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Master Thesis

Thesis Master of Science

How Does the Board of Directors React when Faced with Corporate Scandals? A Study of CEO, Chairman, and Auditor Turnover

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Study Programme:
Master of Science in Business – Major in Finance

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Abstract

In this paper, we examine how the board of directors react when faced with corporate scandals. We compare 75 Norwegian firms involved in corporate scandals with 75 control firms and measure how these scandals impact the probability of CEO, chairman, and auditor turnover. We find minimal previous literature on this topic and none relating to Norwegian firms. By employing a logistic regression model in multiple stages, we find statistical evidence that firms involved in scandals have higher turnover rates for all three board reactions, indicating that the board of directors are effective monitors in corporate scandals. Further, we discover that board size, board independence, and female board presence significantly influence our three board reactions, both independent and conditional on corporate scandals.

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1.0 Introduction

In the world of financial media, uncovering corporate scandals and exposing fraudulent behavior is a recurring theme, also among well-known and established firms. The fall of companies such as Enron, AIG, Tyco, and recently Wirecard have been extensively discussed and researched, and the management and leadership of the firms have been widely criticized. At the heart of these scandals lies the firm's board of directors, who are tasked with reducing the damage to the firm and take the necessary action to prevent similar incidents in the future. In our thesis, we will take a closer look at the board of directors in times of crisis and examine how they react when facing corporate scandals. This topic is largely unexplored in financial literature and practically non-existent when looking outside the American economic landscape. Our thesis focuses on both listed and unlisted firms in Norway, which also have been the subject of corporate scandals in recent times.

In January 2014, the Norwegian firm Yara accepted a fine of NOK 295 million, following accusations of bribery related to their operations in Libya, India, and Russia. Following the scandal, three former directors and the former CEO Thorleif Enger were sentenced to prison, and the incumbent CEO Jørgen Ole Haslestad was removed with immediate effect. Yara's board of directors was also the first to warn authorities about the scandal and have been public about their work to establish better routines and governance systems to avoid similar incidents in the future (Bugge et al., 2016). However, the revelation of corporate scandals does not always lead to changes in top management or the restructuring of the board. For example, Hydro faced allegations of corporate misconduct in 2016 related to their aluminum deals in Tajikistan. It was revealed that Hydro had held meetings with the country's president and his inner circle and entered into agreements with Talco Management Limited (TML), which had hidden owners from the British Virgin Islands. Following the accusations, the chairman of the board at Hydro, Dag Medjell, put forward a statement that denied the claims of corporate misconduct (Bugge et al., 2016).

We can see from the cases presented above that the board of directors has different reactions to the revelation of corporate scandals. In some cases, it leads to changes in the firm's management, and there are also instances where the board of directors

is restructured or certain board members are removed. On the other hand, we also have examples where the board of directors openly supports the firm's management and activities, such as the aforementioned Hydro case.

Board reactions in corporate scandals are an interesting topic for study, not only because it is mainly unexplored. It also gives us a deeper insight into Norwegian firms' governance and tells us something about how the board of directors functions in times of crisis. From governance theory and previous literature related to our topic, we know that the board should act in the best interest of shareholders and take the necessary action to reduce agency problems within the firm. We intend to uncover whether this theory applies to Norwegian firms standing amid a corporate scandal. Is the board willing to remove an incumbent CEO, chairman, or auditor if necessary, as governance theory predicts? Further, we will examine how these board reactions in scandals are affected by certain board traits.

The structure of our thesis is as follows. First, we clearly define the research question and present our main hypothesis, along with several sub-hypotheses. In the theory section, we present some of the corporate governance theory related to the board of directors and their role as the governing body of the firm. Moreover, we clearly define what we consider corporate scandals, present fundamental governance theory, discuss the different board reactions we consider, and how certain board characteristics might affect these reactions. Further, we conduct a review of previous literature related to our specific research question and topic, as well as deeming their relevance to our research. The next section focuses on our methodological approach, explaining in detail how we collect our data, the different variables we construct, and the formal specification of our regression model. We employ a logistic regression model using multiple dependent variables and different model specifications. Next, we present our findings and discuss the implications the results have on the governance of Norwegian firms. Lastly, we conclude from our results and present some areas which could be the subject of future research.

2.0 Problem formulation

We want to study how the board of directors in Norwegian unlisted and listed firms react and act when they face a corporate scandal, and have formulated the research question:

"How does the board of directors react when faced with corporate scandals?"

To measure the different board reactions, we consider three corporate actions performed by the board of directors; removing the incumbent CEO, removing the chairman of the board, and changing the firm's external auditor. To investigate our research question, we conduct a quantitative empirical analysis consisting of multiple logistic regression models to capture the effect of corporate scandals on these three reactions. To identify corporate scandals in Norwegian firms, we use the media archives Atekst and collect governance data on these firms through the data set provided by The Centre of Corporate Governance Research (CCGR) at BI.

Our main hypothesis is that Norwegian firms facing corporate scandals will have a higher probability of CEO, chairman, and auditor turnover than those who do not. Our expectations are based on both governance theory and previous literature that addresses similar research questions outside Norway (Agrawal et al. 1999; Agrawal & Cooper, 2016). We will further investigate whether these three reactions are influenced by specific board characteristics, namely board size, board independence, and female board presence, both independent and conditional on corporate scandals. While the relationship between CEO turnover and independent directors has been explored by previous researchers (Laux, 2008; Weisbach, 1988), we find no existing literature examining the relationship between these board characteristics in corporate scandals and CEO, chairman, and auditor turnover. Our sub-hypothesis is that these board characteristics have a significant impact on the three board reactions, both independent and in relation to corporate scandals. In our research, we will not investigate how the different board reactions affect firm performance. First and foremost, it would make the scope of our thesis rather large, and secondly, we include unlisted Norwegian firms in our sample. The latter would make it difficult to measure the firm's performance following our three board reactions, as stock prices are unavailable.

3.0 Background Information

3.1 Theory

3.1.1 The Board of Directors

At the essence of our research question lies the economic theory on the board of director's advisory and monitoring role of the firm and its management. In Norway, every limited company (AS) and public limited company (ASA) is obliged to have a board of directors, and the board is selected by the firms' shareholders in the general assembly. Further, the board's responsibility towards the firms' shareholders is statutory and formally written in the Norwegian Public Limited Liability Companies Act (Aksjeloven). Firstly, the board shall supervise the day-to-day management and the company's activities in general. Secondly, the board should set the instructions for the day-to-day management. By the same law, the board shall also keep itself informed about the firm's financial position and is obliged to ensure that its activities, accounts, and capital management are subject to adequate control (Aksjeloven, 1997). Reflecting the board's statutory responsibility, Fama and Jensen (1983) argues that the essential function of the board of directors is to ensure that the firm's management act in the best interest of its shareholders. By doing so, the board of directors can reduce the costs associated with the corporation's distinction between ownership and decision-making authority (Fama & Jensen, 1983). In firms with many small, dispersed shareholders, which is common in listed Norwegian firms (Goergen, 2012), the shareholders will have little incentive to monitor the management themselves due to high monitoring costs and low benefits. Therefore, the role of the board of directors is a crucial link between shareholders and management and plays an important role, especially in corporate scandals and crises where there often is misalignment between these two stakeholders. For our research question, these responsibilities are therefore important to understand and be aware of. They show us both how the board of directors can be expected to react to corporate scandals and the motivation behind their reactions.

3.1.2 Corporate scandals

When conducting our research, we need to identify corporate scandals in Norwegian businesses. Therefore, having a clear view of what defines corporate

scandals is essential. Firstly, there needs to be some occurrence or allegation of fraudulent or unethical behavior on the part of one or more members of the company. As explained by Bonini and Boraschi (2010), "Typical instances of fraudulent behavior include misstatements of financial figures on current, past or future investments, or operations, delay in disclosing or failure to disclose information, bribery, insider trading, and any other illegal activities that hurt the shareholders of the firm" (p. 242). Secondly, these events must be observable. In other words, they must be publicized in either newspaper articles or other media sources.

3.1.3 Agency Theory

As previously mentioned, it is not uncommon in Norwegian listed companies and modern corporations to have dispersed ownership composed of small shareholders. Therefore, we expect many of the firms we include in our sample to have a similar ownership structure. With such a high number of owners, there is bound to be diverging incentives among these shareholders. The Agency Theory, introduced by Jensen and Meckling (1976), describes the relationship between the ownership and management of the firm and has been deemed one of the most fundamental theories in corporate governance literature. They presented the "agency relationship" to be an agreement between the owners and the managers of the firm, where the owners (principal) engage managers (agents) to run the company on their behalf. In practice, it is the board of directors that is tasked with appointing these managers, as well as the firm's chairman and external auditor. Since we investigate how the board of directors react to corporate scandals, the governance theories on imperfect information in agency relationships are highly relevant. For instance, we have the Moral Hazard problem, where the owners cannot observe the manager's (CEO) actions or effort (C. Østergaard, personal communication, February 3, 2021). Suppose there are misalignments between the incentives of the owners and manager, for instance, in the level of risk exposure. In that case, the manager might act in ways that are beneficial for him but detrimental to the firm's owners (Moloi & Marwala, 2020). This is further supported by Jensen and Meckling (1976). They argue that the principal-agent problem results from the manager and owner having different utility-maximizing opinions, leading to the manager pursuing his own goals and interests instead of acting in the owners' best interest. Croitoru (2011) emphasizes the importance of corporate governance codes to secure good standards

and principles to mitigate such agency conflicts between shareholders and managers. From his study, he finds that the focus on corporate governance codes is increasing, particularly since the Asian financial crisis in 1997. The importance of such governance codes is also supported by a study conducted by McKinsey in 2000, who find that investors are willing to pay a premium for well-governed firms (McKinsey, 2000).

3.1.4 Board Reactions

In earlier sections, we have discussed both the responsibility of the board of directors and the underlying corporate governance theory, which is the basis for how boards react to corporate scandals and our research question. Next, we need to consider the different ways the board can react when faced with corporate scandals and their decision-making authority. As we have already discussed, the board of directors – as the firm's governing body – should base their decisions on what is optimal both from the perspective of the shareholders and the other stakeholders of the firm. The first board reaction we consider is CEO turnover. If the scandal can be traced back to managerial malpractice, the board of directors has the power to remove an incumbent CEO or any other principal officer within the firm, limit their influence on the company's decisions, and restructure their compensation package. However, previous studies show that this reaction can be sub-optimal. Dikolli et al. (2014) find a positive relationship between CEO tenure and firm performance, which indicates that removing an incumbent CEO is a source of uncertainty, especially related to the firm's future. Contradictory, from a study of stock market reactions to the announcement of management changes, Bonnier and Bruner (1989) find positive abnormal returns, indicating that management changes are met with excitement from investors. Based on these conflicting studies, we are hesitant to conclude whether CEO turnover is a value-creating board reaction and emphasize that it has to be a well-considered action taken by the board of directors.

The second board reaction we consider and include in our analysis is chairman turnover. While we find no existing literature or theory directly related to chairman turnover, the implications of removing the chairman can be explained by existing governance theory. As the head of the board of directors, the chairman is tasked with maintaining the board's statutory responsibilities towards the firm and its shareholders. In corporate scandals, we therefore deem the reaction of chairman

turnover to indicate that the chairman has neglected these responsibilities, such as failing to monitor the management effectively or failing to keep the board informed about the firm's position. From previous corporate scandals, we have seen that chairman turnover is not an infrequent reaction. It was both a result of the Telenor Vimpelcom-scandal and the Wirecard scandal, which received international attention in 2019. In the Wirecard case, the board of directors also ordered both a special audit of the firm's financial results and removed the firm's external auditor, Ernst & Young (McCrum, 2020). This is the third board reaction we will consider, namely auditor turnover. The external auditor is tasked with overseeing and validating the firm's financial statements objectively and is critical to uncovering corporate scandals, particularly fraud. Previous literature has highlighted the importance of auditor independence and financial transparency in relation to corporate scandals (Sridharan et al., 2002). Based on this literature, we therefore deem auditor turnover in corporate scandals to indicate that the auditor is failing to monitor the firm's financial statements effectively.

While we focus on the three abovementioned board reactions in our analysis, we also acknowledge that the board has other ways to react to a corporate scandal. Such reactions could be how the board of directors communicates with the media or shareholders throughout the scandal, explaining the measures being taken, or showing their support to the management when they believe the allegations are unjustified. Lastly, we must also consider the possibility of the board of directors not reacting or taking action in the wake of corporate scandals. While these reactions are interesting, we leave them out of our analysis since they are difficult to quantify and measure.

3.1.5 Optimal board structure

Our analysis also intends to capture the effect of three different board characteristics: *board size, board independence,* and *female board presence* on our three board reactions in corporate scandals. We select these three characteristics based on a study by Jain and Zaman (2020), who found that Corporate Social Irresponsibility (CSiR) decreases when boards with good "bundling" have been prevailing. This concept of bundling refers to boards who, among other things, are larger in size and have a high degree of both board independence and female representation. Based on their findings, it is reasonable to assume that these three

board characteristics could significantly affect the board reactions of firms facing corporate scandals.

Regarding board size, Jain and Zaman (2020) argue that it impacts CSiR through several factors. The size of the board influences how well the directors communicate, how they process information, and the monitoring of management. The positive effect of a large board is that more stakeholders in the firm are likely to be represented, which makes the board more likely to make a well-informed decision. By contrast, a large board also has some adverse effects. There might exist a free-riding problem within the board, and most importantly, the speed of decision-making is often reduced in larger boards. This last feature of larger boards is essential in relation to our research due to the urgency of reaction and action in the wake of corporate scandals. Another finding of Jain and Zaman (2020) is that smaller boards tend to be more short-term oriented and are more likely to be dominated by the CEO, often leading to excessive risk-taking and increasing the probability of CSiR actions.

The gender ratio of the board is also a factor that impacts the probability of CSiR. As female board members are shown to be more aware of ethical judgments, have higher ethical requirements, and are less likely to shirk, having a strong female representation in the board of directors is believed to reduce the probability of CSiR (Jain & Zaman, 2020). This claim is additionally supported by Nielsen and Huse (2010), who postulate that female directors decrease the probability of conflict and are therefore detrimental to the board's strategic control. They also find that boards with a high female ratio are more likely to implement board development activities. Closely related to our research, a paper by Cumming et al. (2015) finds that there is a negative relationship between female board representation and the probability of a firm committing fraud. These studies show that there are fundamental differences between male and female board members. Therefore, it is reasonable to assume that we will find a significant effect of female board directors on CEO, chairman, and auditor turnover in corporate scandals.

The third board characteristic we consider is board independence, namely the fraction of independent board members. These are the members of the board of directors who have no affiliation with the firm other than being a part of the board.

Fama (1980) emphasizes the importance of independent board members and hypothesizes that top management's dominance of the board of directors can result in bribery and redistribution of stockholder capital. Furthermore, Rosenstein and Wyatt (1990) suggest that stockholders value the addition of outside directors, as illustrated by a positive excessive stock gain when outside directors are appointed to the board. From these previous studies, independent directors can be expected to impact the monitoring of management and stakeholders positively and, therefore, also impact the three board reactions we consider in our analysis.

3.2 Literature Review

In the field of corporate governance, we have found extensive previous literature on the different board reactions we consider, namely CEO turnover, chairman turnover, and auditor turnover. However, few have explored the relationship between these reactions and corporate scandals, and none focuses on Norwegian firms. A study by Agrawal et al. (1999) examined the changes in management and corporate governance for US firms accused of fraud. They collect their sample of fraud firms through news searches on the Wall Street Journal Index between 1981 and 1992 and compare them to a control group. From their research, Agrawal et al. (1999) find interesting results. Firstly, they find that 80.9% of firms either accused or involved in fraud have the same individual holding the position of both chairman and CEO, compared to 60.2% for the control group. From their univariate analysis, they also find a statistically significant higher turnover rate for top management in firms accused of fraud. However, their multivariate analysis, including controls for board size and board independence, cannot establish a significant difference in turnover rates between the fraudulent and control firms. Furthermore, their analysis of board structure reveals that firms involved in fraud have a higher turnover frequency of inside directors.

Agrawal et al. (1999) conclude that the insignificant effect of fraud on management turnover shows that management changes are not always the best response to revelations of corporate misconduct. While they present four possible explanations for their findings, we believe two of them to be the most probable and applicable to our analysis. Firstly, they argue that the revelation of fraud does not necessarily reflect issues with the firm's top management and that even good managers have a

significantly positive probability of fraud in their firms. Secondly, even when revelations of fraud indicate that changes in top management are optimal, the cost of implementing a change in corporate control might outweigh the reputational and economic benefits of doing so.

This paper by Agrawal et al. (1999) is highly relevant to both our research question and our main hypothesis. They have explored how the board of directors react to the revelation of fraud, mainly focusing on CEO turnover, but also the changes in the structure of the board of directors. While their results differ from what we anticipate to find in our analysis, it sheds light on our research question and gives insights into whether there are differences between US and Norwegian firms.

A second paper by Agrawal and Cooper (2016) extends the research by Agrawal et al. (1999) and examines whether firms who restate their earnings downwards have a higher probability of top management and auditor turnover. Examining a sample of 519 US public firms between 1997 and 2002, they find that restating firms have a higher turnover probability of CEOs (14%), CFOs (10%), and top management (9%) in the period from one year before to one year after the earnings restatement. However, they find no such increase in the turnover probability of outside auditors for the restating firms (Agrawal & Cooper, 2016). In addition, they find that the severity of the restatement magnifies the turnover probabilities and often triggers class action lawsuits. Similar to the article by Agrawal et al. (1999), we find this paper to be highly relevant for our research since they also include auditor turnover, which is one of the three board reactions we try to measure the effect of in our analysis. However, while the two papers mentioned above are relevant for how the board reacts to scandals, it tells us little about whether different board characteristics influence these reactions in corporate scandals. As far as we know, this area is still unexplored, but there exists previous literature measuring the effect of board characteristics on CEO turnover.

The paper by Weisbach (1988) investigates the relationship between CEO turnover and poor firm performance for both insider and outsider-dominated boards. He finds that there is a high correlation between poor firm performance and CEO changes for firms that are dominated by independent directors. However, this relationship is not consistent when the board of directors is insider-dominated. We

can argue that the paper by Weisbach (1988) is highly relevant for our sub-hypothesis. As corporate scandals can result in periods of poor firm performance, the significant impact of independent directors on CEO turnover could also be present in our analysis. The findings of Weisbach (1988) are also supported by Laux (2008), who, through his model, concludes that the increasing trend of independent directors leads to higher turnover for poor-performing CEOs. This leads us to believe that we might find a positive relationship between board reactions and board independence in corporate scandals, particularly CEO turnover. However, Laux (2008) further argues that a higher degree of board independence not necessarily improves board performance, indicating that increasing the number of independent directors after a scandal might not be the optimal reaction.

An article by Srinivasan (2005) is highly relevant to the second board reaction we consider, namely chairman turnover. Using a sample of 409 firms who restated their earnings between 1997-2001, he finds a 48% director turnover probability for firms that restate earnings downwards, compared to 33% for a "performance-matched" control sample (Srinivasan, 2005). In addition, he discovers that this turnover probability increases with the severity of the restatement. As the chairman is part of a firm's directors, it would be reasonable to assume that Srinivasan's (2005) findings indicate that earnings restatements and possibly corporate scandals positively impact chairman turnover.

We also have another interesting paper by Khanna et al. (2015) where they investigate the probability of dismissal after detecting corporate fraud when the CEOs are connected to the board of directors or other managers. They find that when the CEO strengthens the relations with top executives and directors in conjunction with the decision on appointment, it increases the risk of corporate fraud. Additionally, they argue that when the CEO has a seat on the board of directors, it decreases the probability of detection and makes CEO dismissal less likely following a fraud revelation. As Williamson (1984) argues, "Since managers enjoy huge informational advantages because of their full-time status and inside knowledge, the participating board easily becomes an instrument of management" (p. 1219). It is, therefore, reasonable to assume that a board that is deeply connected to the CEO will be heavily influenced by the firm's management.

4.0 Methodology

4.1 Data

4.1.1 Scandal Sample

To investigate the board reactions following corporate scandals, we have constructed a sample of Norwegian firms, both listed and unlisted, who have faced scandals between 2001 and 2016. To identify these scandal firms, we use a case method similar to Agrawal et al. (1999) and Weisbach (1988). We search through media databases for Norwegian firms either accused or convicted of any type of corporate misconduct or unethical behavior in the relevant period. Using Atekst, a media archive consisting of 1300 Norwegian newspapers, both online and in print, we constructed a list of keywords related to corporate scandals, ensuring consistency in our searching. We were able to identify 100 firms involved in corporate scandals through our search of Atekst in the period between 2001 and 2016. To determine the year of the scandal, we use the first public mention or allegation of corporate misconduct within the given firm. To collect governance and financial data on each scandal firm, we then searched through Brønnøysundregisteret to find their CIDs (company identification number). Next, we use these CIDs to collect key governance, accounting, and financial variables needed for our empirical analysis, using a data set from the Centre of Corporate Governance Research (CCGR) at BI Norwegian Business School. Of the initial 100 scandal firms, we have removed 20 of them for various reasons. First and foremost, we were unable to find some of the firms in the CCGR data set. Secondly, some firms had not reported key governance and financial variables such as board size, CEO birthdate, and total assets, which would limit our ability to conduct our empirical analysis and answer our research question.

4.1.2 Control Sample

Our empirical analysis compares the CEO, chairman, and auditor turnover of the firms facing scandals to a control group. For every scandal firm, we have identified one control firm based on a three-step process. Firstly, we found the firms in the CCGR data-set with the same five-digit industry code as the scandal firm. Next, we select the firm which has the closest firm size to the respective scandal firm. To measure firm size, we use total assets as a proxy, which is widely used in previous financial literature (Dang et al., 2018). Lastly, we conducted a search on Atekst of

the selected control firms to ensure that they were not involved in any corporate scandals during the relevant period (2001-2016). After matching the 80 scandal firms with a control firm, five of these pairings had to be removed due to the control firms missing key financial, governance or accounting variables. As a result, we are left with 75 pairs of scandal and control firms, which is the basis for our empirical analysis.

4.2 Variable definitions and construction

After acquiring the data set from the CCGR database for both our scandal and control firms, we have constructed and defined multiple variables we include in our model. In the following paragraphs, we explain in detail how these were created and why we include them, based on previous economic literature and theory.

Dependent Variables: Our dependent variables are CEO Turnover (*CEOTurn)*, Chairman Turnover (*ChairTurn*), and Auditor Turnover (*AuditTurn*). Since these are not explicitly reported in the CCGR data set, we have to rely on proxies. As a proxy for CEO turnover and Chairman turnover, we use the birthdate of both the CEO and the chairman. For auditor turnover, we use a change in the firm's reported auditor as a proxy, where we also control for instances where the auditing firm changes its name. We then create three dummy variables, one for each of the turnovers. These dummy variables then equals 1 in the period if there is a change in the corresponding proxy over the time window and 0 otherwise.

Scandal dummy (*Scandal*): The primary explanatory variable in our regression model is the dummy variable *scandal* which is 1 for the scandal firms in the relevant period and 0 for the control firms over the same period. For instance, if we look at the window from one year before the scandal to two years after (-1,+2), the scandal variable is 1 over these years for scandal firms and 0 for the control firms. We do this to capture the effect of turnovers both before, during, and after the scandal, as the board's reaction could either precede or succeed the uncovering of the scandal.

Board Size (*BSize*): We construct a dummy variable for board size, which equals 1 if the board is larger than the sample median. Lipton and Lorsch (1992) argue that board size and effective monitoring are inversely related, meaning that a larger

board is poor at monitoring management. This claim is also supported by Jensen (1993) and Yermack (1996). Based on this previous literature, we expect the size of the board to have some impact, particularly on CEO and auditor turnover. Moreover, we expect this relationship to be negatively correlated, meaning that an increase in board size leads to a decrease in turnover probabilities.

Female Directors (*FemDir*): Similar to board size, we construct a dummy that equals 1 if a firm has a larger fraction of female directors than our sample median in an attempt to capture the effect of having female board members on the board's reaction. A study by Srinidhi et al. (2011) shows that firms with greater female participation on the board have higher earnings quality by improving the board's functionality. Therefore, we would expect that there might be some relationship between the number of female directors and our three dependent variables.

Independent Board Members (*IndDir*): We construct a dummy variable for board independence in the same way as the two above. The effect of board independence (outside directors) has been thoroughly explored in previous literature. The model presented by Laux (2008) predicts a positive relationship between board independence and CEO turnover. This relationship is reinforced by the research of Weisbach (1988) who postulate that firms with outsider-dominated boards remove incumbent CEOs more often following poor performance than insider-dominated boards. Further, one could argue that there is a negative relationship between auditor turnover and board independence. A study by Lee et al. (2004) found that both the presence of an audit committee and board independence is negatively associated with auditor resignation.

Return on assets (*ROA*): This control variable is included as a measure for the profitability and management quality of the firm. Return on assets shows us how well the firm's management generates earnings from their assets, and it is reasonable to assume that the ROA could impact our three dependent variables. Therefore, excluding ROA might lead to a bias in our main explanatory variable, the scandal dummy.

Debt Ratio (*DbtLvl*): From corporate governance literature, debt is used to reduce the agency problem between shareholders and managers. Increasing debt reduces

the future free cash flows available to the manager and is, therefore, a disciplining device. Hence, in our model, we control for the effect of debt ratio on board reactions to avoid any bias in our main explanatory variable.

Firm size (*Log(TotalAss)*): As a proxy for firm size, we use total assets. A literature review by Dang et al. (2018) of 87 financial articles found that firm size is the most common metric (49/87), followed by market cap (20/87), sales (16/87), and the number of employees (2/87). Further, we have taken the natural logarithm due to the skewness of firm size data, which is also consistent with financial literature (Dang et al., 2018). Further, firm size has been shown to significantly affect CEO turnover, which argues for including it in our model (Cole, 2018).

Interaction Terms: We also construct interaction terms between the scandal dummy and the three aforementioned board characteristics. The coefficients of these interaction terms will then tell us how these different characteristics affect our three dependent variables in scandals. For instance, we expect the interaction term coefficient between scandals and board independence on CEO turnover to be positive. This will then indicate that having a highly independent board in corporate scandals increases the probability of CEO turnover, which is consistent with previous literature (Dah et al., 2014; Weisbach, 1988). Regarding female representation on boards, Kim et al. (2020) find that this is related to lower CEO-turnover performance sensitivity. We therefore assume that firms who have a higher fraction of female directors on the board have a lower turnover ratio in scandals. Further, there are different opinions on whether having a large board size will increase or decrease the probability of CEO turnover. On the one hand, Chemmanur and Fedaseyeu (2018) suggest that a larger board will have a higher amount of information. This, in turn, could make the board better equipped to make better decisions on CEO turnover and makes it more probable to substitute the CEO in an underperforming firm. On the other hand, Rachpradit et al. (2012) argue that the probability of CEO turnover decreases when the board is larger. Based on these contradictory findings, we believe that the sign of the board size interaction term could be either negative or positive.

Table 1: Scandal/Industry Distribution

Industry (SIC2 codes)	Number of firms	% of total
Agriculture, Forestry and Fishing (01-03)	1	1.3%
Mining and Quarrying (05-09)	5	6.7%
Manufacturing (10-33)	9	12.0%
Electricity, gas, steam, and air conditioning supply (35)	2	2.7%
Water supply; Sewerage, and waste management. (36-39)	1	1.3%
Construction (41-43)	8	10.7%
Wholesale and retail trade; repair of motor vehicles and motorcycles (45-47)	4	5.3%
Transportation and storage (49-53)	13	17.3%
Information and communication (58-63)	8	10.7%
Financial and insurance activities (64-66)	4	5.3%
Real estate activities (68)	4	5.3%
Professional. scientific and technical activities (69-75)	8	10.7%
Administrative and support service activities (77-82)	4	5.3%
Public administration and defence; compulsory social security (84)	1	1.3%
Education (85)	1	1.3%
Human health and social work activities (86-88)	1	1.3%
Arts, entertainment and recreation (90-93)	1	1.3%
Total	75	100%

Table 1 shows the industry distribution of our sample of scandal-firms. The first column displays the industry descriptions, along with the two-digit SIC2 codes. The second column show the number of firms within each industry. In the last column, we have calculated how much each industry contributes to the total. For instance, 13 scandal-firms operate in the Transportation and Storage industry, which is 17.3% of our entire sample of scandal-firms.

4.3 Descriptive Statistics

Before we conduct any regression analysis, we want to take a closer look at the features of our sample of control and scandal firms. Firstly, we want to look at the distribution within each industry of our scandal-control firm pairs. Table 1 shows both the number of firm pairs in each industry determined by their SIC2 codes, as well as that industry's contribution to the total. The names for each industry are consistent with Brønnøysundregisteret's Standard Industrial Classification from 2007. From the table, we see that five industries dominate our sample: Manufacturing, Construction, Transportation & Storage, Information & Communication, and Professional, Scientific, and technical activities. We have no

definite explanation for why these industries dominate our sample and find no previous literature examining the frequency of scandals in different industries.

Next, we want to look at the distribution of scandals over the period between 2001 and 2016. To determine the year of each scandal, we use the first available mention of it in either national or regional newspapers from our search of Atekst. In Table 2, we show how the scandals are distributed across years and how much each year contributes to the total amount of scandals. From the table, we see that mainly two years dominate our sample, 2003 (15%) and 2005 (13%).

Table 2: Scandal/Year Distribution

Years	Count	% Of total
2001	4	5%
2002	5	7%
2003	11	15%
2004	1	1%
2005	10	13%
2006	6	8%
2007	5	7%
2008	6	8%
2009	3	4%
2010	3	4%
2011	7	9%
2012	1	1%
2013	1	1%
2014	6	8%
2015	3	4%
2016	3	4%
Total	75	100%

Table 2 shows how the corporate scandals is distributed across our sample period. In the first column we show every year included in our sample. In the second column we display the number of scandals in that year, and in the last column we calculate the contribution of each year to the total number of scandals.

4.4 Univariate Analysis

To further analyze our sample, we conduct some univariate analysis of the means and medians of key variables in both our scandal and control firms. We look at our entire sample, including every observation for both the scandal and control firms, and compute the means and medians. In our analysis, we run a two-sided t-test to check for a difference in means and a Wilcoxon signed-rank test for a difference in medians. The results from these tests are shown in Table 3, along with the mean and medians of the variables. From our tests, we see that CEO turnover is the only dependent variable that has a statistically significant difference in means and medians between the scandal and control firms. The mean is significant at a 1% level, while the median is significant at a 5% level. We do not find any statistically significant difference in chairman or auditor turnover in means or medians. While these results tell us little about how the board of directors reacts when faced with corporate scandals, it provides information about characteristics of both scandal and control firms. Over the entire sample period (2000-2018), firms that experience a scandal tend to change CEOs more often than firms that do not experience a scandal. The same is, however, not the case for chairman and auditor turnover.

Further, we run the same two tests on other governance and financial variables to see if there are any characteristic differences between our two groups. We find a statistical difference in means and medians between the two groups in *board size, independent board members (%), female directors, employee directors, total assets,* and *ROA* from our test. However, we find no statistically significant difference between the debt level of the two groups. From these results, we can conclude that there are some fundamental differences between scandal and control firms. Firms that experience scandals tend to have a larger board, more independent board members, female directors, and employee directors. They are also significantly larger (size) than the control firms and have a higher return on assets (ROA). While these results are somewhat surprising, we believe that there could be multiple explanations. Firstly, the difference in governance variables between the two groups could be driven by the fact that our scandal firms are larger in size. A study by Linck et al. (2008) found that larger firms have significantly larger boards. It would also be reasonable to expect larger boards to have more female or employee representation, especially since Norwegian law states that the number of

female directors should increase in tandem with the number of directors for public limited companies (Allmennaksjeloven, 1997). This further strengthens our choice of including a measure for firm size in our logistic regression model. Secondly, we have seen from our descriptive statistics that there are some bunching of scandals between the years 2001-2007. Since we have a sample including data up until 2018, many of the scandal-firms will have an overweight of observations post-scandal. The statistically significant difference of the governance variables could then possibly result from firms increasing board size, board independence (%), and the number of female and employee directors after the scandal.

Table 3: Univariate Analysis of Sample

	Means			*Medians*		
	(1)	(2)	(3)	(4)	(5)	(6)
Dependent Variables	Scandal	Control	P-value	Scandal	Control	P-value
CEO Turnover	0.164	0.127	0.009	0.000	0.000	0.013
Chair Turnover	0.224	0.197	0.109	0.000	0.000	0.147
Audit Turnover	0.098	0.081	0.133	0.000	0.000	0.205
Governance Variables						
Board Size	5.930	4.293	0.000	6.000	4.000	0.000
Independent board (%)	0.749	0.667	0.000	0.857	0.750	0.000
Female Directors	1.435	0.718	0.000	1.000	0.000	0.000
Employee Directors	0.945	0.434	0.000	0.000	0.000	0.000
Financial Variables						
Total assets (in M NOK)	16813.98	6128.62	0.000	508.44	193.39	0.000
ROA	1.304	1.152	0.008	0.839	0.733	0.043
Debt Level	2.683	12.625	0.094	1.715	1.835	0.033

Table 3 shows the results from our univariate analysis of the means and medians of our dependent variables and some of the governance and financial variables, using the entire sample period (2000-2018). The first three columns (1-3) show our analysis of the means of the variables, with column (1) showing the mean of the scandal-firms, column (2) showing the means of the control-firms, and column (3) showing the p-value from the two-sample t-test. For illustration, our scandal-firms have an average CEO turnover of 0.164 per year. The next three columns (4-6) show our analysis of the medians, with column (4) showing the median of the scandal-firms for the variable and column (5) showing the median of the control-firms. The last column (6) shows the p-value from the Wilcoxon signed rank test, for the null hypothesis that control minus scandal comes from a distribution with zero median.

Table 4: Pairwise Correlations Year -1 to +2

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
(1) CEOTurn	1.000													
(2) ChairTurn	0.230***	1.000												
(3) AuditTurn	0.117***	0.110***	1.000											
(4) Scandal	0.253***	0.139***	0.125***	1.000										
(5) BSize * Scandal	0.238***	0.121***	-0.002	0.758***	1.000									
(6) FemDir * Scandal	0.241***	0.069*	0.080**	0.544***	0.503***	1.000								
(7) IndDir * Scandal	0.195***	0.096**	0.134***	0.585***	0.486***	0.447***	1.000							
(8) BSize	0.195***	0.033	-0.086**	0.230***	0.596***	0.215***	0.176***	1.000						
(9) IndDir	0.146***	0.159***	-0.047	0.040	0.067*	0.134***	0.597***	0.125***	1.000					
(10) FemDir	0.265***	0.123***	-0.010	0.000	0.076*	0.593***	0.108***	0.245***	0.186***	1.000				
(11) ROA	-0.033	0.085**	0.068*	0.045	0.047	0.018	0.056	0.091**	-0.028	-0.059	1.000			
(12) DbtLvl	0.073*	0.040	0.091**	-0.083**	-0.059	-0.048	-0.050	-0.038	0.084**	0.067*	-0.041	1.000		
(13) Log(FirmAge)	0.162***	0.183***	-0.036	0.005	0.150***	0.085**	0.025	0.255***	0.082**	0.157***	-0.067*	-0.009	1.000	
(14) Log(TotalAss)	0.295***	0.132***	-0.205***	0.139***	0.330***	0.251***	0.127***	0.408***	0.162***	0.296***	-0.265***	0.057	0.346***	1.000

Table 4 shows the point biserial correlation coefficients between our variables for the time window (-1,+2), and their significance. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

4.5 Correlations and Multicollinearity

Before we conduct any empirical analysis of our variables, we want to look at the correlation coefficients between both our dependent and independent variables to understand the relationship between them better. Since we have both continuous and binary (dichotomous) variables in our models, we rely on the point-biserial correlation coefficient, which is mathematically equivalent to the Pearson correlation coefficient and its interpretation. The results are shown in Table 4 above and are based on our main time window (-1,+2). Most of the correlations are statistically significant on a 5% level. Most importantly, there is a significant positive correlation between CEO turnover, chairman turnover, auditor turnover, and the main explanatory variable *Scandal* of 0.253, 0.159, and 0.125, respectively. While this does not explicitly tell us whether we will find any significant effect of scandals on our dependent variables, it gives us an indication of the coefficient signs, which should be positive. This is in line with both economic theory and our expectations. We find the largest correlation coefficient between the dummy *Scandal* and the interaction term *BSize * Scandal,* at 0.759. While this correlation is expected to be high, it tells us that we might have some issues with multicollinearity in our model.

Multicollinearity is when the explanatory variables are highly correlated with each other and could lead to high standard errors of coefficients, leave our model highly sensitive to specification changes and lead to the wrong conclusions being drawn from the hypothesis tests. The threshold for when multicollinearity could severely distort our model estimation is $\boldsymbol{\rho} \geq 0.7$ (Dormann et al., 2013). Since we have correlation coefficients above this threshold, we therefore run further tests for multicollinearity by checking the variance inflation factors (VIFs) of our variables. We do this for all six of our time windows, and the results are shown in Table 5. The VIFs tell us how much multicollinearity inflates the variance of our coefficient estimates, and as a rule of thumb, VIFs below 10 are acceptable (Hair, 2009). The highest VIF we have in our sample is 5.19, which leads us to believe that we should have no problems with multicollinearity in our sample.

Table 5: Testing for Multicollinearity

	Variance Inflation Factors (VIFs)					
	(1)	(2)	(3)	(4)	(5)	(6)
Variables:	(-1,+2)	(-1,+1)	(-3,+3)	(0,+1)	(0,+2)	(-1,0)
CEOTurn	1.29	1.26	1.19	1.22	1.30	1.15
ChairTurn	1.21	1.27	1.20	1.22	1.17	1.18
AuditTurn	1.18	1.18	1.11	1.20	1.24	1.13
Scandal	4.06	4.34	4.07	4.23	3.91	4.51
BSize * Scandal	4.79	5.01	4.78	4.91	4.69	5.19
FemDir * Scandal	3.29	3.19	3.10	3.16	3.31	3.21
IndDir * Scandal	3.41	3.37	3.38	3.41	3.45	3.48
BSize	2.37	2.34	2.29	2.35	2.38	2.41
FemDir	2.33	2.28	2.22	2.27	2.36	2.27
IndDir	2.58	2.44	2.29	2.46	2.67	2.36
ROA	1.18	1.18	1.17	1.18	1.17	1.19
DbtLvl	1.06	1.08	1.05	1.07	1.08	1.11
Log(FirmAge)	1.21	1.20	1.18	1.18	1.18	1.21
Log(TotalAss)	1.70	1.64	1.65	1.60	1.70	1.36

Table 5 show the results from our tests for multicollinearity in all six of our time windows. Each column represents a different time window and shows the variance inflation factors (VIFs) for each variable in that time window.

4.6 Time Windows and Regression Model

After conducting some univariate analysis of our data sample, we want to test whether corporate scandals increase the probability of our three dependent variables – CEO, chairman, and auditor turnover – while controlling for other financial and governance variables that we believe might have an impact. Since we want to evaluate the effect on multiple dependent variables, we have to perform several regressions with alternating dependent variables. As these dependent variables are dichotomous (binary), we employ a three-stage logistic regression model.

In the first stage, we only include the financial variables and the main explanatory variable. From this model, we try to establish a relationship between our three dependent variables and the explanatory variable. This is similar to both the study of Agrawal et al. (1999), who looked at top management and governance changes in relation to fraud allegations, and Agrawal and Cooper (2016), who studied top management, CFO, and auditor turnover of earnings-restating US firms. In addition

to capturing the effect of corporate scandals on CEO, chairman, and auditor turnover, we also try to capture any trends in the timing of these board reactions. Therefore, we run our regressions in multiple time windows of varying lengths. Using year zero as the year of the scandal, we have selected the time windows:

$$(-1\,,+2),(-1\,,+1),(-3\,,+3),(0\,,+1),(0\,,+2),(-1\,,0)$$

Formally, the regression model including only the main explanatory variable *scandal* and the financial variables takes the form of:

$$Turnover = \alpha + \beta_1 Scandal + \beta_2 ROA + \beta_3 Log(FirmAge) + \beta_4 Log(TotalAss) + \epsilon$$

$$where\ Turnover = \begin{cases} CEOTurn \\ or \\ ChairTurn \\ or \\ AuditTurn \end{cases}$$

In our second regression specification, we include the governance variables in addition to our main explanatory variable and the financial variables. We do this for two different purposes. First of all, we want to test whether the effect of corporate scandals on our board reactions is persistent when controlling for the governance variables. Furthermore, we would like to see whether these governance characteristics significantly affect our board reactions independent of scandals. This regression model can be formally written as:

$$Turnover = \alpha + \beta_1 Scandal + \beta_2 Bsize + \beta_3 FemDir + \beta_4 IndDir + \beta_5 ROA + \beta_6 Log(FirmAge) + \beta_7 Log(TotalAss) + \epsilon$$

$$where\ \ Turnover = \begin{cases} CEOTurn \\ or \\ ChairTurn \\ or \\ AuditTurn \end{cases}$$

Our third and final logistic regression model includes interaction terms and the variables from the abovementioned regression specifications. Similar to our previous models, we still check whether corporate scandals have a significant effect on our three board reactions. Moreover, by including interaction terms between our

main explanatory variable and the board characteristics, we hope to gain an improved understanding of how these influence our board reactions conditional of corporate scandals. To our knowledge, this has not been previously studied in either the US or Norway. The model including interaction terms can be formally written as:

$$Turnover = \alpha + \beta_1 Scandal + \beta_2 InteractionTerm + \beta_3 BSize + \beta_4 FemDir + \beta_5 IndDir + \beta_6 ROA + \beta_7 Log(FirmAge) + \beta_8 Log(TotalAss) + \epsilon$$

$$where\ Turnover = \begin{cases} CEOTurn \\ or \\ ChairTurn \\ or \\ AuditTurn \end{cases}$$

$$and\ InteractionTerm = \begin{cases} BSize * Scandal \\ or \\ FemDir * Scandal \\ or \\ IndDir * Scandal \end{cases}$$

5.0 Results and Discussion

5.1 Financial Model

We start by estimating a regression model using only scandal and the financial variables as regressors. In other words, we leave out the governance variables and the interaction terms. The results from this regression are shown in Table 6 and contain coefficient estimates, converted into marginal effect for CEO, chairman, and auditor turnover, along with the financial variables for our main time window (-1,+2). This shows us the probability increase/decrease if the dummy variables go from 0 to 1. The main coefficient of interest is *Scandal*, which indicates whether there has been a scandal over the time window. From the results in Table 6 below, we can see that corporate scandals increase the probability of CEO turnover by 25.4% over the four-year period, which is statistically significant on a 1% level. Further, a corporate scandal increases the probability of chair turnover by 11.7% and auditor turnover by 17.8%, which are also both statistically significant. While we expected to find a positive relationship between corporate scandals and the board reactions, we did not expect to find such a significant effect.

Table 6: Regression using Financial Variables of Year: -1 to +2

	(1) CEOTurn	(2) ChairTurn	(3) AuditTurn
Scandal	0.254***	0.117***	0.178***
	(0.000)	(0.004)	(0.000)
ROA	0.011	0.043***	0.001
	(0.497)	(0.005)	(0.952)
DbtLvl	0.002	0.001	0.002**
	(0.139)	(0.315)	(0.038)
Log(FirmAge)	0.049**	0.075***	0.027
	(0.033)	(0.000)	(0.193)
Log(TotalAss)	0.046***	0.019**	-0.046***
	(0.000)	(0.018)	(0.000)
N	597	597	597
pseudo R^2	0.112	0.057	0.065
P-value	0.000	0.000	0.000

Table 6 shows the results from our logistic regression of *scandal* and the financial variables on *CEO* (1)*, chairman* (2) and *auditor* (3) turnover, for the time window (-1,+2). The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

In Table 7, we run the same regressions but using different time windows and display the marginal effect of our *Scandal* variable. From the results, we can see that both the sign of the coefficients and their significance stay relatively equal across time windows for all three of our dependent variables. As expected, the positive effect of *Scandal* on the three turnovers varies. This is mainly because the time windows vary in length, and that we measure CEO, chairman, and auditor turnover over the entire time window. By comparing time windows of similar length, we can better understand the timing of our board reactions in relation to the scandal. Looking at the scandal coefficients from the time windows (-1,0) and (0,+1), we see that scandals have a more significant positive effect on CEO turnover in the year before the scandal than the year after. Inversely, chairman turnover and auditor turnover seem to be more probable in the year after corporate scandals. This indicates that the board of directors is proactive and often removes the incumbent CEO before the scandal is made public. It also indicates that the board of directors

are rather effective monitors of management in scandals and are quick to act when they suspect that the CEO is involved in corporate misconduct. Another theory, presented by Gangloff et al. (2016), argues that many of the CEOs removed in times of crisis are simply victims of "ritual scapegoating," a symbolic action to alleviate the external pressure from the firms' shareholders. This could be an alternative explanation to why CEO turnover tends to precede the revelation of a scandal, namely that the board of directors is quick to blame the CEO when they uncover the scandal. We find the opposite for chairman and auditor turnover, namely that the probability increase is higher in the year after than the year before. We believe there could be multiple explanations for this relationship. Firstly, it could indicate that the board of directors is poor at judging the severity of the scandal before it is publicly known and whom to hold accountable. In addition, it could simply reflect that removing the chairman or the auditor is a slower and more intricate process compared to CEO turnover. The complete results from these alternative time-window regressions can be seen in Appendix A, where we show the marginal effects of all the variables in the model.

Table 7: Impact of Scandals across Time Windows

	Dependent Variables		
	(1)	(2)	(3)
Time Windows	CEOTurn	ChairTurn	AuditTurn
(-1, +2)	0.254***	0.117***	0.178***
	(0.000)	(0.004)	(0.000)
(-1, +1)	0.206***	0.249***	0.241***
	(0.000)	(0.000)	(0.000)
(-3, +3)	0.090***	0.069**	0.126***
	(0.007)	(0.029)	(0.000)
(0, +1)	0.120**	0.226***	0.210***
	(0.032)	(0.000)	(0.000)
(0, +2)	0.194***	0.076	0.160***
	(0.000)	(0.114)	(0.001)
(-1, 0)	0.169***	0.181***	0.176***
	(0.003)	(0.002)	(0.000)

Table 7 shows the marginal effects of a change in our main explanatory variable *scandal* on our three dependent variables *CEO* (1), *chairman* (2), and *auditor* (3) turnover, across all six of our time windows. The p-values are shown in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

5.2 Financial and Governance Model

In the next step, we include the governance variables in our first model and run logistic regressions on all three dependent variables. By doing so, we can measure the effect board size, independent directors, and female directors have on CEO, chairman, and auditor turnover. We can also see whether these have a larger impact than the financial variables. Table 8 shows the marginal effects of a change in the independent variables on our three dependent variables for the time window (-1,+2). From our results, we can see that the effect of our main explanatory variable *Scandal* remains positive and significant across all three dependent variables. Of the governance variables, we see that an above-median fraction of female directors on the board leads to an increase in CEO turnover of 23.1% over the time window. This effect is statistically significant on a 1% level. In addition, the probability of chairman turnover increases by 7.52% when there is an above-median female presence on the board, but this is only significant on a 10% level. This positive effect, especially on CEO turnover, tells us that boards with more female presence or gender diversity are less hesitant to remove an incumbent CEO in general. From existing literature, gender-diverse boards tend to allocate more effort into monitoring management, which also seems to be the case with our sample (Adams & Ferreira, 2009).

From our results, we also find a negative relationship between board size and chairman turnover. Having an above-median board size lowers the probability of chairman turnover by 14% over the four-year period and is statistically significant on a 1% level. This tells us that larger boards are more hesitant to elect a new chairman. Previous studies have shown the negative relationship between CEO turnover and board size, and it seems that this relationship also can be applied to chairman turnover (Faleye, 2003). Our findings also support the hypothesis of Jain and Zaman (2020), who argue that the speed of decision-making is slower in larger boards. A large board is also less likely to be unified in their opinions, and therefore it might be more difficult to come to agreements on important decisions, such as appointing a new chairman of the board.

Table 8: Regression of Financial and Governance Variables of Year: -1 to +2

	(1) CEOTurn	(2) ChairTurn	(3) AuditTurn
Scandal	0.282***	0.143***	0.192***
	(0.000)	(0.001)	(0.000)
BSize	-0.011	-0.140***	-0.051
	(0.843)	(0.005)	(0.304)
FemDir	0.231***	0.075*	0.069
	(0.000)	(0.087)	(0.123)
IndDir	0.070	0.138***	-0.041
	(0.130)	(0.001)	(0.331)
ROA	0.010	0.056***	0.003
	(0.567)	(0.001)	(0.826)
DbtLvl	0.001	0.001	0.003**
	(0.193)	(0.486)	(0.034)
Log(FirmAge)	0.045*	0.082***	0.031
	(0.059)	(0.000)	(0.163)
Log(TotalAss)	0.034***	0.022**	-0.045***
	(0.001)	(0.015)	(0.000)
N	597	597	597
pseudo R^2	0.147	0.085	0.070
P-value	0.000	0.000	0.000

Table 8 shows the results from our logistic regression of *scandal,* the financial, and governance variables on *CEO* (1)*, chairman* (2) and *auditor* (3) turnover, for the time window (-1,+2). The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Along with board size, independent directors also seem to have an impact on chairman turnover. If there is an above-median fraction of independent directors on the board, the probability of chairman turnover increases by 13.8% (significant on a 1% level). This shows us that above-median independent boards are more demanding regarding their chairman, which is consistent with previous literature,

arguing that independent directors often have more expertise and experience than inside directors (Ibrahim & Angelidis, 1995). In addition, since independent directors have no other relationship to the firm other than being board members, it is reasonable to assume that they would find it easier to remove the chairman.

We also find some significant effects of our financial variables on CEO, chairman, and auditor turnover. Most interestingly, the firm's total assets, which we use as a proxy for firm size, have a significant effect on all three in the time window (-1,+2). An increase in total assets of 1% leads to an increase in CEO and chairman turnover probability of 3.4% and 2.2%, respectively, and reduces the probability of auditor turnover by 4.5%. This indicates that larger firms have shorter CEO and chairman tenure but longer auditor tenure. These effects might result from larger firms having well-established governance systems and routines that demand more from both the CEO and the chairman. The lower probability of auditor turnover for large firms can be explained by the auditor's desire to retain "big" clients as they contribute to a large part of their income. Appendix B shows the complete results from running regressions of our financial and governance model using the alternative time windows.

5.3 Financial, governance, and interaction terms model

After including governance variables in our model, we further want to analyze the effect of these governance variables, conditional of scandals. We therefore introduce interaction terms between the scandal-dummy and the governance-dummies. From this augmented model, shown in Table 9, we still find a significant effect of a scandal on CEO, chairman, and auditor turnover in the period (-1,+2). Interestingly, among our interaction terms, we find that having a board size above our sample-median has no significant effect on any turnover in scandals. We also find that having an above-median fraction of female directors on the board in a scandal decreases the probability of CEO (chairman) turnover by 24.0% (29.4%) over the four-year sample period. Further, having an above-median fraction of independent board members decreases (increases) the probability of chairman (auditor) turnover by 25.7% (35.8%) over the same period. These results are not only interesting but also somewhat surprising. Previously, we have found a positive relationship between both governance variables and scandals on turnover.

Therefore, we would expect the combination of these to have a positive effect, but this is evidently not the case.

Table 9: Regressions with Financial, Governance, and Interactions Terms in Year: -1 to +2

	CEO Turnover			Chairman Turnover			Auditor Turnover		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Scandal	0.344***	0.400***	0.317***	0.115*	0.275***	0.261***	0.269***	0.156***	0.033
	(0.000)	(0.000)	(0.000)	(0.094)	(0.000)	(0.000)	(0.000)	(0.007)	(0.568)
BSize*Scandal	-0.099			0.045			-0.129		
	(0.311)			(0.612)			(0.145)		
FemDir*Scandal		-0.240**			-0.294***			0.080	
		(0.010)			(0.001)			(0.343)	
IndDir*Scandal			-0.071			-0.257***			0.358***
			(0.440)			(0.002)			(0.000)
BSize	0.035	-0.029	-0.012	-0.158***	-0.170***	-0.150***	0.009	-0.046	-0.046
	(0.618)	(0.597)	(0.821)	(0.009)	(0.001)	(0.003)	(0.888)	(0.366)	(0.363)
IndDir	0.068	0.072	0.107	0.139***	0.139***	0.263***	-0.043	-0.042	-0.241***
	(0.140)	(0.117)	(0.109)	(0.001)	(0.001)	(0.000)	(0.316)	(0.317)	(0.000)
FemDir	0.224***	0.360***	0.232***	0.078*	0.217***	0.077*	0.062	0.025	0.063
	(0.000)	(0.000)	(0.000)	(0.078)	(0.000)	(0.084)	(0.170)	(0.697)	(0.163)
ROA	0.010	0.013	0.011	0.056***	0.062***	0.060***	0.003	0.002	-0.001
	(0.567)	(0.455)	(0.533)	(0.001)	(0.000)	(0.000)	(0.839)	(0.871)	(0.923)
DbtLvl	0.001	0.001	0.001	0.001	0.000	0.000	0.002**	0.002**	0.003**
	(0.201)	(0.212)	(0.208)	(0.486)	(0.612)	(0.637)	(0.041)	(0.031)	(0.015)
Log(FirmAge)	0.045*	0.045*	0.044*	0.081***	0.082***	0.079***	0.032	0.030	0.034
	(0.056)	(0.058)	(0.064)	(0.000)	(0.000)	(0.000)	(0.145)	(0.164)	(0.119)
Log(TotalAss)	0.036***	0.035***	0.034***	0.021**	0.024***	0.022**	-0.044***	-0.045***	-0.045***
	(0.001)	(0.001)	(0.001)	(0.020)	(0.007)	(0.017)	(0.000)	(0.000)	(0.000)
N	597	597	597	597	597	597	597	597	597
pseudo R^2	0.148	0.155	0.148	0.086	0.101	0.098	0.073	0.071	0.093
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 9 show the results from our expanded logistic regression model including financial variables, governance variables, and interaction terms between *scandal* and the governance variables in the time window (-1,+2). The first three columns (1-3) use CEO turnover as the dependent variable, and alternating interaction terms. The next three columns (4-6) use chairman turnover as the dependent variable, and the last three (7-9) uses auditor turnover. The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

The negative effect female directors have on CEO, and chairman turnover in our sample shows us that there is a fundamental difference between how female and male directors act in corporate scandals. A study by Bauer and Chytilová (2013) found that women show a higher presence of patience and risk aversion than men, which could explain why boards with more female presence are more hesitant to remove an incumbent CEO and chairman in scandals. Female-dominated boards have also been shown to reduce the performance sensitivity of CEO turnover (Kim et al., 2020), which further strengthens our results.

The negative effect above-median board independence has on chairman turnover in corporate scandals can also be reasonably explained. A study by Coles and Hesterly (2000) shows that there often is a positive relationship between board independence and the chairman's independence. Therefore, it could be argued that the probability of one individual holding both the position of CEO and chairman to be lower for firms with high board independence. In the presence of a corporate scandal, the accountability of the chairman could be lower if he has no other relationship with the firm other than being the chairman. If we assume that firms with an above-median fraction of board independence have a higher probability of having an independent chairman, our results are not that surprising. The relationship between board independence in scandals and auditor turnover could also be explained with previous governance literature and theory. The relationship between auditor and management has been at the heart of some of the largest corporate scandals in recent times, namely Enron in 2001 and Wirecard in 2020. Governance theory tells us that this relationship can be distorted and that there is a possibility of collusion between the management and the auditor (Baiman et al., 1991). Having a large fraction of independent board members on the board can help reduce this moral hazard problem by reducing the probability of collusion. Therefore, a more independent board could have a lower threshold to replace the firm's auditor in scandals. The results from the same regressions, but with our alternative time windows, can be seen in Appendix C.

5.4 The impact of scandals on CEO, chairman, and auditor turnover

We find a positive and statistically significant impact of corporate scandals on CEO, chairman, and auditor turnover in our main time window (-1,+2). These

results also stay consistent across all three of our model specifications and across the time windows we examine. From these results, we can confidently say that the board of directors reacts decidedly in times of crisis and that changes among the firm's key stakeholders are frequent reactions. In contrast to the results found by Agrawal et al. (1999), our results imply that the cost associated with removing and employing a new CEO, chairman, and auditor is outweighed by the potential benefits it has for the firm's long-term reputation. We believe that there can be several explanations for these contrary findings. Agrawal et al. (1999) use a sample of US firms between 1981-1992, while we use a sample of Norwegian firms involved in scandals between 2001 and 2016. Therefore, our significant findings could be a result of the recent, increasing focus on the governance of firms and that the present board of directors has more established and well-functioning governance mechanisms and systems. This is further supported by the study of Agrawal and Cooper (2016), who establish a positive relationship between earnings restatements and top management turnover. However, they were not able to determine a connection between these restatements and auditor turnover. From our analysis, we have found evidence of the contrary, namely that the board of firms involved in corporate scandals has a higher probability of changing their external auditor. We believe that this could result from our different samples, as we include Norwegian unlisted firms in our empirical analysis. As we have previously argued, the auditor could have larger incentives to retain larger firms as their clients. Moreover, larger firms will likely have a higher threshold and greater costs associated with replacing an external auditor.

6.0 Conclusion

This paper seeks to answer how the board of directors react when faced with public corporate scandals in Norwegian listed and unlisted firms. We consider three main reactions, replacing the CEO, the chairman, and the firm's auditor. We capture these reactions for 75 firms involved in corporate scandals between 2001-2016 and compare them to 75 control firms who were not involved in any corporate scandals over the same period. We also capture the effect of specific governance and financial variables on these three reactions, both independent and conditional of corporate scandals.

Our logistic regression models find that corporate scandals positively and significantly affect all three board reactions. The probability of CEO, chairman, and auditor turnover increases by 25.4%, 11.7%, and 17.8%, respectively, over a four-year period around the time of the scandal (-1,+2). This indicates that the board of directors often reacts to corporate scandals by removing key stakeholders of the firm. Using alternative time windows reveals that the board of directors often dismiss CEOs before the scandal is publicly exposed rather than after and that both chairman and auditor turnover are ex-post reactions to scandals.

Further, we find significant relationships between our three governance variables: *board size, female directors* and *independent directors,* and our three reactions, independent of corporate scandals. Having a larger than median board negatively impacts the probability of chairman turnover, while having an above-median fraction of independent directors increases this probability. We also find evidence that a board consisting of an above-median fraction of female directors increases the probability of turnover for the firm's CEO. Of our financial variables, the size of the firms has the most impact on the three reactions, and we find evidence that larger firms have higher CEO and chairman turnover but lower auditor turnover.

When we expand our model to capture the effect of these board characteristics conditional on corporate scandals, we make an interesting discovery. When a firm faces corporate scandals, having an above-median fraction of female directors lowers the probability of both CEO and chairman turnover, implying that female

directors are more reluctant to remove the key individuals of the firm in crises. In addition, firms with above-median board independence tend to less frequently appoint a new chairman in scandals but change auditors more often. In general, we find evidence that certain board characteristics influence the board of director's reaction to a corporate scandal.

There might exist weaknesses to our research. Firstly, we do not differentiate between scandals where the CEO, chairman, or auditor have committed criminal offenses and scandals where no such offenses have been made. It would not be unreasonable to assume that firms where the CEO has been charged with fraud would have a higher probability of turnover. Secondly, as we have relied on newspaper articles to identify corporate scandals, we are dependent on the accuracy of these, as our research assumes that the first mention of a corporate scandal is consistent with the actual year the scandal occurred.

We would also like to suggest some areas for further research. Examining whether there are some fundamental differences between how the board of directors reacts in listed and unlisted firms would be an engaging topic that could yield interesting results. In addition, investigating the firm performance effect of the board reactions would be an interesting topic for study, as it could determine whether the reactions taken by the board are effective ways to deal with corporate scandals.

7.0 References

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8.0 Appendices

8.1 Appendix A: Financial Models

Table 6.1: Regression using Financial Variables of Year: -1 to +1

	(1) CEOTurn	(2) ChairTurn	(3) AuditTurn
Scandal	0.206***	0.249***	0.241***
	(0.000)	(0.000)	(0.000)
ROA	0.016	0.026	-0.018
	(0.354)	(0.142)	(0.242)
DbtLvl	0.002*	0.001	0.002**
	(0.087)	(0.184)	(0.018)
Log(FirmAge)	0.058**	0.042*	0.037*
	(0.017)	(0.089)	(0.084)
Log(TotalAss)	0.020**	0.017*	-0.036***
	(0.040)	(0.078)	(0.000)
N	448	448	448
pseudo R^2	0.069	0.066	0.087
P-value	0.000	0.000	0.000

Table 6.1 shows the results from our logistic regression of *scandal* and the financial variables on *CEO* (1)*, chairman* (2) and *auditor* (3) turnover, for the time window (-1,+1). The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6.2: Regression using Financial Variables of Year: -3 to +3

	(1) CEOTurn	(2) ChairTurn	(3) AuditTurn
Scandal	0.090***	0.070**	0.126***
	(0.007)	(0.029)	(0.000)
ROA	0.009	0.022*	0.003
	(0.448)	(0.069)	(0.763)
DbtLvl	0.000	0.002*	0.000
	(0.175)	(0.072)	(0.102)
Log(FirmAge)	0.054***	0.049***	-0.002
	(0.002)	(0.003)	(0.890)
Log(TotalAss)	0.031***	0.025***	-0.030***
	(0.000)	(0.000)	(0.000)
N	978	978	978
pseudo R^2	0.047	0.046	0.032
P-value	0.000	0.000	0.000

Table 6.2 shows the results from our logistic regression of *scandal* and the financial variables on *CEO* (1)*, chairman* (2) and *auditor* (3) turnover, for the time window (-3,+3). The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6.3: Regression using Financial Variables of Year: -1 to 0

	(1) CEOTurn	(2) ChairTurn	(3) AuditTurn
Scandal	0.169***	0.181***	0.176***
	(0.003)	(0.002)	(0.000)
ROA	-0.012	-0.033	-0.030*
	(0.564)	(0.131)	(0.066)
DbtLvl	0.002*	0.001	0.001**
	(0.082)	(0.129)	(0.023)
Log(FirmAge)	0.048*	0.028	-0.005
	(0.069)	(0.297)	(0.785)
Log(TotalAss)	0.015	0.008	-0.019**
	(0.189)	(0.473)	(0.015)
N	299	299	299
pseudo R^2	0.065	0.051	0.087
P-value	0.000	0.016	0.000

Table 6.3 shows the results from our logistic regression of *scandal* and the financial variables on *CEO* (1)*, chairman* (2) and *auditor* (3) turnover, for the time window (-1, 0). The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6.4: Regression using Financial Variables of Year: 0 to +1

	(1) CEOTurn	(2) ChairTurn	(3) AuditTurn
Scandal	0.120**	0.226***	0.210***
	(0.032)	(0.000)	(0.000)
ROA	0.011	0.030	-0.018
	(0.578)	(0.157)	(0.299)
DbtLvl	0.002	0.000	-0.000
	(0.141)	(0.233)	(0.694)
Log(FirmAge)	0.038	0.026	0.006
	(0.186)	(0.411)	(0.792)
Log(TotalAss)	0.023**	0.011	-0.029***
	(0.036)	(0.331)	(0.002)
N	299	299	299
pseudo R^2	0.055	0.051	0.078
P-value	0.001	0.000	0.000

Table 6.4 shows the results from our logistic regression of *scandal* and the financial variables on *CEO* (1)*, chairman* (2) and *auditor* (3) turnover, for the time window (0, +1). The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 6.5: Regression using Financial Variables of Year: 0 to +2

	(1) CEOTurn	(2) ChairTurn	(3) AuditTurn
Scandal	0.194***	0.076	0.160***
	(0.000)	(0.114)	(0.001)
ROA	0.006	0.045**	-0.007
	(0.730)	(0.011)	(0.641)
DbtLvl	0.002	0.000	0.002
	(0.209)	(0.330)	(0.102)
Log(FirmAge)	0.022	0.047*	-0.002
	(0.418)	(0.069)	(0.947)
Log(TotalAss)	0.049***	0.018*	-0.042***
	(0.000)	(0.052)	(0.000)
N	448	448	448
pseudo R^2	0.098	0.033	0.066
P-value	0.000	0.001	0.000

Table 6.5 shows the results from our logistic regression of *scandal* and the financial variables on *CEO* (1)*, chairman* (2) and *auditor* (3) turnover, for the time window (0, +2). The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

8.2 Appendix B: Financial & Governance Models

Table 8.1: Regression of Financial and Governance Variables of Year: -1 to +1

	(1) CEOTurn	(2) ChairTurn	(3) AuditTurn
Scandal	0.214***	0.277***	0.267***
	(0.000)	(0.000)	(0.000)
BSize	0.063	-0.134**	-0.113**
	(0.288)	(0.028)	(0.033)
FemDir	0.204***	0.076	0.076
	(0.000)	(0.159)	(0.101)
IndDir	0.064	0.145***	-0.004
	(0.206)	(0.005)	(0.928)
ROA	0.010	0.036*	-0.014
	(0.580)	(0.066)	(0.361)
DbtLvl	0.002	0.001	0.002**
	(0.130)	(0.270)	(0.016)
Log(FirmAge)	0.050**	0.048*	0.045**
	(0.044)	(0.062)	(0.043)
Log(TotalAss)	0.005	0.020*	-0.033***
	(0.658)	(0.070)	(0.000)
N	448	448	448
pseudo R^2	0.105	0.089	0.099
P-value	0.000	0.000	0.000

Table 8.1 shows the results from our logistic regression of *scandal,* the financial, and governance variables on *CEO* (1)*, chairman* (2) and *auditor* (3) turnover, for the time window (-1,+1). The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8.2: Regression of Financial and Governance Variables of Year: -3 to +3

	(1) CEOTurn	(2) ChairTurn	(3) AuditTurn
Scandal	0.113***	0.085***	0.132***
	(0.001)	(0.010)	(0.000)
BSize	-0.086**	-0.130***	-0.018
	(0.035)	(0.001)	(0.639)
FemDir	0.139***	-0.064*	0.068**
	(0.000)	(0.062)	(0.045)
IndDir	0.010***	0.114***	0.022
	(0.004)	(0.000)	(0.495)
ROA	0.016	0.032**	0.004
	(0.232)	(0.011)	(0.698)
DbtLvl	0.000	0.002*	0.000
	(0.281)	(0.083)	(0.123)
Log(FirmAge)	0.055***	0.056***	-0.003
	(0.002)	(0.001)	(0.839)
Log(TotalAss)	0.027***	0.035***	-0.033***
	(0.000)	(0.000)	(0.000)
N	978	978	978
pseudo R^2	0.068	0.066	0.035
P-value	0.000	0.000	0.000

Table 8.2 shows the results from our logistic regression of *scandal,* the financial, and governance variables on *CEO* (1)*, chairman* (2) and *auditor* (3) turnover, for the time window (-3,+3). The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8.3: Regression of Financial and Governance Variables of Year: -1 to 0

	(1) CEOTurn	(2) ChairTurn	(3) AuditTurn
Scandal	0.156***	0.227***	0.191***
	(0.007)	(0.000)	(0.000)
BSize	0.115*	-0.200***	-0.085
	(0.100)	(0.004)	(0.101)
FemDir	0.112*	-0.006	0.034
	(0.053)	(0.926)	(0.427)
IndDir	-0.024	0.034	0.027
	(0.675)	(0.555)	(0.531)
ROA	-0.019	-0.022	-0.025
	(0.371)	(0.315)	(0.124)
DbtLvl	0.002	0.002*	0.001**
	(0.108)	(0.082)	(0.020)
Log(FirmAge)	0.038	0.041	-0.000
	(0.148)	(0.129)	(0.988)
Log(TotalAss)	0.003	0.020*	-0.015*
	(0.815)	(0.099)	(0.086)
N	299	299	299
pseudo R^2	0.083	0.072	0.100
P-value	0.000	0.000	0.000

Table 8.3 shows the results from our logistic regression of *scandal,* the financial, and governance variables on *CEO* (1)*, chairman* (2) and *auditor* (3) turnover, for the time window (-1,0). The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8.4: Regression of Financial and Governance Variables of Year: 0 to +1

	(1) CEOTurn	(2) ChairTurn	(3) AuditTurn
Scandal	0.143**	0.243***	0.233***
	(0.013)	(0.000)	(0.000)
BSize	-0.015	-0.078	-0.108*
	(0.829)	(0.283)	(0.059)
FemDir	0.234***	0.104	0.028
	(0.000)	(0.108)	(0.594)
IndDir	0.067	0.100	-0.053
	(0.232)	(0.102)	(0.280)
ROA	0.005	0.034	-0.013
	(0.802)	(0.132)	(0.430)
DbtLvl	0.002	0.001	-0.000
	(0.166)	(0.320)	(0.717)
Log(FirmAge)	0.033	0.028	0.017
	(0.266)	(0.386)	(0.525)
Log(TotalAss)	0.010	0.009	-0.023**
	(0.428)	(0.478)	(0.026)
N	299	299	299
pseudo R^2	0.107	0.066	0.094
P-value	0.000	0.000	0.000

Table 8.4 shows the results from our logistic regression of *scandal,* the financial, and governance variables on *CEO* (1)*, chairman* (2) and *auditor* (3) turnover, for the time window (0,+1). The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 8.5: Regression of Financial and Governance Variables of Year: 0 to +2

	(1) CEOTurn	(2) ChairTurn	(3) AuditTurn
Scandal	0.233***	0.095*	0.175***
	(0.000)	(0.056)	(0.000)
BSize	-0.064	-0.090	-0.050
	(0.294)	(0.116)	(0.368)
FemDir	0.249***	0.100*	0.029
	(0.000)	(0.054)	(0.565)
IndDir	0.094*	0.100**	-0.117**
	(0.070)	(0.039)	(0.013)
ROA	0.006	0.052***	-0.005
	(0.762)	(0.006)	(0.781)
DbtLvl	0.002	0.000	0.002*
	(0.259)	(0.457)	(0.084)
Log(FirmAge)	0.019	0.051*	0.002
	(0.493)	(0.056)	(0.927)
Log(TotalAss)	0.039***	0.016	-0.038***
	(0.001)	(0.117)	(0.000)
N	448	448	448
pseudo R^2	0.142	0.050	0.078
P-value	0.000	0.000	0.000

Table 8.5 shows the results from our logistic regression of *scandal,* the financial, and governance variables on *CEO* (1)*, chairman* (2) and *auditor* (3) turnover, for the time window (0,+2). The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p <$ 0.1, ** $p < 0.05$, *** $p < 0.01$

8.3 Appendix C: Financial, Governance & Interaction Models

Table 9.1: Regressions With Financial. Governance and Interactions Terms in Year: -1 to +1

	CEO Turnover			Chairman Turnover			Auditor Turnover		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Scandal	0.261***	0.252***	0.318***	0.241***	0.388***	0.415***	0.405***	0.287***	0.215***
	(0.003)	(0.001)	(0.000)	(0.006)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
BSize*Scandal	-0.071			0.058			-0.240**		
	(0.514)			(0.602)			(0.012)		
FemDir*Scandal		-0.072			-0.227**			-0.042	
		(0.475)			(0.029)			(0.640)	
IndDir*Scandal			-0.204**			-0.273***			0.112
			(0.042)			(0.008)			(0.218)
BSize	0.097	0.057	0.056	-0.159**	-0.158**	-0.148**	0.018	-0.116**	-0.109**
	(0.220)	(0.342)	(0.347)	(0.040)	(0.013)	(0.018)	(0.813)	(0.029)	(0.038)
IndDir	0.062	0.065	0.177**	0.147***	0.153***	0.287***	-0.007	-0.002	-0.074
	(0.217)	(0.194)	(0.019)	(0.004)	(0.003)	(0.000)	(0.873)	(0.962)	(0.309)
FemDir	0.199***	0.244***	0.211***	0.080	0.192**	0.084	0.062	0.102	0.071
	(0.000)	(0.001)	(0.000)	(0.141)	(0.012)	(0.122)	(0.192)	(0.157)	(0.124)
ROA	0.001	0.011	0.013	0.036*	0.040**	0.041**	-0.016	-0.014	-0.015
	(0.591)	(0.546)	(0.467)	(0.064)	(0.046)	(0.041)	(0.317)	(0.375)	(0.314)
DbtLvl	0.002	0.002	0.001	0.001	0.001	0.001	0.002**	0.002**	0.002**
	(0.135)	(0.135)	(0.168)	(0.264)	(0.325)	(0.381)	(0.026)	(0.017)	(0.012)
Log(FirmAge)	0.051**	0.050**	0.049*	0.048*	0.048*	0.046*	0.048**	0.045**	0.045**
	(0.042)	(0.044)	(0.051)	(0.064)	(0.062)	(0.075)	(0.033)	(0.043)	(0.039)
Log(TotalAss)	0.006	0.005	0.005	0.019*	0.021*	0.020*	-0.031***	-0.033***	-0.033***
	(0.588)	(0.639)	(0.658)	(0.087)	(0.053)	(0.067)	(0.001)	(0.001)	(0.000)
N	448	448	448	448	448	448	448	448	448
pseudo R^2	0.105	0.106	0.112	0.090	0.097	0.101	0.112	0.100	0.103
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 9.1 show the results from our expanded logistic regression model including financial variables, governance variables, and interaction terms between *scandal* and the governance variables in the time window (-1,+1).. The first three columns (1-3) uses CEO turnover as the dependent variable, and alternating interaction terms. The next three columns (4-6) uses chairman turnover as the dependent variable, and the last three (7-9) uses auditor turnover. The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 9.2: Regressions With Financial. Governance and Interactions Terms in Year: -3 to +3

	CEO Turnover			Chairman Turnover			Auditor Turnover		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Scandal	0.197***	0.132***	0.108**	0.077	0.140***	0.103**	0.187***	0.139***	-0.021
	(0.001)	(0.005)	(0.028)	(0.165)	(0.002)	(0.022)	(0.001)	(0.002)	(0.645)
BSize*Scandal	-0.131*			0.013			-0.087		
	(0.074)			(0.855)			(0.198)		
FemDir*Scandal		-0.040			-0.116*			-0.013	
		(0.554)			(0.071)			(0.836)	
IndDir*Scandal			0.010			-0.038			0.312***
			(0.882)			(0.553)			(0.000)
BSize	-0.031	-0.089**	-0.085**	-0.135***	-0.139***	-0.132***	0.021	-0.019	-0.003
	(0.545)	(0.031)	(0.037)	(0.004)	(0.000)	(0.001)	(0.667)	(0.624)	(0.929)
IndDir	0.097***	0.101***	0.094*	0.114***	0.117***	0.133***	0.020	0.023	-0.143***
	(0.005)	(0.003)	(0.052)	(0.000)	(0.000)	(0.003)	(0.532)	(0.488)	(0.003)
FemDir	0.134***	0.159***	0.139***	-0.063*	-0.008	-0.063*	0.065*	0.075	0.059*
	(0.000)	(0.001)	(0.000)	(0.065)	(0.867)	(0.066)	(0.057)	(0.116)	(0.087)
ROA	0.016	0.016	0.016	0.032**	0.034***	0.033***	0.005	0.005	0.000
	(0.227)	(0.215)	(0.237)	(0.011)	(0.007)	(0.010)	(0.698)	(0.687)	(0.995)
DbtLvl	0.000	0.000	0.001	0.002*	0.002*	0.002*	0.001	0.000	0.000**
	(0.273)	(0.287)	(0.278)	(0.082)	(0.088)	(0.087)	(0.114)	(0.125)	(0.048)
Log(FirmAge)	0.056***	0.055***	0.055***	0.056***	0.055***	0.055***	-0.003	-0.003	-0.001
	(0.002)	(0.002)	(0.002)	(0.001)	(0.001)	(0.001)	(0.849)	(0.835)	(0.943)
Log(TotalAss)	0.029***	0.028***	0.027***	0.035***	0.036***	0.035***	-0.032***	-0.033***	-0.034***
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
N	978	978	978	978	978	978	978	978	978
pseudo R^2	0.070	0.068	0.068	0.066	0.068	0.066	0.037	0.035	0.053
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 9.2 show the results from our expanded logistic regression model including financial variables, governance variables, and interaction terms between *scandal* and the governance variables in the time window (-3,+3).. The first three columns (1-3) uses CEO turnover as the dependent variable, and alternating interaction terms. The next three columns (4-6) uses chairman turnover as the dependent variable, and the last three (7-9) uses auditor turnover. The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses.
* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

	CEO Turnover			Chairman Turnover			Auditor Turnover		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Scandal	0.192*	0.249***	0.214***	0.160*	0.366***	0.394***	0.249***	0.204***	0.213***
	(0.069)	(0.004)	(0.008)	(0.094)	(0.000)	(0.000)	(0.000)	(0.001)	(0.001)
BSize*Scandal	-0.052			0.116			-0.111		
	(0.684)			(0.363)			(0.246)		
FemDir*Scandal		-0.171			-0.282**			-0.026	
		(0.130)			(0.015)			(0.768)	
IndDir*Scandal			-0.117			-0.323***			-0.046
			(0.301)			(0.005)			(0.612)
BSize	0.139	0.099	0.109	-0.256***	-0.229***	-0.219***	-0.017	-0.087*	-0.086*
	(0.127)	(0.158)	(0.121)	(0.006)	(0.001)	(0.002)	(0.829)	(0.095)	(0.096)
IndDir	-0.025	-0.018	0.045	0.036	0.049	0.222**	0.026	0.028	0.057
	(0.665)	(0.758)	(0.610)	(0.537)	(0.408)	(0.012)	(0.550)	(0.514)	(0.436)
FemDir	0.109*	0.213**	0.116**	0.002	0.157*	0.008	0.028	0.052	0.036
	(0.063)	(0.016)	(0.046)	(0.968)	(0.079)	(0.891)	(0.534)	(0.480)	(0.404)
ROA	-0.019	-0.016	-0.017	-0.022	-0.018	-0.010	-0.025	-0.024	-0.024
	(0.375)	(0.437)	(0.417)	(0.317)	(0.392)	(0.368)	(0.122)	(0.128)	(0.130)
DbtLvl	0.002	0.002	0.002	0.002*	0.001	0.001	0.001**	0.001**	0.001**
	(0.117)	(0.114)	(0.132)	(0.066)	(0.108)	(0.163)	(0.039)	(0.023)	(0.029)
Log(FirmAge)	0.039	0.038	0.037	0.040	0.043	0.038	0.001	-0.000	-0.001
	(0.144)	(0.145)	(0.167)	(0.138)	(0.117)	(0.165)	(0.968)	(0.999)	(0.959)
Log(TotalAss)	0.004	0.004	0.003	0.018	0.021*	0.021*	-0.014	-0.015*	-0.015*
	(0.761)	(0.770)	(0.785)	(0.140)	(0.083)	(0.079)	(0.119)	(0.088)	(0.090)
N	299	299	299	299	299	299	299	299	299
pseudo R^2	0.084	0.089	0.086	0.075	0.088	0.093	0.105	0.101	0.101
P-value	0.000	0.000	0.000	0.001	0.000	0.000	0.001	0.001	0.001

Table 9.3 show the results from our expanded logistic regression model including financial variables, governance variables, and interaction terms between *scandal* and the governance variables in the time window (-1,0).. The first three columns (1-3) uses CEO turnover as the dependent variable, and alternating interaction terms. The next three columns (4-6) uses chairman turnover as the dependent variable, and the last three (7-9) uses auditor turnover. The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 9.4: Regressions With Financial. Governance and Interactions Terms in Year: 0 to +1

	CEO Turnover			Chairman Turnover			Auditor Turnover		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Scandal	0.166*	0.152*	0.161*	0.282***	0.332***	0.403***	0.362***	0.269***	0.185***
	(0.088)	(0.088)	(0.054)	(0.006)	(0.000)	(0.000)	(0.000)	(0.000)	(0.005)
BSize*Scandal	-0.035			-0.062			-0.239**		
	(0.771)			(0.633)			(0.025)		
FemDir*Scandal		-0.014			-0.181			-0.080	
		(0.901)			(0.140)			(0.430)	
IndDir*Scandal			-0.034			-0.305**			0.115
			(0.766)			(0.014)			(0.270)
BSize	0.003	-0.016	-0.015	-0.049	-0.094	-0.084	0.031	-0.113**	-0.107*
	(0.977)	(0.817)	(0.822)	(0.599)	(0.205)	(0.254)	(0.711)	(0.049)	(0.060)
IndDir	0.067	0.067	0.086	0.099	0.105*	0.266***	-0.057	-0.051	-0.128
	(0.234)	(0.230)	(0.311)	(0.104)	(0.089)	(0.004)	(0.262)	(0.304)	(0.131)
FemDir	0.232***	0.243***	0.235***	0.099	0.201**	0.114*	0.014	0.079	0.023
	(0.000)	(0.006)	(0.000)	(0.128)	(0.030)	(0.081)	(0.799)	(0.341)	(0.654)
ROA	0.005	0.005	0.006	0.033	0.036	0.039*	-0.016	-0.013	-0.014
	(0.808)	(0.796)	(0.782)	(0.137)	(0.108)	(0.090)	(0.338)	(0.449)	(0.395)
DbtLvl	0.002	0.002	0.002	0.001	0.001	0.001	-0.000	-0.000	-0.000
	(0.172)	(0.166)	(0.172)	(0.319)	(0.359)	(0.427)	(0.726)	(0.685)	(0.789)
Log(FirmAge)	0.033	0.033	0.033	0.029	0.028	0.029	0.019	0.016	0.017
	(0.262)	(0.267)	(0.261)	(0.379)	(0.397)	(0.374)	(0.480)	(0.534)	(0.505)
Log(TotalAss)	0.010	0.010	0.009	0.010	0.010	0.007	-0.021**	-0.023**	-0.022**
	(0.407)	(0.426)	(0.442)	(0.441)	(0.428)	(0.588)	(0.046)	(0.027)	(0.032)
N	299	299	299	299	299	299	299	299	299
pseudo R^2	0.107	0.107	0.107	0.067	0.072	0.081	0.109	0.096	0.098
P-value	0.000	0.000	0.000	0.001	0.001	0.000	0.000	0.000	0.000

Table 9.4 show the results from our expanded logistic regression model including financial variables, governance variables, and interaction terms between *scandal* and the governance variables in the time window (0,+1).. The first three columns (1-3) uses CEO turnover as the dependent variable, and alternating interaction terms. The next three columns (4-6) uses chairman turnover as the dependent variable, and the last three (7-9) uses auditor turnover. The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p <$ 0.1, ** $p < 0.05$, *** $p < 0.01$

Table 9.5: Regressions With Financial. Governance and Interactions Terms in Year: 0 to +2

	CEO Turnover			Chairman Turnover			Auditor Turnover		
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Scandal	0.300***	0.417***	0.196***	0.143*	0.229***	0.235***	0.262***	0.151**	0.028
	(0.001)	(0.000)	(0.010)	(0.073)	(0.001)	(0.001)	(0.000)	(0.017)	(0.658)
BSize*Scandal	-0.108			-0.080			-0.153		
	(0.326)			(0.435)			(0.116)		
FemDir*Scandal		-0.336***			-0.299***			0.056	
		(0.002)			(0.002)			(0.553)	
IndDir*Scandal			0.073			-0.292***			0.359***
			(0.480)			(0.003)			(0.000)
BSize	-0.012	-0.090	-0.064	-0.057	-0.115*	-0.093	0.026	-0.047	-0.051
	(0.880)	(0.149)	(0.296)	(0.428)	(0.054)	(0.110)	(0.724)	(0.402)	(0.354)
IndDir	0.093*	0.095*	0.053	0.099**	0.099**	0.248***	-0.119**	-0.117**	-0.328***
	(0.072)	(0.064)	(0.487)	(0.041)	(0.044)	(0.000)	(0.013)	(0.013)	(0.000)
FemDir	0.242***	0.445***	0.249***	0.095*	0.251***	0.102*	0.021	-0.003	0.024
	(0.000)	(0.000)	(0.000)	(0.069)	(0.001)	(0.052)	(0.673)	(0.973)	(0.632)
ROA	0.006	0.010	0.005	0.052***	0.058***	0.056***	-0.005	-0.005	-0.008
	(0.760)	(0.611)	(0.798)	(0.006)	(0.003)	(0.003)	(0.746)	(0.758)	(0.604)
DbtLvl	0.002	0.002	0.002	0.000	0.000	0.000	0.001*	0.002*	0.002**
	(0.270)	(0.251)	(0.249)	(0.448)	(0.546)	(0.576)	(0.084)	(0.077)	(0.044)
Log(FirmAge)	0.020	0.019	0.019	0.051*	0.050*	0.051*	0.004	0.003	0.0041
	(0.476)	(0.497)	(0.501)	(0.054)	(0.061)	(0.055)	(0.874)	(0.917)	(0.870)
Log(TotalAss)	0.040***	0.040***	0.039***	0.017*	0.019*	0.014	-0.037***	-0.038***	-0.036***
	(0.001)	(0.001)	(0.001)	(0.096)	(0.074)	(0.171)	(0.000)	(0.000)	(0.000)
N	448	448	448	448	448	448	448	448	448
pseudo R^2	0.144	0.159	0.143	0.051	0.066	0.065	0.082	0.079	0.102
P-value	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000	0.000

Table 9.5 show the results from our expanded logistic regression model including financial variables, governance variables, and interaction terms between *scandal* and the governance variables in the time window (0,+2).. The first three columns (1-3) uses CEO turnover as the dependent variable, and alternating interaction terms. The next three columns (4-6) uses chairman turnover as the dependent variable, and the last three (7-9) uses auditor turnover. The coefficients are reported as marginal effects (dy/dx) and tells us the probability increase in the dependent variable when the independent variable increases by one unit. For the binary variables, the marginal effect shows the probability increase when they change from 0 to 1. The p-values are reported in parentheses. * $p <$ 0.1, ** $p < 0.05$, *** $p < 0.01$