, a study by Jiraporn, Singh and Lee (2009) found contradictory results. They found that directors who are holding multiple board seats are less likely to hold positions in company committees, in effect decreasing their ability to perform their monitoring duties. These results mirror the results of research studying whether boards have first-order impact on financial performance - results are often contradictory and definitive conclusions have yet not been made.

Kiel & Nicholson (2006), Pfeffer & Salancik (1978), and Zahra & Pearce (1989) argued in favour of multiple board seats. Kiel & Nicholson (2006) discussed Australian Shareholders' Association (ASA) recommendations which were against multiple board seats due to high workload. They agreed that there is definitely a realistic limit to how much a single director can do. Nonetheless, ASA's recommendation of arbitrary limits to a number of concurrent seats a member can undertake is arguably not the best approach to a corporate governance policy. Researches (Kiel & Nicholson, 2006; Kiel, Nicholson and Barclay, 2005) suggested putting more emphasis on the board as a whole, rather than only on individual directors because if the corporation has an effective system to ensure that board members are performing, then the firm can have an effective board even if individual board members have a reasonable number of additional board seats in other companies. Also, some directors have multiple board seats because those multiple companies are part of the same corporate group. Kiel & Nicholson (2006) argues that could mean less workload per board seat as they essentially operate in the same organization. Furthermore, through a statistical analysis of listed companies on Australian Stock Exchange, Kiel & Nicholson (2006) did not discover empirical evidence which would support ASA's view as their findings showed no significant correlation between directors holding multiple boards and financial performance of a company.

Pfeffer & Salancik (1978), and Zahra & Pearce (1989) discussed that there are multiple benefits of having board members with concurrent board seats in other firms. To begin with, board members with concurrent board seats have a possibility to routinely work closely with directors and shareholders from other companies which can lead to a possibility to receive additional support from outside. That support could translate into getting better conditions for

capital access. Bazerman & Schoorman (1983) state that directors with multiple board seats can create a formal interlocking relationship between the companies to cut coordination and resource planning costs. For example, a company with an interlocked relationship with a supplier can gain an advantage by increasing the efficiency of goods and services flow.

Board members with seats on multiple companies can also operate as a channel for new beneficial information from outside (Pfeffer & Salancik, 1978; Kiel & Nicholson, 2006). A board member can transfer and guide implementation of new value-adding ideas which were obtained in a different firm where that board member has also a board seat. Westphal (1999) found that directors can give relevant higher quality insights to companies which also improves performance if those directors are connected with other strategically important firms. McFarland (2004) study discovered that directors with concurrent board seats spread learnt good practices to all the companies those directors are on-board. According to Bazerman & Schoorman (1983), it is a common practice for companies to invite board members from other companies as then the company can benefit from his/her beneficial experiences.

Furthermore, some companies benefit from multiple board membership by increasing their legitimacy (Pfeffer & Salancik, 1978; Zahra & Pearce, 1989; Daily & Schwenk, 1996; Gales & Kesner, 1994). Having well-regarded board members can improve reputation of the company and send a positive signal to business partners.

An important addition to board busyness research was the recent quasi-experimental study conducted by Falato, Kadyrzhanova and Lel (2014), where the authors used a death of a board member as an exogenous shock which forced board members of the company to dedicate more time and effort to their duties in the shocked company, thus, in theory, reducing the director's time that is available to dedicate to other companies where they serve on the board. The authors created this quasi-experimental research design due to the prevailing endogeneity issues relating to busy directors. The endogeneity lies in the fact that talented and well-regarded directors are more likely to hold multiple directorships and thus be more busy, with their talent offsetting the 'busyness cost' of serving on multiple boards. In this light, the passing of a fellow director was a shock that increased the directors' workload exogenously. The authors found a significant negative stock market reaction in the unshocked companies where the 'shocked'

directors were serving as board members. Quasi-experimental research designs allow for mitigation of endogeneity issues and more in-depth studies.

Whereas Falato et al. (2014) studied what happens to the firm value when directors get busier, Hauser (2018) studied the instance when directors are shocked with more free time. He used a similar quasi-experimental methodology to Falato et al. (2014), but instead of a passing of a board member the exogenous shock used is the dismissal of board members following a merger or acquisition. The study used data on publicly traded companies included in the S&P 1500 index and found that an external shock of free time made other companies on whose boards the shocked directors were serving on more profitable and valuable, and also found out that this effect became stronger if the shocked director was geographically distant from the company headquarters. The study also found that each additional directorships board members hold causes a 0.28-0.3% decrease in the return on assets or a 1.18-1.34% decrease in Tobin's q. The effects are robust to control variables and robustness tests, such as including industry-by-year fixed effects and using alternative sets of control firms. Due to the innovative methodology and robust nature of Hauser's (2018) results we wish to conduct a study with a similar methodology in the Nordics. In the following subchapter we seek to discuss the differences between the Nordic and Anglo-American corporate governance model.

2.3 The Nordic corporate governance model

According to Lekvall (2014), the Nordic countries have some corporate governance features which are distinctive from the Anglo-American, market-based governance model. The Nordic countries became prominent for having substantially more internationally successful companies in relation to their size partly as a result of "the Nordic supermodel". The main differences of the Nordic corporate governance are shareholders having a much stronger controlling power of the company and board of directors being a completely separate body from the executive management as shown in appendix A. Also, board and management are subordinate to the shareholders, who have the final say when evaluating firm's performance. Nordic corporate governance model structure can be summarized in four key components.

1. The general meeting has the decision power regarding any queries which are not specifically covered by any of the company's units

The general meeting is the most import annual event in the organization as it provides a medium for the shareholders to discuss the performance of the company, and to exercise their proprietary rights. The meeting has far-reaching authority to administer because the shareholders can make independent decisions if the matter is not covered by any other organizational organ. The board must maintain a dialogue with the shareholders. That is because the board is held directly accountable to the shareholders since they have the ability to immediately change the board if the trust is lost.

2. A non-executive board of directors, selected and subdued by the stockholders in a general meeting

Explicitly non-executive boards in the Nordic companies have several consequences. Firstly, the board has a very clear role in the company to strategically guide and monitor, whilst management has an entirely executive function which is not the case in the Anglo-American corporate governance model where board members are not separated from management. The non-executive boards have independence from the company and its management to fulfill the fiduciary duty for the shareholders. Secondly, due to the independent structure, the board is substantially more integral in comparison to a more mixed board in Anglo-American model where both executive and non-executive directors are on the same board. Therefore, boards in the Nordic model can focus on working without the risk of a conflict of interest which is tackled by audits and other committees in the Anglo-American model.

Although the board is non-executive and is subordinate to the shareholders in the general meeting, the board still has an extensive authority to manage business' matters. The three main functions of the board are: to manage the company according to the shareholder concern as a fiduciary duty, to appoint and oversee efficiency of the executive management, and to update the shareholders together with any other groups of interest about the company's performance. The services of directors on a board are annually (or every second year in Norway) reconsidered by the shareholders as mandate periods are for one or two years. Consequently, new owners of the company can easily replace the whole board. However, serving time on a board is usually much longer in practice.

3. An executive management, selected by and completely subordinate to the board of directors

The executive management is held as a separate component of the organization with specific responsibilities. Danish version usually has several members lead by a CEO, while other countries have only one person, the CEO. The board has the power to immediately fire any member of the executive management if the board loses confidence in them. Moreover, the executives do not have the authority to make high-impact decisions without the cooperation with the board, unless the circumstances require immediate action. In such a case, the management must inform the board immediately. Furthermore, the CEO has a responsibility to warrant the board if their decision can be successfully executed. The board can also request supplementary information from external sources as well as inviting other managers or workers to the board meetings.

4. A statutory auditor, selected by, and obligated to respond and report mainly to the shareholders in a general meeting

The auditor is chosen by the shareholders in the general meeting with a function of inspecting the performance of the board and management. The auditor has to cooperate with the board and its audit committee to form an accurate picture of the processes to ensure that the employees are abiding regulations. Moreover, the auditor is also seen as a safeguard for the business' creditors and other direct stakeholders like ordinary employees or customers.

Even though these four key points might not appear as unique regarding other popular European corporate governance models, it is different from the Anglo-American model as Lekvall (2014) concludes. Years of experience refining the model and high competitiveness of Nordic companies on a global scale indicate that the model is a successful alternative to the Anglo-American market-based governance model. According to Thomsen (2016), the Nordic stock markets have outpaced the EU average and the US markets.

Fæste et al. (2016) study on Nordic companies also revealed a superiority of the Nordic corporate governance model. The Boston Consulting Group analysts found that from 2001 to 2015 Nordic companies have outperformed US, Continental Europe, and the UK firms in almost every industry. It is argued that even though there are many determinants for the success of the companies, the board is one of the most important factors. Over 150 interviews with the highest-

ranking officials of top Nordic firms lead to the same conclusion as the interviewees expressed a similar view unanimously. A more active role of the board in guiding their companies due to the different governance model structure in the Nordic countries is the distinguishing element from the Anglo-American model.

We believe that taking into the account the aforementioned literature and controversial studies' findings it raises interest to investigate the board members with concurrent directorships in Nordic firms. All members of a board in a Nordic corporate governance model are more active compared with the Anglo-American setting, but separated from the executive management, boards are considered to be more integral, and the board performance as a whole is thoroughly audited which means that it is not possible to draw a definite conclusion of workload impact in the Nordics without investigating as individual board members alone might not have as strong influence on firm performance. In the following chapter we will discuss the differences between the board of directors in public and private firms and how it may change the impact of board busyness on firm performance of both respective firm types.

2.4 The board of directors and corporate governance in private companies

Unlisted or private companies are crucially important to and a dominant part of economies thanks to their large contribution to the gross domestic products (GDP) of economies across the world, with private companies producing more than 75% of the European Union's GDP (EcoDa, 2010). Although their importance may be great, the majority of corporate governance standards related to listed firms, which in many cases are not directly applicable to private firms due to the different corporate governance challenges they face (EcoDa, 2010). More specifically, the key corporate governance challenge in private firms is the creation of processes and systems to ensure the long-term success of the business, instead of the principal-agent problem in listed companies, with the distinction being caused by the fact that most private firms are owned by a single controlling individual or consortium (EcoDa, 2010). We believe that that, even though the unlisted board of directors do not have the additional task of solving the principal-agent problem, they can still create value by managing, compensating and advising the executive management of the company. The main differences between public and private boards of directors are outline in chapter 2.5, with the chapter listing all of the notable research examining the board of directors in private companies.

One of the intentions of this chapter is to outline previous research regarding private firms and their board of directors and how that reflects on many aspects of firm characteristics. One research approach we found was trying to link board composition to firm performance. Basco and Voordreckers (2015) examined the link between the board composition and firm performance in family-owned businesses in Spain. Specifically, the authors examined the proportion of outside directors serving on the board, and what that entailed for firm performance, and subsequently found that both boards with a high proportion of family members (family-oriented) and outside directors (business-oriented) were positively related with firm performance., with mixed boards seeing lesser firm performance. Continuing with the theme of board composition, Omran (2009) found that following the privatization of Egyptian state-owned companies firms that employed a higher proportion of outside directors on their boards saw a positive effect on firm performance. In contrast with the previous research Mrad and Hallara (2014) found that in recently privatized French companies a higher number of outside directors and the size of the board of directors were negatively correlated with private firm performance, although the research only focused on the first five years after the company had been privatized. Although the previous studies focus on other aspects of board of directors, they do find that a characteristic of the board of directors has an effect on firm performance. This finding implicitly means that the board of directors have an effect on firm performance, creating credibility for our examination of the effect of multiple directorships on firm performance in private firms by showing that significant effects were found before.

Aside from the sub-topic of family-owned companies and privatization we met a great challenge in finding previous research about private company boards, possibly due to the fact that even in the most developed countries such as the United States, a formal officer structure and the existence of a board of directors is not mandated in many states (Furniss, 2018). The inconsistencies in requirements and data availability problems have led to a considerable drought of empirical research on the topic, especially in quantitative research about the effect of the board of directors of private companies on firm performance. The lack of research is also clearly explainable when one considers the fact that the research of the firsthand effect of the board of directors is a relatively new field of research, and that the effect of public boards of directors are not fully explored.

2.5 Comparing board busyness in public and private firms

Unlike corporate governance in public firms, the research of corporate governance in private companies is currently a sparsely explored research area despite their abundance and importance to the economy (EcoDa, 2010). The sparseness in research also extends to the concurrent board appointment subarea, with no studies existing that focus on the effect board busyness has on firm performance in private companies, which is one of many important motivating factors for the existence of our study.

To examine how board busyness affects public and private firms, we first have to deduce what are the main differences between the board of directors of public and private companies and how these differences may change the effects of board busyness. The key difference of public and private boards stems from the fact that public firms have the majority of their corporate governance standards imposed by various regulations and listing requirements, whereas private firms have much more control over what corporate governance standards they set, or whether they set them at all (EcoDa, 2010). We expect this difference to cause private firms to be less susceptible to the effect of board busyness as compared to public firms, as we posit that private firms have lesser corporate governance standards on average. Our hypothesis that corporate standards are lower in Nordic private firms is supported by a study conducted in Switzerland by Loderer & Waelchli (2010) comparing the minority investor protection in listed and unlisted companies. Loderer & Waelchli (2010) found that boards of unlisted firms were less involved in the monitoring of executive management and appointment and dismissal of managers than their listed counterparts. Although Loderer & Waelchli (2010) found that the boards of private firms in Switzerland were less involved than their public peers, they also ascertained that the boards of listed companies were not just rubber stamping committees, but were actually quite independent and actually bore a significant responsibility in the setting of corporate strategy, an activity which arguably affects firm value. Due to evidence of comparatively lower corporate governance standards decreasing the impact of monitoring and assessment duties of directors in private companies we expect that the effects of board busyness, specifically merger-shocks, will affect firm performance in public companies to a larger extent, although we still expect that merger-shocks will affect firm performance in private companies significantly.

After reviewing the existing academic literature on the topic, we have outlined the following hypotheses:

Hypothesis 1: Merger-shocks affect firm performance in private Nordic companies positively

Hypothesis 2: Merger-shocks affect firm performance in public Nordic companies positively

Hypothesis 3: Merger-shocks affect public firm performance more positively than private firm performance in Nordic countries

3. Methodology

The following chapter details the methodology used in our paper and data description. To identify the effect of concurrent board appointments on firm performance in the Nordics we will be basing our methodology on the one used in Hauser's (2018) research, which we will modify to suit our particular study. We need to modify the methodology of the previous paper due to us studying both private and public companies, which imposes certain data limitations on our study, such as us being unable to observe the market-based performance measures of private companies. In particular, we will not be replicating the part of the methodology that concerns with studying the effect of geographic distance on board busyness, due to difficulties gathering and formatting the geographic data for the Nordics. In addition to that, we cannot study how board busyness affects committee memberships due to lack of data. Thus, our study will only be focused on discovering the effect of concurrent board appointments on firm performance in public and private Nordic companies, without researching the possible causal mechanism with the exception of the workload channel.

3.1 The first-differenced regression

To study the effect of board busyness on firm performance in private and public Nordic companies we first need to provide evidence that boards have a first-order and causal effect on firm performance. Similarly to Hauser (2018), we provide this evidence by focusing on appointments of directors to multiple board seats at the same time. If board appointments matter to firm performance this also means that the board of directors matter and have an impact on company performance.

The first-differenced regression we will be using is the following:

$$\Delta Performance_{it} = b_1 \Delta NumberOfBoards_{it} + B_3 Controls_{it} + ft * f_{industry} + v_{it}$$

The coefficient b_1 captures the effect of a change in the total amount (sum) of board seats held by directors of firm i at time t on the change in firm performance, conditional on time-varying determinants of performance which relate to board seats, which are specified in "Controls". The controls we use are firm-specific controls, such as firm size (book value of assets), board size (number of directors on board), financial leverage (a ratio of current and non-

current liabilities to total assets), as these are known to correlate with performance. In addition to this, we also include country indicator variables and listed company indicator variables. We include these additional control variables due to the fact that firm performance can vary across the countries in our dataset due to country-specific reasons such as differing tax policies, which impact the net income of companies and subsequently the return on assets measure we have as the dependent variable. The regression also includes industry-by-year fixed effects and their cross products to control for the chance that mergers occurred in outperforming years or industries.

The justification for using the first-differenced regression comes from the fact that it imposes consistency in board personnel by requiring valid observations for two consecutive years of director-level data. This means that directors who join or leave a board do not cause an increase (decrease) in the year they join (leave). An important point to note is when one director replaces another, the disparity between their board seats is not included in our measure. This is due to the fact that such incidents are of endogenous nature, either due to the lacking skill of the replaced director or due to the one director being too busy, which leads them to be replaced by a less busy director.

As we are studying both private and public companies, the dependent performance measure we will be using is the change in the return on assets of a company (ROA). We use the return on assets as the measure of firm performance because it is capital structure agnostic unlike other accounting-based performance metrics, such as return on equity. This is important as there cannot be rapid shifts in measured firm performance due to capital structure changes, such as a company taking on more leverage thereby increasing return on equity, thus making the return on assets a more objective measure of firm performance. The return on assets metric also has an additional advantage of being widely available in datasets due to the basic nature of the data that is used for its calculation. The main limitation of the return on assets metric concerns the fact we use net income as a measure of profitability. Net income can be subject to many accounting adjustments which may cause it to obfuscate the actual performance of the firm, such as impairment of goodwill or revaluation of fixed assets or financial investments. Net income also is affected by the capital structure of a company - two firms with identical assets and earnings before interest and taxes will have differing net incomes depending on the mix of debt and equity

they use. In conclusion, however, we believe that the benefits of using this metric outweigh the limitations and thus proceed to define dependent performance measure as the return on assets.

3.2 The reduced form regression

The first-differenced regression alone cannot explain the effect of board appointments on firm performance, as it can also include changes due to endogenous causes. We need an exogenous variation in the number of board appointments, which we accomplish by using the variation of board appointments following a merger event. Hauser (2018) notes that in the majority of merger events the board of directors gets relieved of their duties following acquisition of their company, which we refer to as "merger-shocks". Directors whose number of board appointments change after a merger event are "shocked" and those who don't experience this are named as "unshocked". We capture this effect in the variable $Treat_{i,t}$, which counts the merger-shocks of the directors of firm i at time t. It should be stressed that the merger-shocks are not the influence of a merger on a director, but rather the effect of a diminished workload after a director loses a board seat after a merger which allows the director to dedicate more time and energy to other firms where he serves as a board member. To solve the endogeneity problem mentioned previously we use a reduced-form regression, where we regress the firm performance on the variable $Treat_{i,t}$. This effectively limits our investigation to variations in board appointments caused by an exogenous cause, which in our case is the merger-shock.

As a brief aside it should be noted that as in Hauser's (2018) study, we view directors as agents capable of optimizing the time and effort they commit to their various responsibilities. It follows that if one responsibility is exogenously removed and the directors are shocked with free time, the directors will spend the newly gained free time on their remaining directorships and create value in those companies.

The timing of the merger-shock is defined as the first fiscal year when the company that is acquired no longer exists, and is marked as time *t*. This is important because in the fiscal year when the company is acquired (year *t-1*) directors have a partial workload working on the board of the acquired firm. The next fiscal year from year *t-1* shows the effect of fully alleviating directors from the workload of holding a board seat. For first-differences purposes, we will use the first year where the board seat demands full workload as the "pre" year (*t-2*) and when it does

not apply (year *t*) as the "post" year. We do this due to the fact that in the year of the merger (year *t-1*) the board seat still partially applies. Using this approach we compare a shocked firm (where directors were relieved of their duties following a merger) pre- and post-shock to control firms in the respective years. The control group, in this case, are firms whose directors did not experience shocks. The effect of the shock is defined as the average difference between the pre- to post-trends of the two groups.

As one of the aims of our study is to examine how concurrent board appointments affect firm performance in both private and public firms we need to modify our regression model via the addition of a public company indicator and Treat interaction variable. This interaction variable will allow us to observe whether the effect of merger-shocks on firm performance changes between the public and private firm group.

The reduced-form regression we use looks as follows:

$$\Delta Performance_{i,t} = \beta_1 Treat_{i,t} + \beta_2 Public + \beta_3 Public*Treat_{it} + B'\Delta Controls_{i,t} + ft*f_{industry} + \varepsilon_{i,t}$$

The dependent variable is the change in the return on assets of firm *i* at time *t*. The variable $Treat_{i,t}$ shows the amount of shocks directors experienced at firm *i* at time *t*. The coefficient β_1 in conjunction with β_3 captures the effect of merger-shocked directors serving on the board of firm *i* at time *t* on the change in firm performance and also reveals to us how and to what extent the effects of merger-shocks affect the performance of private and public firms differently. The coefficient β_3 reveals to us by how much firm performance varies between private and public firms. The controls we use are listed in the previous subchapter.

3.3 Instrumental variable estimation

While the reduced-form approach shows the effect of merger-shocks on firm performance and the difference in the effect in private and public firms, it does not make any assumptions of the underlying mechanisms that drive the merger-shock effect. In a similar approach to Hauser (2018), the instrumental variable (IV) approach allows us to assume that other factors other than workload are irrelevant, which allows us to test the assumption that the causal effect of the concurrent board appointments on firm performance is driven by the

workload effect. In this approach we instrument for the endogenous variable that is $\Delta Boards_{i,t}$ by using $Treat_{i,t}$ as an instrumental variable. Instrumenting $\Delta Boards_{i,t}$ with $Treat_{i,t}$ allows us to interpret additional concurrent directorships specifically as a shock to the directors' workload, as the $Treat_{i,t}$ measure is, in essence, a measure of freedom from workload caused by an exogenous factor. $\Delta Boards_{i,t}$ shows the change in the total amount of board seats held by directors of firm *i* at time *t*. The first stage of the instrumental variable regression looks as follows:

$$\Delta Boards_{i,t} = \delta_1 Treat_{i,t} + \Theta' \Delta Controls_{i,t} + f_t * F_{industry} + \upsilon_{i,t}$$

The $Treat_{it}$ variable represents the number of cases directors in firm i were merger-shocked at time t. The controls used are the same as in the reduced form regression.

The main form of the instrumental variable regression we estimate as the following first-difference specification:

$$\Delta Performance_{i,t} = \gamma_1 \Delta BoardsIV_{i,t} + \Gamma' \Delta Controls_{i,t} + f_t * F_{industry} + \mu_{i,t}$$

The variable $\Delta BoardsIV_{it}$ is the predicted value from the first-stage regression of changes in the number of board seats held by the board members of a company on the variable $Treat_{i,t}$. The coefficient γ_1 is interpreted as the workload effect of each additional concurrently held board seat on firm performance. The control variables and industry effects used are the same as in the first-stage instrumental variable regression. As a result of this regression we will find out what is the effect of an extra board seat held by the directors of a firm on firm performance. We will not be able to compare the effect of a concurrent board seat on firm performance in private and public firms separately with this regression. Instead, we will receive information about how much a concurrent board seat increases or decreases firm performance on average across private and public firms.

It should be noted that to account for within-firm serial correlation in the error term, we cluster the standard errors by company in all of the previous regressions. As a robustness check, we will run all the regressions without firm-level control variables, which in our case are the board size, firm size and leverage of a firm.

3.4 Public firm analysis

As an extension of our study we have decided to repeat the study on public firms, of which we have identified 441 by the end of 2017, the end of the time period of our study. The aim of this is to allow for easier interpretation of the results, in addition to permitting us to make closer comparisons to similar research, especially Hauser's (2018) study.

The methodology has stayed the same as outlined in chapters 3.1 to 3.3, with the notable additions of Tobin's Q performance measure, and the Volatility and Research & Development control variables. Tobin's Q is defined as the sum of book value of assets and the market value of equity, which is then subtracted by the book value of equity and divided by the total (book value of) assets. Using the Tobin's Q as an performance measure variable provides us a market-based performance measure which may capture the effects of merger shocks differently than the accounting-based return on assets measure.Volatility is the annualized standard deviation of daily returns of each public company, whereas the Research & Development variable is defined as the research and development expenditures of a company divided by its total assets.

A notable exemption is the absence of the board independence variable, which Hauser (2018) defines as the fraction of independent directors on the board as classified by the Institutional Shareholder Services database. We omit this variable because Orbis does not provide us time-series director-level judgements about directors' independence. The closest proxy to this may be the Orbis Firm Independence indicator, but because it is not directly related to board independence on individual directors' level, we decided against using this as the second best alternative, and chose to omit a board independence indicator altogether. The public dummy variable and all subsequent interactions were also omitted.

4. Data and sample description

4.1 Data description

We will be studying the effect of concurrent board seats on firm performance over a multiple year span, which in our case will be the years from 2009 to 2017 as director-level data is limited by the Orbis database. We cannot include 2018 data in our study as the financial year is not over yet for some companies and most companies have not published their 2018 financial year report yet, leading to unbalanced and unavailable data. In our definition of "Nordic" companies we include companies which have a board of directors in Denmark, Sweden, Norway and Finland. All of the data for the variables we need to conduct our study is sourced from Orbis and is listed in the table 1 below.

Category	**Variable**	**Definition**
Performance measure	Return on assets (ROA)	The net income divided by book value of assets at of firm i at time t.
Performance measure	Tobin's Q	Book value of assets plus market value of equity minus the book value of equity, with the end product divided by the book value of assets (public companies only)
Explanatory variable	Number of Boards	The total amount of board seats held by the directors of firm i at time t.
Explanatory variable	Treat	The number of directors on the board of firm i at time t that are shocked as a result of a merger event.
Explanatory variable	Treat and public company dummy interaction	The interaction term between the Treat and Public company indicator variables.
Control	Public company indicator	Signifies whether the company is listed.
Control	Firm size	The book value of assets of firm i at time t. In the regressions we use the natural logarithm of the book value

		of assets for clearer interpretation.
Control	Board size	The number of directors on the board of firm i at time t.
Control	Leverage	The total liabilities divided by the total assets of company i at time t.
Control	Industry dummy	The primary NACE Rev. 2 major industry code of the company.
Control	Year dummy	A dummy variable denoting the year
Control	Country dummies	4 separate dummy variables denoting whether the company is based in Sweden, Denmark, Norway or Finland
Control	Year-industry interaction variable	Interaction variables between the year and industry variables
Control	Country-treat interaction variable	Interaction variable between the country dummy variables and the treat variable
Control	Volatility	Annualized standard deviation of daily returns (public companies only)
Control	Research and Development	R&D expenditures of a company divided by its total assets (public companies only)

Table 1. Variable definitions.

We collected director level data of large public and private enterprises as defined by the OECD (2005) over the four Nordic countries to investigate how the performance of these companies was affected by the merger shocks on directors. The OECD (2005) definition we followed defined large enterprises as firms with at least 250 employees and 50 million euros of revenue, although it should be noted that the exact definition for a “large enterprise” varies by

region. We use large companies in our sample because we posit that the workload of the directors needs to be sufficient for merger shocks to have an observable effect on firm performance and that large firms impose a larger workload on directors due to increased business complexity and demand for supervision.

Sample composition by country is illustrated in appendix A. In our sample we have 3,772 companies that operate in 19 different industries, although a small proportion (3%) have missing industry data. Out of the 3,227 companies 441 are public firms and 2,786 are private. We use the major industry codes as defined by NACE rev. 2 to identify the industry the company operates in. We use the major industry codes instead of more specifically defined codes due to the size of our data set, which often contains only one or a handful of companies in industries defined by more specific codes.

The number of boards variable was constructed by counting how many times a director's unique contact identifier (UCI) was mentioned in other boards in our sample. The count was then summed up for each of the company boards to have the total number of boards for each company per year. The dataset was cleaned of duplicate director identifiers in the same company. The resignation date of directors was used when creating the aforementioned number of boards variable by excluding directors that had already resigned from the sum of the number of board seats. This process is needed due to the fact that Orbis lacks time-series director data, with this process being the only reasonable alternative to determine time-series information.

To find shocks, we also obtained a director level data of the biggest 6500 companies which were successfully merged and dissolved throughout the years 2009-2017. Only the directors with available resignation dates were selected for further analysis as the date indicates that the director has lost the position they had. We assume that the directors who did not have resignation dates recorded after the merger event either continued to be board members in a company which took over or the Orbis database simply did not have the available records.

Treat variable was constructed by matching a director's UCI from the merged companies with the UCI of a director in an active companies' sample and marking on which years the directors were shocked after by taking the following year after the director's resignation date. After cleaning up datasets we have identified that there are 811 companies from the sample of

3,772 companies which had directors affected by successful merger events in the last 9 years. Most of the aftershock years were recorded in 2017, 2016, and 2014.

Firm-specific control variables such as firm size (total assets), firm leverage, board size, volatility and research and development variables will undergo winsorization at the 1st and 99th percentiles to control for the chance that the results will be motivated by some outlying observations. The winsorization procedure is the same as specified in Hauser (2018).

4.2 Descriptive statistics

Summary statistics for the 3772 biggest active companies sample from four Nordic countries during 2009-2017 is provided in table 2. The information given in the table is composed of the number of firm-year observations (N), the mean, standard deviation, median, minimum and maximum values as well as the value of top and bottom first percentile of the respective variables.

Firm characteristics	N	Mean	Std. dev.	Median	Min	Max	1st percentile	99th percentile
Return on assets (ROA, %)	26,604	5.41	10.99	4.33	-99.24	99.56	-24.65	39.71
Total assets (€m)	26,664	482.65	1,480.66	77.60	1.93	11,318.95	1.93	11,318.95
Leverage	25,789	62.79	20.39	65.42	12.02	108.74	12.02	108.74
Board size	27,716	4.37	3.15	3.00	1.00	41.00	1.00	41.00
Number of boards	27,716	7.28	6.65	5.00	1.00	95.00	1.00	32.00

Table 2. Firm characteristics of all the sample

As seen from the average and median size of assets, firms are quite big with the largest company having 11.319 billion euros worth of assets and median being 77 million euros worth of assets. Most of them are industrial companies in asset-intensive industries as provided in appendix B. Distribution of the largest Nordic companies by country can be found in appendix C, which shows that the highest proportion (44.13%) of the biggest active companies are located in Sweden out the Nordic countries.

As for the size of the board of directors of companies, we find that the median board size in Nordic companies is 3 with a mean of 4.37. The largest board of directors in our data set peaks at 41. We can also observe that the median number of directorship positions held on the company level in Nordic companies is 5, from which we could infer that concurrent board

appointments are indeed prevalent among the largest Nordic firms. The largest number of board seats held by the directors of a single company reached 95 for a 29-person board. In total, we observe 27,716 firm-year results of both the board size and number of board measures.

For the return on assets measure we obtained 26,604 observations with a mean of 5.41% and a median of 4.33%. The leverage metric, which we measure by the sum of current and non-current liabilities divided by the total assets can be seen in row 3 of table 2. We can observe that the average leverage of the largest Nordic countries was quite balanced in our time period, with the mean leverage being 62.79% and the median 65.42%. The leverage ratio is multiplied by 100 for easier interpretation in all descriptive statistics and regressions.

From the table we can also observe that there is significant variance in the number of observations, ranging from 27,716 for the board measures and 25,789 for the leverage measure. This variance can be explained firstly by the fact that some companies in our data set were incorporated in the middle of our studied time period and secondly due to missing financial data in some firm years for some companies. We can, however, affirm by the large number of firm year observations and number of observations in the regressions that our data set is large enough for the purpose of our study.

Summary statistics for firms that experienced a merger-shock, public and private firms are provided in appendices D, E and F.

5. Results and discussion

5.1 First-difference and reduced-form regression results

In line with our chosen methodology, we first studied the effect of a variation in the number of boards held by the directors of a company on firm performance with an OLS regression which is specified in terms of first-differences. Table 3 contains the results for the first-difference and reduced-form OLS regressions. Standard errors clustered by firm are given in parentheses and the significance of coefficients is marked via apostrophes, with ***, ** and * signifying confidence levels of 1%, 5% and 10% respectively. All results are shown with 2 decimal places or enough decimal places to show 2 significant digits. A lack of the second digit signifies that the second significant digit rounds to zero. R-squared values are provided with 2 decimal places. This formatting also applies to Table 4.

We specify the first-difference regression as "OLS" in the table to set it apart from the reduced-form regression and do not intend to imply any differences between the estimation methods of the two regressions - both the first-difference specification and reduced-form regressions are estimated using the ordinary least squares method.

In column (2) we have listed the results of the first-difference specification OLS regression with firm-level control variables, with column (1) displaying the results of the same regression without firm-level control variables. The results of the main coefficient of interest in this regression, the number of boards measure, shows that each additional board seat increases the return on assets of a firm by 0.0086-0.026% depending on the regression specification. The coefficient in the main regression is not statistically significant in both specification cases and the 95% confidence interval (not depicted in the table) shows that the coefficient could also be negative, leaving the direction of the effect ambiguous. This result is not surprising considering the inconclusive literature about the unconditional effect of concurrent board seats on firm performance and mirrors Hauser's (2018) findings. The reasons for the variation in the number of board seats directors of a company concurrently hold is unobserved in this regression, and can depend on a variety of endogenous factors, lacking director skill and resignations to name a few. This leads to difficulty in effective interpretation, as we observe the effect but have not determined what the underlying cause is. The inconclusive and ambiguous results also motivate

further research by making the variation in board seats conditional on merger-shocks via the variable Treat.

The "OLS" regression in column (2) also includes significant results for some of the firm-specific control variables. Firm size is shown to be correlated with firm performance with a 10% significance, with each 1% change in the book value of assets of a firm leading to a 0.094% increase on average in the return on assets, everything else held constant. We also find that leverage is correlated with firm performance with a 1% increase in the liabilities to total assets ratio leading to a 0.28% decrease in the return on assets of firms on average, holding everything else constant. The measure of fit (R^2) increases dramatically from 0.02 to 0.10 when adding in the firm-specific control variables, indicating that the change in number of boards measure, public company indicator variable and year and industry effects alone do not have much explanatory power of the firm performance measure (ROA).

Dependent variable	ΔROA			
	OLS		Reduced-form	
	(1)	(2)	(3)	(4)
Treat			-0.081*	-0.048
			(0.074)	(0.045)
ΔNumber of boards	0.026	0.0086		
	(0.021)	(0.032)		
Public dummy	0.13	0.087	0.19**	0.1
	(0.12)	(0.098)	(0.089)	(0.1)
Public dummy and Treat interaction			-0.032	-0.12
			(0.11)	(0.16)
ΔFirm size		0.094*		0.095*
		(0.056)		(0.000082)
ΔLeverage		-0.28***		-0.28***
		(0.018)		(0.018)
ΔBoard size		0.032		0.046
		(0.08)		(0.05)
R^2	0.02	0.10	0.02	0.10
Observations	19,277	18,540	22,744	18,540

Table 3. Results of the OLS and reduced-form regression.

In columns (4) and (3) of table 2 we have listed the results of the reduced-form regression with and without firm-level control variables. The merger-shocks in the main regression are

predicted to have a negative relationship with firm performance, with each additional merger-shock predicted to have a 0.048% decrease in the return on assets of a company, although the relationship is not statistically significant. We cannot look at this measure alone, as we also included a public company and merger-shock interaction variable in our study. The interaction variable predicts that each additional merger-shocked director in a public company affects the firm performance by a decrease of 0.12% on average, totaling the effect of a merger-shock in a public company a decrease of 0.168% of the return on assets, however the results are still insignificant. The results for the baseline regression in column (3) show that each merger-shock has a negative effect of 0.081% on the return on assets with a 10% confidence level and that public companies have a 0.19% ROA on average when compared to private firms. However, the public company dummy and merger-shock variables are insignificant, the R^2 of the regression is very low (0.02) and the results are not robust to the addition of firm-level control variables, leading us to count the results as non-robust.

The results of the reduced-form regression suggest that an increase in free time of a director following a merger event does not cause a statistically significant improvement in firm performance in neither public or private firms and are in contrast to Hauser's (2018) findings. Hauser (2018) discovered that each merger-shock increases public company return on assets by 0.24-0.26% with 1% statistical significance. The possible interpretation of insignificant results could be that public and private company directors do not have a direct impact on firm performance, but the conflicting nature of our results naturally leads us to analyze the probable causes behind the observed results.

A probable cause of the insignificant results could be the effect of other factors than workload. Once the director loses the board seat following a merger, the director loses access to numerous beneficial effects of holding the board seat as well. According to Bazerman & Schoorman (1983), Zahra & Pearce (1989), Westphal (1999), McFarland (2004) it is quite common for firms to pursue having board members with multiple board seats in different companies as such directors have external experience, bigger networks and can give beneficial advice which could increase firms' performance. Moreover, directors with multiple board seats can also help to cut costs of operations by coordinating with strategically important partners through interlocking relationship through board membership (Bazerman & Schoorman, 1983). Furthermore, some smaller companies benefit by inviting on board well-regarded directors which

increase the firm's legitimacy. All these benefits can indicate that in case of a merger shock, additional free time received for board members to increase performance can be offset by a loss of other valuable benefits of having concurrent board seats.

In conclusion, we find no evidence that merger-shocks affect the performance of either public or private firm performance positively, leading us to reject our three hypotheses. The result could at first glance, as per Hauser's (2018) interpretation, be deemed as confirmation that the boards of directors do not affect firm performance and are thus redundant, but we believe that such a strict verdict is not reasonable considering various ways in which concurrent board appointments benefit directors. The result adds to existing scientific knowledge by deeming the total effect of exogenous variation in concurrent board seats on firm performance in private and public firms is insignificant in the Nordics.

5.2 Instrumental variable regression results

Even though the effect of merger-shocks on firm performance might be insignificant, we still find it important to study whether the variation in board appointments caused purely by the workload effect has a significant relationship with company performance in the Nordics. The instrumental variable regression helps us in that by providing analysis about the impact of variations in the number of board seats on firm performance induced by the workload effect. The regression results are provided in table 4 below.

Dependent variable	IV stage 1		IV stage 2	
	ΔNumber of Boards		ΔROA	
	(1)	(2)	(3)	(4)
Treat	-0.11**	-0.073***		
	(0.025)	(0.018)		
ΔNumber of boards			0.5	0.7
			(0.37)	(0.58)
Public dummy		0.37***		-0.17
		(0.045)		(0.24)
ΔFirm size		-0.013		0.1*
		(0.013)		(0.057)
ΔLeverage		-0.00085		-0.28***
		(0.0019)		(0.018)
ΔBoard size		1.78***		-1.21
		(0.03)		(1.05)
R^2	0.02	0.62	-	0.07
Observations	23,163	18,595	19,277	18,540

Table 4. Results of the IV regression.

The main first stage instrumental variable regression in column (2) shows us that each shocked director leads to a loss of 0.073 board seats with a 1% statistical significance. The effect of merger-shocks is also significant in the baseline regression with a 5% statistical significance. This is the expected result, although it is much lower than Hauser's (2018) result of 0.85 board seats lost per merger shock. This result implies that only 7.3% of shocks lead to a net reduction in the number of board seats, possibly meaning that either that Nordic directors are fast to replace their directorships with a board position in a new firm, or the fact that concurrent board appointments have become more popular overall in the Nordics during 2009-2017. We also observe positive changes in the number of board seats in public firms (a net increase of 0.37 seats compared to private firms) and with each additional board member (a net increase of 1.37 seats per board member), with both of the coefficients being statistically significant at the 1% confidence level.

The results of the second stage regression mirror the results seen previously in the reduced-form regression. We observe that an increase in the number of board seats held by the directors of a company is estimated to increase firm performance by 0.7% with no statistical significance in both the main and baseline regressions. It is surprising to discover that in the

Nordic countries the workload effect does not have a significant impact, as Hauser's (2018) results in the US showed that a decrease in workload made directors transfer their newly gained free time to improve performance in the remaining companies.

Insignificant results of the isolated workload effect could be explained by taking a deeper look into the features of the Nordic corporate governance model. As analyzed in the literature review, the Nordic corporate governance model is different from the Anglo-American model for several reasons which in the end could have impacted the significance of the results (Lekvall, 2014). To begin with, the board is solely accountable to the shareholders who investigate the performance of the board by choosing an auditor with a function to evaluate performance of individual directors and the board altogether. This goes in line with the discussion of Kiel & Nicholson (2006), who argue that board performance as a whole is more important to the performance of the company rather than individual directors who might have different roles and importance in the processes of the board. Thus, even if some members of the board were impacted by the decrease in workload, significance of the board on firm performance does not significantly change in the Nordic countries were boards are continuously audited by the shareholders to keep good performance in any case.

Another feature of the Nordic corporate governance model, which arguably impacted the results, is that the boards are non-executive and have to coordinate each decision with the executive management (Lekvall, 2014). Since each important decision has to be discussed between the groups, an increase in free time for some board members might only translate to a marginal increase for the board which also cannot execute any highly impacting decisions without coordination with the executive branch anyway.

According to Kiel & Nicholson (2006), a reason for insignificance could be intra-corporate group mergers as board members could have been on boards of subsidiaries, part of a corporate group. This means that the impact on workload was not high after merger shock as it was argued by the authors that being part of the board in a corporate group firm did not imply a lot of additional workload as it was essentially working in the same corporation.

All in all, ambiguous results from the regressions indicate that in case of the Nordic countries there are two possible implications for multiple board memberships which also answers our research question "How do concurrent board appointments affect firm performance in private

and public companies in the Nordics?". There is either no significant effect due to the structure of Nordic corporate governance model and the way boards operate or concurrent board seats may actually be providing various benefits to companies which offsets the gain of additional free time from board seat loss due to a merger. A combination of these counterbalancing effects could also have been the reason for the insignificance. Therefore, it is possible to draw a conclusion that shareholders of companies in the Nordic countries should not be concerned with the number of concurrent board seats a member has as it does not significantly affect firm performance in a negative way and could potentially be beneficial for a firm.

5.3 Public firm analysis

As an extension of our study we proceeded to do the previous analysis only on the public companies in Nordic countries. This will allow for easier interpretation of the results and will permit us to make closer comparisons to Hauser's (2018) study. The results of the OLS (first-difference) and reduced form regression are given in Table 5 below. Evenly numbered columns contain the results of the regressions with all firm-level control variables, whereas the odd columns show the results without. The following Table 6 provides results of the IV regression.

Dependent variable	OLS				Reduced form			
	ΔROA		ΔlogQ		ΔROA		ΔlogQ	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Treat					-0.055	0.41	-0.019**	-0.00065
					(0.11)	(0.54)	(0.0092)	(0.016)
ΔNumber of boards	0.039	-0.024	-0.0002	-0.0087*				
	(0.055)	(0.16)	(0.0023)	(0.0049)				
ΔFirm size		-0.47		-0.0024		-0.039		-0.0027
		(0.24)		(0.0065)		(0.23)		(0.006)
ΔLeverage		-0.37***		-0.014***		-0.37***		-0.014***
		(0.84)		(0.0025)		(0.083)		(0.0024)
ΔR&D		-0.022		-0.00011		-0.0021		-0.00012
		(0.0024)		(0.00012)		(0.0025)		(0.00012)
ΔVolatility		-4.39		-0.067		-4.41		-0.073
		(4.01)		(0.18)		(4.02)		(0.17)
ΔBoard size		0.058		0.0084		0.023		-0.0048
		(0.3)		(0.011)		(0.24)		(0.009)
R^2	0.06	0.15	0.19	0.34	0.06	0.15	0.19	0.33
Observations	2,996	978	2,626	981	2,996	978	2,626	981

Table 5. Results of the OLS and reduced-form regression for public firms

Dependent variable	IV stage 1		IV stage 2			
	ΔNumber of Boards		ΔROA		ΔlogQ	
	(1)	(2)	(3)	(4)	(5)	(6)
Treat	0.083	-0.11				
	(0.14)	(0.018)				
ΔNumber of boards			-0.42	-3.9	-0.092	0.0059
			(0.92)	(5.66)	(0.095)	(0.14)
ΔLeverage		0.0034		-0.33***		-0.014***
		(0.014)		(0.1)		(0.0023)
ΔFirm size		0.029		0.088		-0.0029
		(0.049)		(0.35)		(0.0078)
ΔR&D		0.001		0.0018		-0.00013
		(0.00078)		(0.0062)		(0.00019)
ΔVolatility		0.75		-1.71		-0.078
		(0.63)		(4.5)		(0.15)
ΔBoard size		1.5***		5.84		-0.014
		(0.071)		(8.45)		(0.011)
R^2	0.2	0.66	0.03	-	-	0.33
Observations	3,528	981	2,996	981	2,626	981

Table 6. Results of the IV regressions for public firms

The results of the reduced-form regression are the following. In both cases where firm-level control variables were included (Columns 6 and 8), we found no evidence that the firm performance is significantly affected by merger-shocks. This mirrors our previous findings in the combined public and private sample (Table 3). In the second stage of the instrumental variable regression we also found that an additional concurrent board seat has an ambiguous and insignificant effect on firm performance, which goes in line with our previous results, but against Hauser's (2018) results. The results are also in contrast to Falato et al. (2014), where the authors found that a workload *increasing* event had a significant negative impact on firm performance. General similarities with Hauser's (2018) study are the higher R-squared in the regressions where the dependent variable is the Tobin's Q and the negative effect of additional leverage on company performance in both accounting- and market-based performance measures.

As somewhat expected, based on the results from the previous parts of our analysis, the investigation of public firms exclusively did not provide results with different significance. Inclusion of new control variables and performance measure did not change the outcome of the research. In comparison, Hauser (2018) found that the Treat variable (merger-shocks) had a significant ($p<0.01$) positive effect on firm performance and instrumented Number of Boards

variable had a significant ($p<0.01$) negative effect on both ROA and Tobin's Q ratio performance measurements of a public company.

The difference between Nordic and Anglo-American corporate governance models could be a possible explanation why our obtained results of public firm analysis do not match with the findings of Hauser's (2018) U.S. public firms analysis. In addition to this, we believe that the previously discussed reasoning based on Lekvall (2014), Kiel & Nicholson (2006), Bazerman & Schoorman (1983), Zahra & Pearce (1989), Westphal (1999), and McFarland (2004) can also apply in this case. As a results we are led to conclude that merger-shocks and multiple directorships do not have a clear and significant relationship with firm performance in Nordic listed companies.

5.4 Limitations of the study

This study results could have been affected for several reasons. Formerly, as discussed in the data description section, a number of observations for all variables was not consistent as Orbis database could not provide complete data on all the firms used in this study. It was also not possible to use more dependent and controlling variables in the statistical analysis such as time series director level board independence levels since such information is not provided for companies in the Nordic countries.

6. Conclusion

Our study seeks to answer whether and how concurrent board appointments influence firm performance in the Nordics, which is also reflected in our research question: "How do concurrent board appointments affect firm performance in private and public companies in the Nordics?". In addition to this, we wanted to reveal whether the board of directors of private and public firms affect the firm performance and how this effect differs between public and private firms, for which we formulated three hypotheses and investigated the effect of merger-shocks on firm performance. We hypothesized that the merger-shocks will have a positive effect on firm performance in both public and private firms, with a larger effect in the public firms.

We achieved our research goals by finding no significant evidence that concurrent board appointments affect firm performance in the Nordics. In addition to this, we discovered wholly insignificant results regarding the effect of the public and private board of directors on firm performance, leading us to reject our hypotheses. Analysis focused specifically only on public firms also lead to the same conclusion. Based on our research we can assure shareholders in Nordic companies that they should not be worried about their directors holding concurrent board seats. Although we do not favor such a strict interpretation and additional factors should be considered, we found no evidence that board members of private and public companies have a first-order effect on firm performance.

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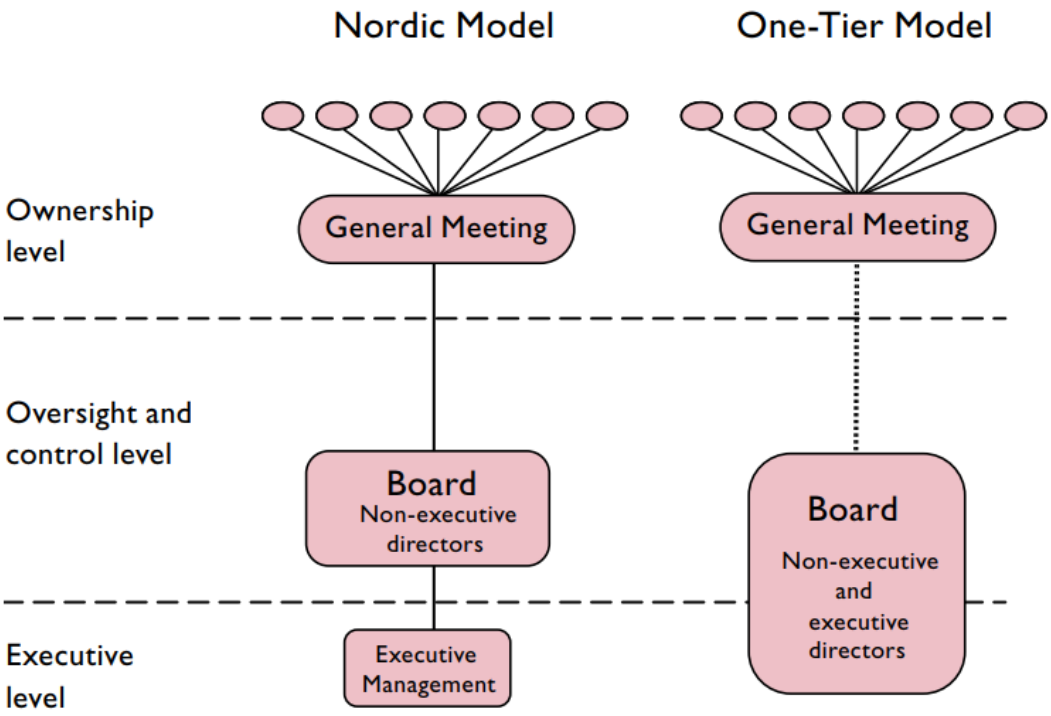
8. Appendices

Appendix A. *Illustration of Nordic and Anglo-American corporate governance models. Retrieved from Lekvall, P. (2014) and edited by the authors.*



Appendix B. *Distribution of the largest Nordic companies by industry.*

Industry split	**N**	**Percent**
Manufacturing	903	24%
Wholesale and retail trade	576	15%
Financial and insurance activities	527	14%
Professional, scientific and technical activities	518	14%

Information and communication	215	6%
Transportation and storage	192	5%
Construction	173	5%
Administrative and support service activities	142	4%
Human health and social work activities	105	3%
Not available	105	3%
Mining and quarrying	56	1%
Electricity, gas, steam and air conditioning supply	55	1%
Accomodation and food service	47	1%
Real estate activities	44	1%
Water supply; sewerage, waste management and remediation services	26	1%
Agriculture, forestry and fishing	25	1%
Arts, entertainment and recreation	23	1%
Education	19	1%
Other service activities	16	0%
Public administration and defence	5	0%
Total	**3,772**	**100%**

Appendix C. *Distribution of the largest Nordic companies by country.*

Country split	**N**	**Percent**
Denmark	945	25.05%
Finland	740	19.62%
Sweden	1,559	41.33%
Norway	528	14.00%
Total	**3,772**	**100%**

Appendix D. *Characteristics of firms that experienced a merger-shock*

Firm characteristics	N	Mean	Std. dev.	Median	Min	Max	1st percentile	99th percentile
Return on assets (ROA, %)	1,244	4.33	11.37	4.33	-80.26	84.32	-32.26	34.33
Total assets (€m)	1,245	667.96	1,896.59	78.94	1.93	11,318.95	2.86	11,318.95
Leverage	1,182	66.01	18.72	67.68	12.02	108.74	12.02	108.74
Board size	1,240	6.27	3.77	5.00	1.00	15.00	1.00	15.00
Number of boards	1,240	12.11	8.93	11.00	1.00	52.00	1.00	39.00

Appendix E. *Characteristics of public firms*

Firm characteristics	N	Mean	Std. dev.	Median	Min	Max	1st percentile	99th percentile
Return on assets (ROA, %)	3,523	4.56	9.03	4.28	-69.89	72.50	-23.66	33.49
Total assets (€m)	3,529	1,435.00	2,667.49	268.62	1.93	11,318.95	2.96	11,318.95
Leverage	3,345	56.30	16.34	57.18	12.02	108.74	15.94	98.68
Board size	3,910	5.98	3.38	5.00	1.00	15.00	1.00	15.00
Number of boards	3,910	10.34	7.82	9.00	1.00	95.00	1.00	37.00

Appendix F. *Characteristics of private firms*

Firm characteristics	N	Mean	Std. dev.	Median	Min	Max	1st percentile	99th percentile
Return on assets (ROA, %)	23,081	5.54	11.26	4.34	-99.24	99.56	-24.95	40.85
Total assets (€m)	23,135	337.24	1,132.20	68.76	1.93	11,318.95	1.93	6,366.17
Leverage	22,444	63.76	20.76	66.03	12.02	108.74	12.02	108.74
Board size	23,806	4.11	3.03	3.00	1.00	15.00	1.00	14.00
Number of boards	23,806	6.77	6.29	5.00	1.00	70.00	1.00	31.00