

CEO substitution: Are long-term investors better monitors?

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Supervisor:
Ibolya Schindele

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Abstract

This paper investigates the relationship between long-term investors and CEO substitutions on the Oslo Stock Exchange from 2000 to 2009. We find that long-term investors have a significant positive relationship with CEO substitutions, after limiting the CEO substitutions to those which are categorized as substitutions due to pressure by owners or disagreement with the board. These findings indicate that active monitors who directly intervene in the firms' decision making are better monitors than monitors who by speculating in the stock market put pressure on prices.

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Lise Dørum-Persen

Morten Reiten

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1. Introduction

It is an open question whether active monitors who directly intervene in the firms' decision making are better monitors than monitors who by speculating in the stock market put pressure on prices.

In the article *Institutional Investors and Corporate Investment*, Cella (2010) argues that small investors have no incentive to actively monitor management, and that it is up to institutional investors with large shareholdings and long-term investment horizon to carry out the task. Cella finds that among firms that over-invest, long-term institutional investors have a direct and negative impact on capital expenditure, while short-term investors have no influence on capital expenditure¹. She shows that this reduction in capital expenditure leads to improvements in firms' performance the subsequent years, and that long-term institutional investors' monitoring aimed at improving investment decisions is value-enhancing. Our study is motivated by investigating whether Cella's findings can apply to monitoring in general; that long-term institutional investors are better monitors than short-term investors. By using Chief Executive Officer (CEO) substitution as a measure of monitoring, we investigate whether forced CEO substitution has a higher probability of happening in firms with long-term investors, compared to firms with short-term investors.

Before we go deeper into our study, we would first like to explain why active monitoring is so important by looking at the issues that arise with separation of ownership and control, second, we will look at the difference between active and speculative monitors. The latter is to better understand why some shareholders choose to monitor by interfering with the management, while some choose not to.

1.1 Separation of ownership and control

Monitoring by shareholders is important due to the issues related to the separation of ownership and control. By investing their money in the stock market, the shareholders risk that the CEO, insulated from the risk, has other priorities than

¹ Cella finds this relationship after controlling for insider ownership, investment opportunities and financial constraints.

putting sufficient effort in increasing shareholder value. This issue is the classical principal-agency problem, and deals with possible “moral hazard” and conflicts of interests. The problem arises when there is incomplete or asymmetric information between the principal, in this case the shareholder, and the agent, the CEO. As described, the CEO might maximize her own utility function rather than that of the shareholders’. Cella’s (2010) study is focused on firms that over-invest. The CEO’s utility maximization includes how the CEO makes decisions on investments, but also the way that she chooses to allocate her time, how she might be careful to secure her position and/or to increase her private benefits (Tirole 2006). Incentives to align interests between the shareholders and the CEO can be created through tools such as bonus schemes, stocks or stock options. However, in addition to being costly, it can be difficult to make sure these incentives are appropriate. Another way for the shareholders to reduce these agency costs is through monitoring.

1.2 Active versus speculative monitoring

When trying to reduce principal-agency problems and assure that CEOs with bad policy or performance are removed, monitoring can take two different forms. Hirschman (1970) distinguished between exit and voice in order to contrast between those investors who “vote with their feet” instead of actively monitor when firms perform poorly in comparison to the market. An active² monitor collects value-enhancing information³, interferes with management in order to increase the value of the investors’ claims, and use either formal or real control⁴ to force the underperforming CEO to leave the company (Tirole 2006). Speculative monitors use information on past performance to speculate by selling or buying shares, rather than interfering with the firm’s management (Tirole 2006). By

² Active monitors intervene in matters such as the firm’s future strategy, investment decisions, assets sales, CEO compensation, design of takeover defenses, board size and composition (Tirole 2006).

³ Value-enhancing information is information on what should be the optimal course of action for the firm (Tirole 2006).

⁴ Formal control is enjoyed by an investor with majority of voting shares. Real control refers to investors with minority positions, who manage to persuade a sufficient number of other owners to create a dissenting majority, of the need for intervention. Sometimes the threat of a proxy contest is sufficient to achieve the active monitor’s aims (Tirole 2006).

buying or selling shares, speculators put pressure on prices and this way they can indirectly reward or punish the management. Motivated by Cella's (2010) study, the theory we wanted to further investigate was whether shareholders who choose to stay with the company and actively interfere when the company's performance is poor, are better monitors than shareholders who have a shorter investment horizon and choose to sell off their shares.

In relation to the distinction between active and speculative monitors, there is the popular debate on how comparative corporate governance distinguishes between the AS model (or the Anglo-Saxon paradigm, used in countries like the United States and the United Kingdom) and the GJ model (used in Germany, Japan and most of continental Europe, including Norway) (Tirole 2006). This distinction is interesting in respect to our study. While the AS model is often criticized for encouraging short-term profit maximization and for preventing long-term relationships, according to its proponents, the GJ model encourages long-term relationships between investors and managers (Tirole 2006). This can be interpreted as that GJ investors are more focused on long-term investments and active monitoring. As Norwegian investors are linked to the GJ model, one should expect to find that investors are more long-term oriented, and thus monitor more actively, compared to for instances investors in the United States. However, one should be careful to identify voice with long-term involvement and exit with short-term one (Tirole 2006). As we will see in section 2.1.1, studies show that also hedge funds, with typical short-term investment horizon, can be active monitors. On the other hand, Cella's (2010) findings indicate that long-term investors are the ones that actually monitor when it comes to capital-expenditure.

1.3 Are long-term investors better monitors?

The question we wanted to ask was whether investors with a long-term attachment to the firm are better monitors than investors who carry out speculative trading. Is it so that long-term institutional investors to a larger extent stay and make sure that bad performing CEOs get substituted, while shareholders with a shorter investment horizon rather follow the "Wall Street rule"⁵? Using data from the

⁵ To follow the "Wall Street rule" is an expression that refers to selling the stocks rather than trying to change the company's policies.

Norwegian stock market for the period 2000-2009, we are investigating the following hypothesis: *There exists no significant positive relationship between firms having long-term investors and likelihood of CEO substitution.*

By comparing Norwegian firms that have substituted their CEO with firms that have not, we were able to see whether our alternative hypothesis could be supported. Like Chen, Harford and Li (2007) and Cella (2010), we define long-term investors as investors that have an investment horizon of one year or longer. The idea is that institutional investors that have maintained their large stakes for a year or longer, will not have short-term profits but rather have incentives to monitor. As monitoring is more relevant for those with a larger position, we look at the investment horizon of the largest investor⁶ in each firm.

The most important contribution of this paper is the finding that long-term investors have significant positive effect on CEO substitutions. This relationship was found to be significant after limiting the CEO substitutions to those which were categorized as substitutions due to pressure by owners or disagreement with the board, and supports our theory that those substitutions in particular reflect the active monitors' substitutions of the poor performing CEOs. These findings indicate that active monitors who directly intervene in the firms' decision making are better than monitors who by speculating in the stock market put pressure on prices. Our results are in line with theory claiming that long-term investors are the ones that have the incentives to actively monitor firms' management (Coffee (1991), Porter (1992), Bhide (1993) and Cella (2010)).

Further, using ROA as a performance measure, this paper supports previous evidence that poor firm performance has a significant negative relationship with CEO substitution (see e.g. Coughlan and Schmidt (1985), Warner, Watts and Wruck (1988), Denis and Denis (1995), Hermalin and Weisbach (1998) and Lel and Miller (2007)). These findings indicate that CEOs do have to take responsibility for bad firm performance.

⁶ In their article, *Negotiated Block Trades and Corporate Control*, Barclay and Holderness (1991) suggest that around 10-15% block ownership could be enough to get substantial corporate control for a single investor. The largest long-term investor in each firm in our sample has an average equity stake of 30,17%. As we will explain in part 3, we only had access to data on the largest investor in each firm.

The outline of the paper is as follows; first, in the literature review, we present relevant theory and empirical research, before we present our problem definition and hypothesis. In part 3, we describe how the sample was collected and present the descriptive data. Part 4 include the methodology and how we tested our hypothesis. Then, in part 5, we present the results of the analysis and provide a discussion of the results. Finally, we offer some concluding remarks for the paper and propose suggestions for future research. The appendices contain details on the logistic regressions.

2. Literature review

There is vast literature on the role of institutional investors as potential monitors of firms' managers. In this section we will start out by reviewing literature on institutional investors as monitors, and take a closer look at Cella's (2010) empirical findings regarding long-term institutional investors, before we review some of the research where CEO substitution is used as a measure of monitoring. After reviewing the literature we will present our problem definition and hypothesis.

2.1.1 Institutional investors as monitors

Jensen and Meckling (1976) describe how it is generally impossible for the principal or the agent to ensure that the agent will make optimal decisions from the principal's viewpoint at zero cost. The price shareholders are willing to pay for their shares will reflect the costs of monitoring and improved firm performance is the way for institutional investors to reap rewards on their monitoring activities (Jensen and Meckling 1976). Since the shareholders cannot coordinate the costs of monitoring, the active shareholders incur all the costs associated with such activism, while the benefits have to be shared with the non-monitoring shareholders; we have the classic "free rider" problem (see e.g., Maug (1998), Admati and Pfleiderer (2007), Gillan and Starks (2007) and Edmans and Manso (2009)). Due to the cost of monitoring Jensen and Meckling (1976) argue that one would expect monitoring activities to become specialized to those who possess comparative advantages in these activities. Gillan and Starks (2007) argue

that only shareholders with large investments are likely to obtain a return that justifies the costs.

With more time to collect information, institutional investors with long-term investment horizon should have a comparative advantage. Researchers like Coffee (1991), Porter (1992), Bhidé (1993), Chen, Harford and Li (2007), and Cella (2010) argue that long-term investors are the ones that have the incentives to actively monitor firms' management, and therefore are good monitors. Chen, Harford and Li (2007) argue that while the gain from effective monitoring is shared with other shareholders, the gain from long-run portfolio adjustment is private, and thus alleviate part of the free-rider problem. According to Porter (1992) institutional investors with a small stake and a holding period of two years or less, will not get serious attention by the management. However, studies show that also hedge funds, with typical short investment horizon, can be active monitors. Brav *et al.* (2008) and Klein and Zur (2009) identify a significant positive abnormal return after announcement of a hedge-fund investment. These studies show that also investors with a shorter investment horizon are able to increase value of a firm through shareholder activism.

2.1.2 Cella's empirical study on long-term institutional investors

An article that lies close to our research is the article by Cella (2010), which investigates whether institutional investors influence firms' investment policies. Cella (2010) argues that small investors have no incentive to monitor management, and that it is up to institutional investors with large shareholdings and long-term investment horizon to carry out the task. The larger the stake, the larger the financial benefits they get from successful monitoring, and the longer institutional investors stay in a company, the cheaper it is to gather and process information (Cella 2010).

As mentioned in the introduction, Cella (2010) finds that long-term institutional investors have a direct and negative impact on capital expenditure, while short-term institutions have no influence on capital expenditure⁷. In firms that over-

⁷ Cella finds this relationship after controlling for insider ownership, investment opportunities and financial constraints.

invest, she finds that the larger the stake held by long-term institutional investors, the lower the level of over-investment. These findings indicate that long-term investors control investment decisions through monitoring, and that they succeed in reducing over-investment. Further, Cella (2010) finds that reduction in investments due to investors' intervention are associated with positive changes in a firms' ROA (Return On Assets)⁸ and stock returns in the subsequent years, confirming that institutional investors' actions aimed at removing over-investment are value-enhancing. This suggests that long-term institutional investors create value for all shareholders by alleviate agency problems.

Opposed to Cella (2010), Bøhren, Priestly and Ødegaard (2009) argue that long-term owners might be *passive* monitors. They claim that financial institutions are interested in the short-term earnings and also that their result is consistent with long-term owners being poor monitors due to "deeper sleep". The authors claim that active, short-termist⁹ investors that influence the firm over extended periods destroy value by distracting the firm from long-term projects.

2.2 CEO substitution as a measure of monitoring

Multiple international research articles show that an important component of effective corporate governance is the ability to identify and replace poorly performing CEOs (see e.g., Kaplan (1994), Coffee (1999), Murphy (1999), Volpin (2002), Dahya, McConnell and Travlos (2002), Gibson (2003), DeFond and Hung (2004) and Lel and Miller (2007)).

The last decades a vast number of articles have done empirical studies on the relationship between CEO substitution and firm performance. Several articles identify a positive relationship between poor firm performance and CEO substitution (see e.g., Coughlan and Schmidt (1985), Warner, Watts and Wruck

⁸ ROA is an indicator of how profitable a company is relative to its total assets.

$$ROA = \frac{Net\ Income}{Total\ Assets}$$

⁹ Short-termist investors typically push managers to invest in short-term projects to keep the short-term earnings high at the expense of profitable long-term projects. In this sense, investors who behave in a short-termistic manner may well have long holding periods (Bøhren, Priestly and Ødegaard 2009).

(1988), Denis and Denis (1995), Hermalin and Weisbach (1998), Conyon and Florou (2002) and Lal and Miller (2007)). Bøhren, Sharma and Vegarud (2004) have studied CEO substitutions from a Norwegian perspective, and their results indicate that there is a positive relationship between poor performance and CEO substitutions, also in Norway. However, it is important to notice that they find the relationship dependent on using different Return on Asset measures as proxy for performance¹⁰. Denis and Denis (1995) find operating income to be a good predictor of CEO substitution as they find a significant difference in the pre-substitution performance of firms that experience dismissals compared to those experiencing voluntary retirements. In their article *Stock Prices and Top Management Changes*, Warner, Watts and Wruck (1988) find that stock prices relative to the market itself is a better predictor of CEO substitution than the firm's stock return. This suggests that the CEO is not held responsible for factors outside her control. Zhou (2000) also finds a significant negative relationship between firm net-of-market stock return and CEO substitution. In addition he finds the threat of dismissal given poor firm performance to be less pronounced in small firms.

Fizel and Louie (1990) however, find that CEO substitutions are more influenced by internal governance structure, than by firms profit or sales performance. Given the limited overall explanatory power of their model, they argue that the criteria for CEO substitutions are relatively random. However, they find that CEO power has significant influence on CEO substitution, and they look at how the characteristics of the board members can give the CEO more power.

While several studies focus on the role of board of directors in disciplining CEOs (e.g. Coughland and Schmidt (1985), Weisbach (1988), Fizel and Louie (1990)), Warner, Watts and Wruck (1988) and Conyon and Florou's (2002) studies emphasize on the importance of monitoring top managers by holders of large share blocks. Because of their large stake in the company, large shareholders have incentive to replace inefficient managers; the large shareholders' return on their investment is sufficient to cover their monitoring costs (Conyon and Florou 2002).

¹⁰ The authors found that ROA, ROA lag, ROA average and ROA change were the performance measures that got significant results.

The theoretical work of Shleifer and Vishny (1986) also focuses on the importance of monitoring by blockholders, and give another reason for why holders of large share blocks effectively monitor the actions of management. They argue that large shareholders represent a credible takeover threat if company performance declines.

2.3 Problem definition and hypothesis

Above we have seen that there is empirical evidence of positive relationship between poor firm performance and CEO substitution. We have also seen that as monitoring management is costly, the shareholders need the right incentives to become active monitors in order to alleviate agency problems. Both theory and empirical research show that large shareholders monitor management. Existing literature also give us reason to believe that long-term institutional investors to a larger extent stay and make sure that bad performing CEOs get substituted, while shareholders with a shorter investment horizon rather follow the "Wall Street rule" when the CEO is not following the shareholders' interests.

We measure whether long-term institutional investors are better monitors through CEO substitutions, and we define better monitors as the investors that are more likely to take on the cost of substituting a CEO that does not perform optimally. This leads us to the following problem definition:

Problem definition: Are companies with long-term institutional investors more likely to substitute their CEO than companies with short-term institutional investors?

From this problem definition we find it appropriate to analyze the following hypothesis:

Hypothesis: There exists no significant positive relationship between firms having long-term investors and likelihood of CEO substitution.

As discussed, investors can reduce asymmetric information by closely monitor the management, and existing literature describes that long-term investors should

have the right incentives to do so. Therefore, we believe that CEOs in firms with long-term institutional investors are more likely to be substituted than CEOs in firms with short-term institutional investors. Consequently, our alternative hypothesis is that there exists a significant positive relationship between companies having long-term investors and likelihood of CEO substitution.

As we have seen in section 2.2, several researchers have investigated the monitoring role of large shareholders. However, to our knowledge, little empirical research has been done on long-term institutional investors as monitors. Also, as far as we know, there has not been done direct empirical studies on the relationship between long-term institutional investors and active monitoring modeled through CEO substitutions.

3. Data description

As the aim of our thesis was to study whether forced CEO substitution happens more frequently in firms with long-term investors we needed to collect data on CEO substitutions, as well as shareholders' investment horizon. In the following section we will describe how we collected and sorted the data for our study, as well as make a few comments on our findings from the descriptive data.

Our sample consists of 162¹¹ Norwegian CEO substitutions in firms listed on the Oslo Stock Exchange (OSE), in the years 2000 to 2009. The Centre for Corporate Governance Research's (CCGR)¹² database provided us with the data on companies listed on the Oslo Stock Exchange (OSE) that had substituted their CEO within these 10 years. Data on the reason for the substitutions was then found through interpreting news articles mainly in *Aftenposten*, *Adresseavisen*,

¹¹ Originally we found 191 CEO substitutions (104 voluntary and 87 dismissals). However, after receiving the ownership data it turned out that we had ownership data on all but 29 of the CEO substitutions.

¹² The Centre for Corporate Governance Research (CCGR) is located at BI Norwegian Business School in Oslo, and was founded in 2005. CCGR is a virtual organization and is directed by professor Øyvind Bøhren with the personal support of William Birkeland and the administrative assistance from Ingunn Strand at the Department of Financial Economics (www.bi.no (accessed Aug. 7, 2011)).

Bergens Tidende, Dagens Næringsliv and NTB¹³, written at the time of the substitution. We used Atekst¹⁴ to search for the news articles. The data on CEO substitutions was kindly given to us by CCGR after we submitted an application, while the information on reason for substitution in particular is publically available and can be retrieved from their respective web pages. To assure quality, we compared our list of substitutions with Skoe and Høidalen's (2008) list of CEO substitutions in Norway on 1989-2006 data.

Further, we used Thomson Datastream¹⁵ to identify companies most comparable to the 162 target companies. We sought to find comparable companies within the same industry and with approximately the same size¹⁶. By using the information on CEO substitutions from the CCGR database, we made sure that the peer companies had not substituted their CEO¹⁷. Further, we used a dummy variable to create our dependent variable, where companies without substitutions and with substitutions were defined by 0 and 1 respectively.

Our data on shareholders' investment horizon was limited to the duration of the largest investor in each firm¹⁸, which we got from the CCGR database. We also sorted the investment horizon data by using a dummy variable. In firms where the largest investor held her shares for a year or longer it was given the dummy 1,

¹³ In addition to the five main sources were: Aftenbladet, Agderposten, Computerworld Norge, Dagbladet, Dagens medisin, Elektronikk, E24, Fedrelandsvennen, Hallingdølen, Handelsbladet FK, Nationen, Nordlys, Offshore, Stavanger Aftenblad, Teknisk Ukeblad, Ukeavisen ledelse, and Økonomisk rapport.

¹⁴ Atekst is a Norwegian newspaper database.

¹⁵ Thomson Datastream is a financial statistical database.

¹⁶ As Oslo Stock exchange has a limited number of companies we ran into difficulties finding good comparables. When we could not find a peer company within the same industry we looked for companies with approximately the same size within other industries (again we sought to use industries with some similarity). As we did not have access to ownership data on companies other than companies on the Norwegian stock market, we could not use companies from other stock exchanges (e.g. Stockholm Stock Exchange) as peer companies.

¹⁷ None of our peer companies did substitute their CEO within a time period of ± 2 years from the target firm's CEO substitution.

¹⁸ Ideally we would have liked to have investors' investment horizon data on also at the second- and third largest investors. However, as ownership duration was not a pre-made index in the CCGR database, and this was not data we could collect ourselves, there were limitations on how much time we could ask the CCGR organization to spend collecting data for us.

while shorter than one year was defined as 0¹⁹. If two or more investors had the same amount of equity the average investment horizon was used. In addition to data on CEO substitutions and the largest investors' investment horizon, the CCGR database provided us with data on various accounting variables. The data on OSE performance was retrieved online²⁰, and we used the percentage change in performance the year before the substitution, as we did not have the exact date and wanted to investigate the performance before the substitution happened.

After collecting the data, we sorted the target firms and identified 91 voluntary substitutions and 71 dismissals, based on our interpretation of the news articles. Again, a dummy variable was used to sort the data, where voluntary leaves and dismissals were defined by 0 and 1 respectively. The reason for sorting the data was to identify those substitutions that might be unimportant in respect to our hypothesis. As we wanted to investigate CEO substitutions caused by active monitoring, we were first and foremost interested in the forced CEO substitutions.

Aiming to study active monitoring by shareholders, we did not want to include those CEO substitutions that are truly voluntary. Several cases of CEO substitution might be due to a normal succession process (Vancil 1987), bad health or retirement. Inclusion of such substitutions could possibly bias our tests, such that our tests would not show a positive relationship, even if such relationship exists. However, we investigate our hypothesis both with and without the voluntary CEO substitutions, as there is often a challenge to differ between forced CEO dismissals, and voluntarily leaves. As stated by Warner, Watts and Wruck (1988), identification of forced departures is difficult because press releases rarely describe them as such. One reason for this is to protect the reputation of the CEO. The CEO substitution might also be "voluntary", after getting pressured to resign. These difficulties might create some noise in our results.

¹⁹ Since we have only gathered data on the largest investor's investment horizon, the investment horizon ends if the largest investor becomes the second largest investor. Consequently, a potential weakness in this dummy variable is if a "new" investor bought enough shares to suddenly be the largest shareholder few months before the substitution. The "new" investor would then make it seem like the firm had an investor with a short investment horizon even though a strong investor could have been actively monitoring for years in the particular firm.

²⁰ The information on OSE performance was retrieved from (www.oslobors.no (accessed Aug. 1, 2011)).

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Based on the information from the news, we sorted the data by the following reasons for substitution; New job offer, Poor performance, Pressure from owners, Disagreement with board, Age(retirement)/health, Merger/takeover, Reorganization and Other, as shown in table 3.1.

| | Reported reasons for CEO substitution | | | | | |
|--------------------------------|---------------------------------------|-------------|-----------|-------------|-----------|-------------|
| | Total | | Voluntary | | Dismissed | |
| | Number | Percent (%) | Number | Percent (%) | Number | Percent (%) |
| New job offer | 44 | 27,2 % | 44 | 48,4 % | 0 | 0,0 % |
| Poor performance | 28 | 17,3 % | 5 | 5,5 % | 23 | 32,4 % |
| Pressure by owners | 21 | 13,0 % | 6 | 6,6 % | 15 | 21,1 % |
| Disagreement with board | 17 | 10,5 % | 2 | 2,2 % | 15 | 21,1 % |
| Age (retirement)/health | 17 | 10,5 % | 16 | 17,6 % | 1 | 1,4 % |
| Merger/takeover | 6 | 3,7 % | 1 | 1,1 % | 5 | 7,0 % |
| Reorganization | 5 | 3,1 % | 0 | 0,0 % | 5 | 7,0 % |
| Other | 24 | 14,8 % | 17 | 18,7 % | 7 | 9,9 % |
| Sum | 162 | 100,0 % | 91 | 100,0 % | 71 | 100,0 % |

Table 3.1 Reported reasons for CEO substitution.

In respect to our hypothesis, the most important reasons for substitution are pressure by owners and disagreement with board. The reason for this is that these two are the ones which best reflect active monitoring by shareholders. From Table 3.1 we observe that 23,5% of the data is within these categories. We also observe that poor performance, pressure from owners and disagreement with board are the most common reasons for why CEOs get dismissed. On the other hand, the main reason for voluntary leaves seems to be that the CEO has been offered a position in another company, or that she resigns because of her age or bad health. In other words, we observe that the reasons for dismissals differ significantly from the reasons for voluntary leaves. As discussed above it is often hard to know the real reason for the substitution, consequently we will later, in part 4 and 5, discuss how we tested our hypothesis both with and without the voluntary substitutions.

As described, our data consists of 162 observations. Compared to other studies, 162 observations might be seen as a small number (see e.g. Warner, Watts and Wruck (1988) and Denis and Denis (1995)). However, Norway is a fairly small

country with significantly fewer listed companies than bigger countries²¹. Consequently, one cannot expect the sample to be as big as studies on the American market. For information on the yearly distribution of CEO substitutions see appendix 1.

4. Methodology

When testing our hypothesis, *there exists no significant positive relationship between firms having long-term investors and likelihood of CEO substitution*, we used a logistic regression model²². The logit model is especially applicable to our hypothesis as we defined our dependent variable as dichotomous. This type of model also allowed us to test our dependent variable against both other dichotomous- and continuous variables²³. We estimated the following model:

$$\begin{aligned} \text{Log}(p) = & \alpha + \beta_1 * D_{IIH} + \beta_2 * ROA + \beta_3 * \text{Herfindahl} \\ & + \beta_4 * D_{Sales} + \beta_5 * OSE + \varepsilon \end{aligned}$$

As described in part 3, the dependent variable CEO substitution is a dummy variable, and is given the number 1 if there was a CEO turnover and 0 for our comparable companies. The term IIH refers to Investors' Investment Horizon; a dummy variable where the value 1 is given for investors with a long-term investment horizon and the value 0 is given for investors with a short-term investment horizon²⁴. The performance measure included in the model is ROA which shows how profitable the company's assets are in generating revenue, and is a useful number for comparing competing companies in the same industry. Herfindahl refers to the Herfindahl Index which is a measure, between zero and

²¹ The number of listed companies on the Oslo Stock Exchange varied from 178-241 in the years 2000-2009 (www.oslobors.no (accessed Aug. 1, 2011)).

²² The logistic regression model is a non-linear model and is not calculating the parameters using the Ordinary Least Squares method (OLS). Logistical regression estimates the parameters based upon the Maximum Likelihood method (ML).

²³ The logistic model is used in earlier research papers, such as Weisbach (1988) and Warner, Watts and Wruck (1988).

²⁴ Long-term is defined as a holding period of one year or longer, see section 1.3.

one, of the ownership concentration in the company. If few investors own most company stocks, the Herfindahl index has a higher number compared to a company with smaller investments by the shareholders. The control variable Sales is a proxy for the size of the firm, and OSE refers to the performance on the Oslo Stock Exchange to control for what is going on in the firm's economic environment.

The probability of CEO substitution is modeled by the following equation:

$$\begin{aligned} & \text{Prob (CEO substitution)} \\ &= \frac{1}{1 + e^{-(\alpha + \beta_1 * D_{IHH} + \beta_2 * ROA + \beta_3 * Herfindahl + \beta_4 * D_{Sales} + \beta_5 * OSE + \varepsilon)}} \end{aligned}$$

This can be written as:

$$\text{Prob (CEO substitution)} = \frac{1}{1 + e^{-z_i}}$$

$$\begin{aligned} \text{Where } z_i = & \alpha + \beta_1 * D_{IHH} + \beta_2 * ROA + \beta_3 * Herfindahl \\ & + \beta_4 * D_{Sales} + \beta_5 * OSE + \varepsilon \end{aligned}$$

A graph of the function is shown in figure 4.1. The figure shows that the output of a logistic function, e.g. CEO substitution, will have values between 0 and 1. In our study a higher number (closer to 1) represents a higher probability of CEO substitution. z represents our constant and explanatory variable and ranges from $-\infty$ to $+\infty$.

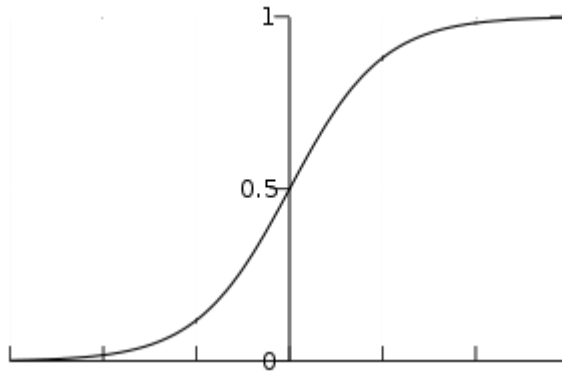


Figure 4.1 Graph of the logic function, with z on the horizontal axis and $Prob(z)$ on the vertical axis.

After testing the model with CEO substitution as the dependent variable, we tested the same independent variables on another dependent variable; CEO dismissals (CEO substitution minus the substitutions categorized as voluntarily leaves):

$$Prob(CEO dismissal) = \frac{1}{1 + e^{-z_i}}$$

Where, again, $z_i = \alpha + \beta_1 * D_{IHH} + \beta_2 * ROA + \beta_3 * Herfindahl$
 $+ \beta_4 * D_{Sales} + \beta_5 * OSE + \varepsilon$

This was done to exclude the CEO substitutions where the CEO chose to leave the company voluntarily, for instance because of a new job offer, or that she had reached the age of retirement (see reasons for voluntarily leaves in table 3.1). Such truly voluntary leaves are not considered to be CEO substitutions caused by active monitoring by shareholders. However, it was important to first test our model with CEO substitutions (including all categories) as the dependent variable, due to the uncertainty when categorizing the CEO substitutions.

Third, and last, we wanted to test our sample by using two specific reasons for CEO substitutions as the dependent variable; Pressure from owners and Disagreement with the board. The reason for choosing these two categories was that these are the substitutions that fit best with the core of our problem; are active monitors who directly intervene in the firm's decision making better monitors?

This dependent variable reflects real and formal control²⁵ discussed in the introduction part of this thesis. These control rights are essential for active monitors to be able to oppose bad policies of CEOs. We expected this dependent variable to be a better predictor of active monitoring, than the two former dependent variables, CEO substitution and CEO dismissal. We defined this particular dependent variable as PressureDisagree. Thus, the third model we estimated was:

$$\text{Prob (CEO substitution PressureDisagree)} = \frac{1}{1 + e^{-z_i}}$$

Where, again, $z_i = \alpha + \beta_1 * D_{IHH} + \beta_2 * ROA + \beta_3 * Herfindahl$
 $+ \beta_4 * D_{Sales} + \beta_5 * OSE + \varepsilon$

For these two categories in particular, pressure by owners and disagreement with boards, we suspected that it might be difficult to know whether the substitution indeed was voluntary, due to limited information published in the news articles. A “voluntary” resignation by a CEO that was pressured by the owners, or had a disagreement with the board, could in fact be involuntary. With this in mind we chose to include both those substitutions categorized as voluntary as well as those listed as dismissals when creating the PressureDisagree variable.

In the process of converting our theoretical thoughts into a regression model we discussed several possible independent variables and their possible influence on the probability of CEO substitution. Among several performance measures we discussed stock return as a potential independent variable, as other papers have used this variable. However, Bøhren, Sharma and Vegarud (2004), used several different performance measures on Norwegian data and found ROA to be the only significant independent variable with relationship to the probability of CEO substitution. An economic explanation for this phenomenon could be that the stock return unlike ROA is dependent on expectations for future return and performance. Also, stock return is probably to a larger extent influenced by macro

²⁵ Formal control is enjoyed by an investor with majority of voting shares and enables the owner to directly and unencumbered implement the changes she finds necessary. On the other hand, real control is enjoyed by a minority owner who persuades other owners to create a dissenting majority (proxy fights) to influence the CEO (Tirole 2006).

variables out of reach for the CEO. Consequently, our decision was to use ROA as a proxy for firm performance. As of using the control variable Sales as a proxy for size, we saw the possible implications of industrial fluctuations in the market. However, when looking at total fixed assets²⁶ as a potential control variable for firm size, we found that our data on total fixed assets had a high number of both outliers and missing values, such that we would have had to exclude quite a few CEO substitutions from our sample. Therefore we chose to use Sales as a proxy for size, instead of total fixed assets²⁷.

5. Results

In this part of the paper we will present the results from the regression analysis on our hypothesis. As described we used three different dependent variables. Consequently, we have three equations that we statistically analyzed.

Hypothesis: There exists no significant positive relationship between firms having long-term investors and likelihood of CEO substitution.

Theory, as well as our hypothesis, made us have certain expectations regarding the coefficients of our independent variables. The expected signs on the coefficients of the independent variables are described below.

| Independent variables | Expected sign on coefficient |
|-----------------------------------|------------------------------|
| Investor Investment Horizon (IIH) | + |
| ROA | - |
| Herfindahl | + |
| Sales | + |
| OSE performance | + |

Table 5.1 Expected signs on the coefficients of the independent variables

²⁶ We believe that total fixed assets are significantly less influenced by industrial fluctuations.

²⁷ Other variables that were discussed as control variables were: CEO salary, dividends, profit margin, liquidity level, debt level, CF, ROE, % equity of the largest owner, aggregate fraction held by institutional owners, aggregate fraction held by state owners and aggregate fraction held by international owners.

As described thoroughly in our introduction we expected that a longer Investor's Investment Horizon (IIH) would increase the incentives of active monitoring and further increase the probability of CEO substitution, hence we expected a positive coefficient. Next, we expected ROA to have a negative coefficient due to the theoretical argument, as well as previous empirical results²⁸, that poor firm performance should increase the probability of CEO substitution. Further, we expected the Herfindahl Index to have a positive coefficient. It should be easier for fewer big owners to put pressure on and substitute a CEO, compared to several small owners. Consequently, we found it likely that increased ownership concentration (a higher Herfindahl Index number) would increase the probability of CEO substitution. Then, we expected that Sales, as a proxy for firm size, would have a positive coefficient, which is line with previous research²⁹. A larger company is expected to be more transparent. This makes it cheaper and more likely to be monitored and again increase the probability of CEO substitution. Last, we expected a negative performance on the Oslo Stock Exchange (OSE) to have a negative effect on CEO substitution. We believe that if the market in general performs poorly, there is a smaller probability that the CEO will get substituted due to poor company performance, compared to if the company performance is poor when the economic environment is good.

The first regression analysis was run for the whole sample, where we did not distinguish between dismissals and voluntary substitution.

$$\text{Log}(p) = \alpha + \beta_1 * D_{IIH} + \beta_2 * ROA + \beta_3 * Herfindahl + \beta_4 * D_{Sales} + \beta_5 * OSE^{30}$$

²⁸ See e.g. Coughlan and Schmidt (1985), Warner, Watts and Wruck (1988), Denis and Denis (1995), Hermalin and Weisbach (1998) and Lel and Miller (2007).

²⁹ Zhou (2000) found the threat of dismissal given poor firm performance to be less pronounced in small firms.

³⁰ D_{IIH} = dummy variable, Investors' Investment Horizon. The dummy takes 1 if one year or longer and 0 if shorter than 1 year.

ROA = Return On Assets the year of CEO substitution.

Herfindahl = an index for ownership concentration.

D_{Sales} =dummy variable. Sales as a proxy for size. The dummy takes 1 if large company, and 0 if small.

OSE = Performance on Oslo Stock Exchange the year of CEO substitution.

Where $\text{Log}(p)$ is the logistic probability of CEO substitution.

$$\begin{aligned} \text{Log}(p) = & -0,184 + 0,098 * D_{IIH} - 0,016^{***} * ROA + 0,991 * \text{Herfindahl} \\ & + 0,030 * D_{Sales} - 0,0002 * OSE \end{aligned}$$

Where *** indicates significance on the one percent level.

The beta values in the equation display the relationship between the dependent and the independent variables. E.g., observing the equation above, a one unit increase in IIH will increase the probability of CEO substitution with 0,098, when holding all other variables constant. Also, we observe that the positive coefficient is as expected. However, as the variable is not significant conclusions cannot be made on either the effect or the sign of the coefficient³¹. Further, as IIH is not significant in this equation we have to keep our null hypothesis and conclude that there exists no significant positive relationship between firms having long-term investors and likelihood of CEO substitution. A potential reason for this preliminary conclusion might be that the voluntary substitutions are not dependent on the investment horizon of the investors, and that these substitutions are creating noise in our results. On the other hand, it might be that there bluntly exists no significant relationship between the investors' investment horizon and CEO substitutions.

In this statistical analysis we also observe that ROA's negative coefficient is as expected. Decreased firm performance will increase the probability of CEO substitution. The p-value of 0,0092 indicates that ROA is a significant independent variable on the one percent level, and we can conclude that there is a negative relationship between ROA and probability of CEO substitution³². These findings are in line with earlier cited papers on the relationship between firm performance measures and CEO substitution (see e.g. Coughlan and Schmidt

³¹ See appendix 2, 3, 4, 5 and 6 for all statistical figures.

³² Also, the LR-Statistics show that there is a significant relationship between substitution and at least one of the variables. The LR statistics is the result on testing the joint null hypothesis that all slope coefficients are restricted to zero.

(1985), Warner, Watts and Wruck (1988), Denis and Denis (1995), Hermalin and Weisbach (1998) and Lal and Miller (2007)). Bøhren, Sharma and Vegarud (2004) also used ROA as the performance measure in their paper on Norwegian data, *Eierstyring i store norske selskaper: Oppsigelse av toppleder*³³, and found a significant negative relationship with the probability of CEO substitution. Further, our tests show that neither of the control variables, Herfindahl, Sales or OSE, was significant with CEO substitution as the dependent variable.

In the second equation, we used the CEO dismissals rather than the CEO substitutions in general (we subtracted the voluntary substitutions) as the dependent variable. Testing without these voluntary substitutions could possibly remove possible noise in our results, and prove the empirical relationship between active monitoring and CEO substitution that we were expecting.

$$\text{Log}(p) = \alpha + \beta_1 * D_{IIH} + \beta_2 * ROA + \beta_3 * \text{Herfindahl} + \beta_4 * D_{Sales} + \beta_5 * OSE$$

Where Log(p) is the logistic probability of CEO dismissal.

$$\text{Log}(p) = -0,346 + 0,019 * D_{IIH} - 0,019^{**} * ROA + 2,280^{*} * \text{Herfindahl} + 0,045 * D_{Sales} - 0,001 * OSE$$

Where ** indicates significance on the five percent level and * indicates significance on the ten percent level.

We observe that the independent variable IIH is still not significant using dismissals as the dependent variable. Consequently, we still have to keep our preliminary conclusion and null hypothesis, that there exists no significant positive relationship between firms having long-term investors and likelihood of CEO substitution. However, again, there could still be noise in our data. For instance there could be several dismissals that were unrelated to active monitoring. On the other hand, again, it could just be that there exists no

³³ The articles title “*Eierstyring i store norske selskaper: Oppsigelse av toppleder*” translated into English: “*Corporate governance in Norwegian firms: Dismissing the CEO*”.

significant relationship between the shareholders' investment horizon and CEO substitutions.

Further, looking at the results from our logistic regression we observe that ROA is still significant (on the five percent level), which is consistent with earlier research described above. The relationship between the dependent variable and the Herfindahl Index is also significant (on the ten percent level) and the positive coefficient is as expected, and suggests that a higher ownership concentration increases the probability of CEO dismissal. As described earlier in this part of the paper, it seems logic that it is easier for a few bigger owners to put pressure on and substitute a CEO than several small owners. Neither one of the control variables Sales and OSE are significant in this model.

To check whether some of the dismissals that could possibly be unrelated to the investors' investment horizon are making noise in our results, we used a third dependent variable in our third equation. As described earlier in section 4, the third equation has CEO substitutions due to pressure by owners and disagreement with the board as the dependent variable. We now expected more noise to be removed from the dataset and the remaining CEO substitutions to have a positive relationship with the investment horizon of the investors. As described in detail in part 4, we expected this dependent variable to better reflect the monitoring by active shareholders as those substitutions should be a result of the shareholders use of their control rights.

$$\text{Log}(p) = \alpha + \beta_1 * D_{IHH} + \beta_2 * ROA + \beta_3 * \text{Herfindahl} + \beta_4 * D_{Sales} + \beta_5 * OSE$$

Where Log(p) is the logistic probability of CEO substitution due to pressure by owners or disagreement with board.

$$\text{Log}(p) = -1,618^{***} + 1,366^{**} * D_{IHH} - 0,024^{**} * ROA + 4,444^{**} * \text{Herfindahl} + 0,428 * D_{Sales} - 0,009 * OSE$$

CEO substitution: Are long-term investors better monitors?

Where *** indicates significance on the one percent level and ** indicates significance on the five percent level.

In this third equation we observe that the relationship between the Investors' Investment Horizon and the dependent variable PressureDisagree is significant on the five percent level. This statistical result is as we expected and supports our alternative hypothesis that an investor with a longer investment horizon has a larger incentive to be an active monitor and increase the probability of CEO substitution.

Also, the intercept³⁴ is significant on the one percent level, and the control variables ROA and Herfindahl are significant on the five percent level. So, as expected we found that an increase in ROA will decrease the probability of substitution due to pressure by owners or disagreement with boards which is in line with earlier research. Also, we observe that the Herfindahl Index is significant on the five percent level and that the coefficient is in line with our earlier described expectations. Neither one of the control variables Sales and OSE are significant in this model.

Table 5.2 summarizes the results from the regression analysis, and gives an overview of the beta values, as well as which variables are significant.

| Independent variables | Dependent variables | | |
|--|---------------------|------------|------------------|
| | CEO substitution | Dismissals | PressureDisagree |
| Intercept | -0,184 | -0,346 | -1,618*** |
| Investor Investment Horizon (D_IIH) | 0,098 | 0,019 | 1,366** |
| ROA | -0,016*** | -0,019** | -0,024** |
| Herfindahl | 0,992 | 2,280* | 4,444** |
| D_Sales | 0,030 | 0,045 | 0,428 |
| OSE performance | -0,0002 | -0,001 | -0,009 |

Table 5.2 Summarized results from regression analysis. *** indicates significance on the one percent level, ** indicates significance on the five percent level and * indicates significance on the ten percent level.

³⁴ The intercept is the base level of the prediction when all other independent variables are zero. As this is a logistic regression, the output will by definition always be between zero and one. Thus, the negative intercept does not give a negative output but rather a probability between 0 and 1. The equation $\frac{1}{1+e^{-z_i}}$ will always give a positive output, even if z is a negative number.

The regression analysis of our last model with PressureDisagree as the dependent variable, had an R^2 of 12,42%. R^2 is a figure on the relative predictive power of the model, and in that sense 12,42% might at first hand seem a bit low. However, it is important to keep in mind that there is likely to be a significant number of different variables that are a part of explaining the probability of CEO substitution. Also, CEO substitution might signal several things, such as; New direction in policy, -in business plans, -in investments, -in strategies, reorganization of assets or new impulses. These multiple signals make it less likely to capture all variability in the data set in one regression model, and reassure us that an R^2 of 12,42% is not necessarily insufficient.

6. Conclusion

After having discussed the results from our analysis in the previous section, we will in this section give some concluding remarks, as well as suggestions for further research.

6.1 Conclusion

This paper investigates whether long-term investors are better monitors than short-term investors. Previous research by Cella (2010) has shown that the investors' investment horizon matters when it comes to firms' investment policies, and that long-term investors have a negative impact on over-investment. To study whether long-term shareholders actively monitor corporate managers in a more general term, we have looked at CEO substitutions in Norway from 2000 to 2009.

The main result of this paper is that long-term investors have a significant positive effect on CEO substitutions categorized as substitutions due to pressure by owners or disagreement with the board. This indicates that active monitors who directly intervene in the firms' decision making are better than monitors who by speculating in the stock market put pressure on prices. A potential reason for the significant positive relationship is that, while monitoring is a costly activity, it is cheaper to gather and process information for the shareholders with longer investment horizon, as they have more time to collect information and should

already have greater knowledge on the company and its CEO. Also, if substitution of the CEO leads to better company performance, the longer the investor stays, the more she will get in return for substituting the CEO. Our results are in line with theory saying that long-term investors are the ones that have the incentives to actively monitor firms' management (Coffee (1991), Porter (1992), Bhidé (1993)), as well as Cella's (2010) empirical results showing that long-term investors actively monitor managers' investment decisions.

Using a logistic regression model we did not find investors' investment horizon to have a significant effect on CEO substitutions neither when including all substitutions, nor when just using the CEO dismissals (excluding the voluntary substitutions). However, we find investors' investment horizon to have significant effect on CEO substitutions categorized as substitutions due to pressure by owners or disagreement with the board. The reason for choosing these two categories was that these are the substitutions that fit best with the core of our problem; are active monitors who directly intervene in the firms' decision making better monitors? Our findings let us reject the null hypothesis, that there exists no significant positive relationship between firms having long-term investors and likelihood of CEO substitution.

We also find a significant negative relationship between firm performance and CEO substitutions, using ROA as a performance measure. We find the relationship to be true both when including all CEO substitutions in our sample, when excluding the voluntary substitutions, and when just testing the CEO substitutions due to pressure from owners and disagreement with the board. The inverse relationship between firm performance and CEO substitution is in line with previous research (see e.g., Coughlan and Schmidt (1985), Warner, Watts and Wruck (1988), Denis and Denis (1995), Hermalin and Weisbach (1998) and Lel and Miller (2007)). We also find the Herfindahl index to have a significant positive relationship with CEO substitutions. This finding suggests that a higher ownership concentration increases the probability of CEO dismissal. It seems logic that it is easier for a few bigger owners to put pressure on and substitute a CEO than it is for several small owners.

6.2 Suggestion for further research

We find it particularly interesting for future research to study whether the monitoring by long-term institutional investors is in fact value-enhancing. This can be done by e.g. investigating the effect CEO substitutions has on ROA. By investigating whether the CEO substitutions have a positive abnormal effect on performance the years after the events, one can see whether long-term institutional investors create value for all shareholders by alleviate agency problems.

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Appendices

Appendix 1: Descriptive distribution of CEO substitutions per year

| | CEO substitution per year | | | | | |
|-------------|---------------------------|-------------|-----------|-------------|-----------|-------------|
| | Total | | Voluntary | | Dismissed | |
| | Number | Percent (%) | Number | Percent (%) | Number | Percent (%) |
| 2000 | 13 | 8,0 % | 5 | 5,5 % | 8 | 11,3 % |
| 2001 | 14 | 8,6 % | 5 | 5,5 % | 9 | 12,7 % |
| 2002 | 15 | 9,3 % | 5 | 5,5 % | 10 | 14,1 % |
| 2003 | 13 | 8,0 % | 7 | 7,7 % | 6 | 8,5 % |
| 2004 | 8 | 4,9 % | 7 | 7,7 % | 1 | 1,4 % |
| 2005 | 22 | 13,6 % | 15 | 16,5 % | 7 | 9,9 % |
| 2006 | 20 | 12,3 % | 13 | 14,3 % | 7 | 9,9 % |
| 2007 | 22 | 13,6 % | 13 | 14,3 % | 9 | 12,7 % |
| 2008 | 17 | 10,5 % | 8 | 8,8 % | 9 | 12,7 % |
| 2009 | 18 | 11,1 % | 13 | 14,3 % | 5 | 7,0 % |
| Sum | 162 | 100,0 % | 91 | 100,0 % | 71 | 100,0 % |

Appendix 2: Logistic regression with CEO substitution as dependent variable

| Dependent Variable: CEO_SUBSTITUTION | | | | |
|---|-------------|-----------------------|-------------|---------------|
| Method: ML - Binary Logit (Quadratic hill climbing) | | | | |
| Sample: 1 324 | | | | |
| Included observations: 323 | | | | |
| Convergence achieved after 4 iterations | | | | |
| Covariance matrix computed using second derivatives | | | | |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
| C | -0.183933 | 0.241501 | -0.761624 | 0.4463 |
| ROA | -0.015803 | 0.006070 | -2.603385 | 0.0092 |
| HERFINDAHL | 0.991501 | 0.778293 | 1.273942 | 0.2027 |
| D_IIH | 0.098455 | 0.253178 | 0.388876 | 0.6974 |
| D_SALES | 0.029602 | 0.228239 | 0.129697 | 0.8968 |
| OSE_PERFORMANCE | -0.000192 | 0.003548 | -0.054025 | 0.9569 |
| | | | | |
| McFadden R-squared | 0.023813 | Mean dependent var | | 0.498452 |
| S.D. dependent var | 0.500773 | S.E. of regression | | 0.497280 |
| Akaike info criterion | 1.390425 | Sum squared resid | | 78.39025 |
| Schwarz criterion | 1.460598 | Log likelihood | | -218.5536 |
| Hannan-Quinn criter. | 1.418437 | Deviance | | 437.1072 |
| Restr. deviance | 447.7700 | Restr. log likelihood | | -223.8850 |
| LR statistic | 10.66282 | Avg. log likelihood | | -0.676636 |
| Prob(LR statistic) | 0.058491 | | | |
| | | | | |
| Obs with Dep=0 | 162 | Total obs | | 323 |
| Obs with Dep=1 | 161 | | | |

Appendix 3: Logistic regression with CEO dismissal as dependent variable

| Dependent Variable: DISMISSAL | | | | |
|---|-------------|-----------------------|-------------|---------------|
| Method: ML - Binary Logit (Quadratic hill climbing) | | | | |
| Sample: 1 142 | | | | |
| Included observations: 142 | | | | |
| Convergence achieved after 5 iterations | | | | |
| Covariance matrix computed using second derivatives | | | | |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
| C | -0.345786 | 0.355392 | -0.972970 | 0.3306 |
| ROA | -0.018759 | 0.008479 | -2.212517 | 0.0269 |
| HERFINDAHL | 2.280551 | 1.271224 | 1.793981 | 0.0728 |
| D_IIH | 0.018736 | 0.384577 | 0.048718 | 0.9611 |
| D_SALES | 0.044954 | 0.356037 | 0.126261 | 0.8995 |
| OSE_PERFORMANCE | -0.001432 | 0.005928 | -0.241626 | 0.8091 |
| | | | | |
| McFadden R-squared | 0.053277 | Mean dependent var | | 0.500000 |
| S.D. dependent var | 0.501770 | S.E. of regression | | 0.493921 |
| Akaike info criterion | 1.396944 | Sum squared resid | | 33.17832 |
| Schwarz criterion | 1.521838 | Log likelihood | | -93.18301 |
| Hannan-Quinn criter. | 1.447696 | Deviance | | 186.3660 |
| Restr. deviance | 196.8538 | Restr. log likelihood | | -98.42690 |
| LR statistic | 10.48778 | Avg. log likelihood | | -0.656218 |
| Prob(LR statistic) | 0.062537 | | | |
| | | | | |
| Obs with Dep=0 | 71 | Total obs | | 142 |
| Obs with Dep=1 | 71 | | | |

Appendix 4: Logistic regression with PressureDisagree as dependent variable

| Dependent Variable: TOTAL_PFO_DWB | | | | |
|---|-------------|-----------------------|-------------|---------------|
| Method: ML - Binary Logit (Quadratic hill climbing) | | | | |
| Sample: 1 76 | | | | |
| Included observations: 76 | | | | |
| Convergence achieved after 4 iterations | | | | |
| Covariance matrix computed using second derivatives | | | | |
| Variable | Coefficient | Std. Error | z-Statistic | Prob. |
| C | -1.618394 | 0.618995 | -2.614552 | 0.0089 |
| ROA | -0.024005 | 0.011888 | -2.019286 | 0.0435 |
| HERFINDAHL | 4.444696 | 2.259243 | 1.967339 | 0.0491 |
| D_IIH | 1.365964 | 0.605594 | 2.255576 | 0.0241 |
| D_SALES | 0.427682 | 0.528105 | 0.809842 | 0.4180 |
| OSE_PERFORMANCE | -0.008861 | 0.009557 | -0.927228 | 0.3538 |
| | | | | |
| McFadden R-squared | 0.124150 | Mean dependent var | | 0.500000 |
| S.D. dependent var | 0.503322 | S.E. of regression | | 0.480077 |
| Akaike info criterion | 1.372080 | Sum squared resid | | 16.13318 |
| Schwarz criterion | 1.556085 | Log likelihood | | -46.13905 |
| Hannan-Quinn criter. | 1.445618 | Deviance | | 92.27809 |
| Restr. deviance | 105.3584 | Restr. log likelihood | | -52.67919 |
| LR statistic | 13.08028 | Avg. log likelihood | | -0.607093 |
| Prob(LR statistic) | 0.022638 | | | |
| | | | | |
| Obs with Dep=0 | 38 | Total obs | | 76 |
| Obs with Dep=1 | 38 | | | |

Appendix 5: Correlation table for PressureDisagree

| | D_SALES | HERFINDAHL | ROA | OSE PERFORMANCE | D_IIH |
|-----------------|-----------|------------|-----------|-----------------|----------|
| D_SALES | 1.000000 | 0.089612 | -0.033255 | 0.250523 | 0.056614 |
| HERFINDAHL | 0.089612 | 1.000000 | 0.141822 | 0.092886 | 0.120666 |
| ROA | -0.033255 | 0.141822 | 1.000000 | -0.022251 | 0.213244 |
| OSE PERFORMANCE | 0.250523 | 0.092886 | -0.022251 | 1.000000 | 0.173086 |
| D_IIH | 0.056614 | 0.120666 | 0.213244 | 0.173086 | 1.000000 |

Appendix 6: Variance Inflation Factor (VIF) for PressureDisagree

| | Value |
|----------------------|----------|
| VIF PressureDisagree | 1.134547 |

BI NORWEGIAN BUSINESS SCHOOL

GRA 19002 – Preliminary Thesis

**CEO substitution:
Are long-term investors better monitors?**

Supervisor:
Ibolya Schindele

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1. Introduction

We have reason to believe that shareholders with a long investment horizon are better monitors than shareholders with a short investment horizon, due to higher incentives for long-term investors. By using Chief Executive Officer (CEO) substitution as a measure of monitoring, we investigate whether forced CEO substitution happens more frequently in firms with long-term investors, compared to firms with short-term investors. Little research have been conducted to this specific area; Cella (2010) highlights in the article “Institutional Investors and Corporate Investment”, the importance of shedding more light on the investors monitoring role, and how some use their “voice”, while some “vote with their feet”³⁵. Thus, we believe it is both interesting and important to further investigate the replacement of CEOs and institutional investors’ monitoring.

Shleifer and Vishny (1997, 737) state that corporate governance “deals with the ways in which the suppliers of finance to corporations assure themselves of getting a return on their investment”. By investing their money in the stock market, the shareholders risks that the CEO, insulated from the risk, has other priorities than putting sufficient effort in increasing shareholder value. This issue is the classical principal-agency problem, and deals with possible “moral hazard” and conflicts of interests. The problem arises when there is incomplete or asymmetric information between the principal, in this case the shareholder, and the agent, here the CEO. As described, the CEO might maximize his own utility function, rather than the shareholders’. This includes how the CEO makes decisions on investments, the way he choose to allocate his time, how he might be careful to secure his position and/or to increase his private benefits (Tirole 2006). Incentives to align interests between the shareholder and the CEO can be created through tools such as bonus schemes, stocks or stock options. However, it can be difficult to make sure these incentives are appropriate, and it can often be costly to use such tools in the attempt of aligning the incentives.

Another way for shareholders to reduce these agency costs is through engaging in shareholder activism, also known as monitoring. If internal controls, like

³⁵ Using their “voice” means that the investors monitor by expressing opinion (e.g. through voting), while “vote with their feet” is referring to investors selling their shares, and this way indirectly showing their opinion.

monitoring is effective, poor performing CEOs should be substituted. However, as monitoring requires effort in obtaining information, it is a costly and time-consuming activity. Therefore, not all shareholders will benefit from playing the role as monitors. But who will have the incentives to monitor the managers? Research show that shareholders with a larger position will monitor the managers to make sure the return is as high as possible, as the shareholders are the ones that will be able to carry the cost (see e.g. McCahery, Sautner and Starks 2009). The question we want to ask is whether also long-term institutional investors are better monitors than short-term institutional investors? And thus, whether companies with long-term institutional investors substitute their CEO more frequently? In addition to this, we are also investigating whether companies with long-term investors improve their stock price after substituting the CEO.

Using data from the Norwegian stock market for the period 1989-2006, we are investigating the hypotheses: 1) *There exists no significant positive relationship between firms having long-term investors and likelihood of CEO substitution*, and 2) *There exists no significant positive abnormal return on stock prices following CEO substitution in firms with long-term investors*. By comparing Norwegian firms that have substituted their CEO with firms that have not, we will be able to see whether our hypotheses can be supported. Like Cella (2010), we define long-term investors as investors that have an investment horizon of one year or longer. Further, as monitoring is more relevant for those with a larger position, we define 5% ownership as substantial influence in a company.

2. Literature

There is vast literature on the role of institutional investors as potential monitors of firms' managers. An article that lies close to our research is the work of Cella (2010) with her article on "Institutional Investors and Corporate Investment". The article investigates whether institutional investors influence firms' investment policies. Cella (2010) argues that small investors have no incentive to monitor management, and that it is up to institutional investors with large shareholdings and long-term investment horizons to carry out the task. The larger the stake, the larger the financial benefits they get from successful monitoring, and the longer institutional investors stay in a company, the cheaper it is to gather and process information (Cella 2010). In fact, Coffee (1991), Porter (1992) and Bhidé (1993)

have argued that only long-term investors are good monitors (Tirole 2006).

Institutional investors have become increasingly important in firm's ownership structures, and Cella (2010) argues that due to their significant ownership stakes and investment horizon, we should expect that institutional investors influence the firms' decisions. Using survey data, McCahery, Sautner and Starks (2009) find that institutional investors are willing to engage in shareholder activism to make sure that their expected returns are achieved. Further, they find that investors would first sell their shares, second, use their vote at the annual meeting, and third engage in discussions with the firm's executives to achieve their goals. In fact, large shareholders sometimes want to take a seat on the board of directors to intervene in that capacity (Tirole 2006). Weisbach (1988) argues that the board of directors plays an important role in supervising the actions of the management, provide advice and veto poor decisions. Thus, there is a stronger connection between prior performance and CEO substitution in outside dominated compared to inside dominated boards (Weisbach 1988; Fazel and Louie 1990).

Several articles identify a positive relationship between poor firm performance and CEO substitution (see e.g. Coughlan and Schmidt 1985; Warner, Watts and Wruck 1988; Denis and Denis 1995; Hermalin and Weisbach 1998 and Lal and Miller 2007). In their article, "Stock Prices and Top Management Changes", Warner, Watts and Wruck (1988) show that stock prices relative to the market itself is a better predictor of CEO substitution than absolute performance. However, according to Denis and Denis (1995) performance is a good predictor as they find a significant difference in the pre-substitution performance of firms that experience dismissals compared to those experiencing voluntary retirements.

Monitoring is a costly activity. From Jensen and Meckling's (1976) point of view it is generally impossible for the principal or the agent to ensure that the agent will make optimal decisions from the principal's viewpoint at zero cost. They also argue that "agency costs are as real as any other cost" (Jensen and Meckling 1976, 72), and that the price shareholders are willing to pay for their shares, will reflect the costs of monitoring. According to Jensen and Meckling (1976), improved firm performance is the way for institutional investors to reap rewards on their monitoring activities, and Kahn and Winton (1998) argue that they will only

intervene if that is more profitable than pure speculation. Cella (2010) tests Jensen and Meckling's (1976) hypothesis, and finds that reduction in investments due to investors intervention, are associated with positive changes in a firms' ROA³⁶ and stock returns in the subsequent years. This suggests that institutional investors create value for all shareholders by alleviate agency problems (Cella 2010). Since the shareholders cannot coordinate the costs of monitoring, the active shareholders incur all the costs associated with such activism, while the benefits have to be shared with the non-monitoring shareholders; we have the classic "free rider" problem (Maug 1998; Admati and Pfleiderer 2007; Gillan and Starks 2007; Edmans and Manso 2009). Consequently, only shareholders with large investments are likely to obtain a return that justifies the costs (Gillan and Starks 2007).

Hirschman (1970) was the first to distinguish between exit and voice in order to contrast between those investors who "vote with their feet" instead of actively monitor when firms perform poorly in comparison to the market (Tirole 2006). Parrino, Sias and Stark (2003) report the first empirical examination of the selling of shares in poorly managed firms, and find that aggregate institutional ownership and the number of institutional investors decline in the year prior to forced CEO substitution. By just selling its stake the investor saves the cost of intervention, and traditionally investors have been following the Wall Street rule rather than taking the cost of directly monitoring (Kahn and Winton 1998). However, there are reasons to believe that recently more institutional investors choose to use their voice when monitoring firms' managers (Kahn and Winton 1998). An active monitor³⁷ collects value-enhancing information³⁸, and interferes with management in order to increase the value of the investors' claims (Tirole 2006). Multiple international research articles show that an important component of effective

³⁶ Return On Assets (ROA) is an indicator of how profitable a company is relative to its total assets.

³⁷ Active monitoring is associated with either formal or real control. Formal control refers to control rights (e.g. majority of seats on the board or a majority of votes at the general assembly). Real control refers to investors with minority positions, who manage to persuade a sufficient number of other owners to create a dissenting majority, of the need for intervention. Sometimes the threat of a proxy contest is sufficient to achieve the active monitor's aims (Tirole 2006). Although proxy fights have become more common in Scandinavian countries, Norway has not seen much of this form of active investors, with the exception of the alliance "Unionen's" entry into Norske Skog (DN.no 2008).

³⁸ Value-enhancing information is "information that bears on the optimal course of action to be followed by the firm" (Tirole 2006, 334).

corporate governance is the ability to identify and replace poorly performing CEOs (see, e.g., Kaplan (1994), Coffee (1999), Murphy (1999), Volpin (2002), Dahya, McConnell and Travlos (2002), Gibson (2003), DeFond and Hung (2004)) (Lel and Miller 2007). But not only active monitors play a role here, also speculative monitors³⁹ can discipline management in several ways. They can do this either through rewarding management through stock options, or indirectly force reluctant boards to admit poor performance and put pressure on or remove management (Tirole 2006).

It is easier to sell of large ownership positions (i.e. vote with your feet) in a more liquid stock market. In fact, Bhidé (1993) argues that liquid stock market prevents effective corporate governance. He points out that by reducing the cost of exit of unhappy shareholders, stock liquidity discourages internal monitoring. Maug (1998) on the other hand argues that less liquid stock markets will lead to less shareholders engaging in monitoring. According to Maug liquid stock markets have two opposing effects on the corporate governance; although it is easier to sell the shares in a more liquid stock market, liquid markets also make it easier for investors to acquire large positions, such that they can profit from increased monitoring activities (Maug 1998; Parrino, Sias and Starks 2003). Which of these effects dominates is still an empirical question (Parrino, Sias and Starks 2003). Maug (1998) also argues that liquid stock markets help large investors to overcome the free-rider problem and benefit from monitoring through informed trading.

3. Problem definition and hypotheses

Above we have seen that there is empirical evidence of positive relationship between poor firm performance and CEO substitution. However, existing theoretical literature also tells us that monitoring is costly, and thus that the shareholders need the right incentives to be an active monitor in order to alleviate agency problems. We have seen that both theoretical and empirical literature distinguish between the investors' choice of exit when the firm performs poorly, and the choice of monitoring through their voice. These theories and evidences are interesting with respect to the problem we want to investigate. Existing literature

³⁹ Speculative monitors (typically a performed by a stock market analyst) use past and present information to decide whether to invest further, stay put or disengage (Tirole 2006)

give us reason to believe that long-term institutional investors to a larger extent stay and make sure that bad performing CEOs get substituted, while shareholders with a shorter investment horizon rather follow the "Wall Street rule" when the CEO is not following the shareholders' interests.

It is evident that there is a principal-agent problem between the shareholders and the CEO in a company. A way for shareholders to deal with the possible moral hazard issue is to actively monitor through collecting information and interfere with management. As this is costly in terms of both time and effort, we have seen that the investor must consider the tradeoff between taking "the Wall Street walk" and possibly increasing company performance through monitoring and interfering with the management. We believe that long-term institutional investors are more likely to take on the costs of active monitoring than short-term institutional investors, due to the long-term investors' cash flow stakes and investment horizon. The way we will measure whether long-term institutional investors are better monitors is through CEO substitutions, and we define better monitors as the investors that are more likely to take on the cost of substituting a CEO that does not perform optimally. This leads us to the following problem definition.

Problem definition: Are companies with long-term institutional investors more likely to substitute their CEO than companies with short-term institutional investors? How do the substitutions of CEOs affect stock prices?

From this problem definition we find it appropriate to analyze the two following hypotheses:

Hypothesis 1: There exists no significant positive relationship between firms having long-term investors and likelihood of CEO substitution.

As discussed, institutional investors should make sure to reduce asymmetric information, and thus closely monitor the management. Therefore, we believe, that CEOs of firms with long-term institutional investors are more likely to be substituted than CEOs in firms with short-term institutional investors. Consequently, our alternative hypothesis is that there exists a significant positive

relationship between companies having long-term investors and likelihood of CEO substitution.

Hypothesis 2: There exists no significant positive abnormal return on stock prices following CEO substitution in firms with long-term investors.

Given the assumption that a company will replace the old CEO with a CEO that is more likely to maximize the utility function of the shareholders, we believe the market will interpret the substitution as a decision taken by the board of directors in order to increase the value creation for the shareholders. Consequently, we expect companies with long-term institutional investors, which experience a CEO substitution, to have a significant positive abnormal return.

As discussed in the earlier section, several researchers have investigated the relationship between CEO substitution and firm performance. However, little research has been done on firm performance after CEO substitution on long-term investors in particular.

4. Data description

Our data consists of 50 Norwegian CEO substitutions from 1989 to 2006. The data is collected from news articles in *Aftenposten*, *Adresseavisen*, *Dagens Næringsliv* and *NTB*, written at the time of the substitution. All the information is publicly available and can be retrieved from their respective web pages.

First we collected, and then we sorted the data and identified 27 voluntary substitutions and 23 dismissals. Further, a dummy variable was used to sort the data, where voluntary leaves and dismissals were defined by 0 and 1 respectively. The reason for this was to identify those substitutions that might be unimportant in respect to our hypothesis. As described before we are looking at the long-term institutional monitoring, thus we do not want to include those CEO substitutions that are truly voluntary. Several cases of CEO substitution might be due to a normal succession process (Vancil 1987), bad health or retirement. However, we will investigate our hypothesis both with and without the voluntary CEO substitutions. We are doing this as there is often a challenge to differ between forced CEO dismissals, and voluntarily leaves. As stated by Warner, Watts and

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Wruck (1988), identification of forced departures is difficult because press releases rarely describe them as such. A potential reason might be to protect the reputation of the CEO. The CEO dismissal might also be “voluntarily”, after getting pressured to resign. These difficulties might create some noise in our results. Despite the possible noise, we will expect that the effect a CEO substitution has on stock prices is larger when the CEO is dismissed, rather than when the CEO leaves voluntarily.

In addition to the name, industry and date, we sorted the data by the following reasons for substitution; Disagreement with board, Poor performance, Pressure from owners, Merger and takeover, Age/health, Reorganization and Other, as shown in table 1.

| | Table 1 | | | | | |
|---|-----------------------------|-------------|-----------|-------------|--------|-------------|
| | Reason for CEO substitution | | | | | |
| | Voluntary | | Dismissed | | Total | |
| | Number | Percent (%) | Number | Percent (%) | Number | Percent (%) |
| Disagreement with board | 2 | 7,4 % | 9 | 39,1 % | 11 | 22,0 % |
| Poor performance | 2 | 7,4 % | 7 | 30,4 % | 9 | 18,0 % |
| Pressure from owners | 0 | 0,0 % | 5 | 21,7 % | 5 | 10,0 % |
| Merger or takeover | 1 | 3,7 % | 1 | 4,3 % | 2 | 4,0 % |
| Age (CEO is >60)/retiring/ health | 1 | 3,7 % | 0 | 0,0 % | 1 | 2,0 % |
| Reorganization | 0 | 0,0 % | 0 | 0,0 % | 0 | 0,0 % |
| Other | 21 | 77,8 % | 1 | 4,3 % | 22 | 44,0 % |
| Sum | 27 | 100,0 % | 23 | 100,0 % | 50 | 100,0 % |

Further, we used dummy variables on the different reasons for substitution. As we can see, Disagreement with the board and Poor performance, as well as Other, are the main given reasons for CEO substitution. From table 1, we can also see that 21 out of 27 voluntary substitutions are listed under the category Other. Some of these are cases where the reason for substitution is not completely clear. As these in fact might be dismissals, we will as described, test our hypothesis both with and without the voluntary substitutions.

CEO substitution: Are long-term investors better monitors?

To find number of CEO substitutions each year and to spot possible trends, we also sorted the data chronologically, see table 2.

| Table 2 | | | | | | |
|----------------------------------|------------------|--------------------|------------------|--------------------|---------------|--------------------|
| CEO substitution per year | | | | | | |
| | Voluntary | | Dismissed | | Total | |
| | Number | Percent (%) | Number | Percent (%) | Number | Percent (%) |
| 1989 | 0 | 0,0 % | 1 | 4,3 % | 1 | 2,0 % |
| 1990 | 0 | 0,0 % | 3 | 13,0 % | 3 | 6,0 % |
| 1991 | 2 | 7,4 % | 3 | 13,0 % | 5 | 10,0 % |
| 1992 | 1 | 3,7 % | 1 | 4,3 % | 2 | 4,0 % |
| 1993 | 2 | 7,4 % | 2 | 8,7 % | 4 | 8,0 % |
| 1994 | 1 | 3,7 % | 1 | 4,3 % | 2 | 4,0 % |
| 1995 | 0 | 0,0 % | 1 | 4,3 % | 1 | 2,0 % |
| 1996 | 1 | 3,7 % | 1 | 4,3 % | 2 | 4,0 % |
| 1997 | 1 | 3,7 % | 0 | 0,0 % | 1 | 2,0 % |
| 1998 | 1 | 3,7 % | 1 | 4,3 % | 2 | 4,0 % |
| 1999 | 3 | 11,1 % | 1 | 4,3 % | 4 | 8,0 % |
| 2000 | 2 | 7,4 % | 3 | 13,0 % | 5 | 10,0 % |
| 2001 | 1 | 3,7 % | 1 | 4,3 % | 2 | 4,0 % |
| 2002 | 1 | 3,7 % | 2 | 8,7 % | 3 | 6,0 % |
| 2003 | 1 | 3,7 % | 1 | 4,3 % | 2 | 4,0 % |
| 2004 | 2 | 7,4 % | 0 | 0,0 % | 2 | 4,0 % |
| 2005 | 4 | 14,8 % | 0 | 0,0 % | 4 | 8,0 % |
| 2006 | 4 | 14,8 % | 1 | 4,3 % | 5 | 10,0 % |
| Sum | 27 | 100,0 % | 23 | 100,0 % | 50 | 100,0 % |

From table 2 we observe that the number of CEO substitutions is fairly stable over the time period. However, we find minor peaks around 1991, 2000 and 2006. Our suggestion is that the first two peaks might be due to the financial distress that Norway was in around these two time periods. However, at the time, we find it difficult to explain the peak in 2006.

As discussed, our data consists of 50 observations. Compared to other studies, 50 observations might be seen as a small number (see e.g. Warner Watts Wruck 1988 and Denis and Denis 1995). However, as the data is based on CEO substitutions in Norway, we feel that we have sufficient data. Norway is a fairly small country with significantly fewer listed companies than bigger countries. Consequently, one cannot expect the sample to be as big as studies on the American market.

To be able to test our two hypotheses we will have to collect additional data on comparables (same industry, size and year) that did not substitute their CEO. Further, by using data on shareholders ownership from the Norwegian Central Securities Depository (Verdipapirsentralen or VPS) database, we will by

comparing companies that have substituted their CEO with companies that have not, be able to see whether our hypotheses can be supported. Looking in the VPS database for institutional investors, we define 5% ownership as substantial influence in a company.

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