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Does Firm Performance Improve After CEO Turnover?

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Abstract

Several papers have evaluated the relationship between firm performance and CEO turnover. There is robust evidence that the separation between forced and voluntary resignations affects performance changes in the US. However, research on Norwegian companies is still an untouched territory, as far as we know. This paper seeks to analyze whether firm performance increases following a CEO turnover, taking into account forced and voluntary resignations. We have used two methods to gain knowledge on the topic. An event study uses daily stock returns, while profitability is evaluated through quarterly reported operating income. The results in this paper suggest that the announcement of a CEO turnover creates negative abnormal returns in the short run, for both forced and voluntary resignations. Forced turnovers experience an immediate improvement in operating performance after the turnover. Profitability seems to slightly improve in the long run, even though the estimates can be argued to be relatively small for both turnover characteristics evaluated.

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1. Introduction

Chief executive officers (CEO) of poorly performing corporations are more likely to be fired (Weisbach, 1988). In our research, we want to investigate whether bringing in “fresh blood” could have any positive financial effects on a company. More specifically, we will test whether CEO turnover improves firm performance. Even though there are various papers already exploring this topic, we want to narrow the focus to examine how CEO turnovers might affect performance for companies on the Oslo Stock Exchange (OSE). This has, as far as we know, not been documented previously. Thus, we find it very relevant to understand the internal decision-making processes regarding CEO turnovers in Norwegian firms.

This particular topic interests us as changing the CEO could affect the company in various ways. The CEO is a key figure in decision-making and being the public face. As firms strive to be profitable and improve their performances, a CEO turnover might seem like a “quick fix”. However, some issues can be out of the manager's control. Therefore, when to fire central management is often not clear.

We want to emphasize the impact of separating forced and voluntary turnovers. One can argue that the two categories have different characteristics concerning a firm's past and future performance. E.g., forced turnovers may be a result of past poor performance, which is often not the case for voluntary resignations. Existing research from the US shows that firm performance before announcement tends to be worse for those who have a forced change in management. After the turnover, these observations experience increased performance. We find the results interesting and have therefore chosen to focus on this relationship. Our study is relevant since we focus only on firms listed on the Oslo Stock Exchange. Moreover, it is interesting to evaluate if the strong economic relations from abroad hold up among Norwegian firms.

How a manager performs will affect a company's stakeholders as they are often sensitive to performance changes. Moreover, management turnover affects how well a company performs. Principal-agent conflicts are costly since different stakeholders could act in their self-interest, creating an overall loss for the company. In this case, moral hazard can emerge when a CEO acts in his/her self-interest. The

presence of moral hazard can be controlled through company monitoring. Therefore, monitoring is very relevant when deciding whether to fire the former CEO and recruit a new one. Since monitoring partly determines whether or not the board of directors chooses to fire old management, results on forced versus voluntary resignations will give insight on this topic. Hence, research on the board's capability in the process of changing managers can help us address the effectiveness of internal monitoring.

The research consists of an event study and an analysis of changes in operating performance. Thus, we analyze the relationship between firm performance and CEO turnover using two different measures of how well the company performs. The relationship between stock prices and operating income will eventually be evaluated, which helps us draw conclusions to our hypotheses. Our obtained results suggest that forced resignations tend to experience poor operating performance prior to the announcement. In the aftermath of CEO turnovers, stock prices of both forced and voluntary events react negatively in the short term, while operating performance improves to some degree. Moreover, we reveal significant profitability increases immediately after forced turnovers.

The paper is structured as follows: chapter one introduces the topic and the underlying motivation. Further, we formulate our problem statement and present relevant literature on the topic. In chapter four, we provide our hypotheses. Chapter five brings up theory, and six and seven shed light on the data and methodology. In chapter eight, we analyze our results. At last, we conclude and discuss potential areas of weaknesses and further studies.

2. Problem Formulation

We want to evaluate whether firm performance improves after CEO turnovers for companies on the Oslo Stock Exchange. In addition, our research seeks to answer whether a forced resignation improves performance more than a voluntary resignation. The analysis is divided into an event study focusing on stock price movements and an operating performance analysis based on accounting measures. While the event study on stock prices evaluates how investors react to turnover announcements, we use the latter in order to conclude whether firm profitability actually improves.

Our study will distinguish between forced and voluntary turnovers. According to Denis and Denis (1995) and Huson, Malasta and Parrino (2004), this is an essential factor in the particular topic. Previous studies have also emphasized the relationship between internally and externally hired CEOs, but we have chosen not to focus on this specific issue. Also, we have evaluated only CEO changes rather than other top management changes such as replacements of CFO and in board of directors.

3. Literature Review

There exist multiple relevant research studies on our chosen topic, and they have produced quite mixed results. In this section, we will present some studies and their main findings. Later chapters will emphasize more results and methodologies. Two of the studies, by Denis and Denis (1995) and Huson et al. (2004), conclude for a significant relationship between firm performance and CEO turnover. Denis and Denis (1995) look at the changes in performance following the dismissal of top management. The sample consists of 908 top management changes that were announced within 1985 and 1988 in the US. Their study also monitored the companies involved three years before and after the dismissal, measured by accounting numbers and stock returns. In order to assess the firm performance using accounting measures, they estimated unadjusted changes in operating performance. Further, they controlled for industry effects by deducting the median value of all firms sharing the same two-digit SIC code. Results show a significant decrease in performance in the years before the turnovers, as well as a significant improvement in the years to follow. However, for voluntary resignations, they did not find any negative trends in performance prior to the change and only minor improvements in the later years (Denis & Denis, 1995).

Testing the same issue as Denis and Denis (1995), Huson et al. (2004) use only accounting measures to construct the analysis. In addition to distinguishing between voluntary and forced turnovers, they also introduced the separation between internal and external recruitment. Their study focuses on the effectiveness of monitoring managerial behavior and the corporate board's functions in the process of firing and recruiting managers. Further, it examines the relationship between institutional shareholdings, firm-related takeover activity, successor CEO origin, board composition, and post-turnover performance. They controlled for industry effects

using the same procedure as Denis and Denis (1995). Results show that the board of directors tends to punish poor performance by initiating CEO turnovers. Following a CEO turnover, Huson et al. (2004) conclude that operating performance increases.

Contrarily, Warner, Watts and Wruck (1988) did not find the same significant results as the previous two. They conducted one of the first studies on the relationship between stock prices and top management changes and defined top management as CEOs, presidents or chair of the board. The sample used in the study includes 269 companies listed on NYSE or AMEX in July 1962. Their results show an inverse relationship between a firm's performance, measured through share return, and the probability of a company changing its top management. I.e., if the stock performs poorly, the probability of CEO turnover will increase. The event study shows little evidence of nonzero mean abnormal returns at the announcement. However, variance shift tests and cross-sectional tests indicate small significant abnormal movements following management changes, both positive and negative.

4. Hypotheses

4.1 General Hypothesis

"Firm performance improves after a CEO turnover."

In general, there is consensus that turnover is negatively correlated to firm performance. I.e., the worse the performance of a company is, the more likely it is to change the CEO. This argues that companies experiencing a CEO resignation are often victims of poor performance prior to the announcement. Announcing a new CEO in the aftermath can be interpreted as good news because investors might expect quick improvements in firm performance.

Several similar papers support this thought. Warner et al. (1988) found that firms with low stock returns have a higher probability of changing their CEO. Huson et al. (2004) revealed statistically significant and robust results that a firm's operating performance declines before a turnover occurs. They also found that positive average abnormal stock returns coincide with press releases regarding turnover. Further, these abnormal stock returns are found positively related to later changes in accounting measures. Denis and Denis (1995) report that changes in management

are preceded by negative abnormal returns and followed by minor increases in stock performance. This gives reason to believe that both stock price and operating performance will increase as a result of CEO turnover.

4.2 Sub-Hypothesis

"Forced turnover improves firm performance more than a voluntary turnover"

A resignation is defined as forced if at least one of the following is true:

- A CEO is under retirement age and has not received a similar or better job offer in the same or another firm
- The company is going through a restructuring
- The contract is not renewed
- The announcement clearly states that the turnover is forced

The criteria share close similarities to those of Clayton (2005), Hartzell and Rosenberg (2005), Denis and Denis (1995) and Huson et al. (2004). In cases of forced turnovers, there is reason to believe that the former CEO did not meet the company's expectations. Thus, shareholders, represented by the board, might want to explore alternative strategies or existing firm policies with a new CEO. In turn, these announcements might reflect positive future prospects for the company, making it an interesting investment. We believe that this could motivate more investors to buy the stock, increasing the company's stock price.

We define a resignation as voluntary if one of the following is true:

- the CEO is retiring
- he/she has a similar/better job lined up
- It is clearly stated as voluntary in the announcement
- other reasons, e.g. illness, death etc.

Our criteria for voluntary resignations are in line with the definitions from the papers above. When this is the case, the turnover is often initiated by the CEO and not the board. Hence, it does not suggest that the CEO has lost the board's trust or that the board is unsatisfied with the firm's performance. In turn, a voluntary resignation does not necessarily lead to a change in strategy or firm policies. Thus, if the company stays on the same track, only replacing the CEO, we believe that the

changes in stock performance and accounting measures will not be as significant as in cases of forced turnovers.

Similar papers have examined the relationship between forced and voluntary resignations in the past. Clayton et al. (2005) tested a hypothesis called the *Strategy Hypothesis*. The hypothesis states that equity volatility increases more following a forced departure than a voluntary. We want to investigate the same relationship, but rather try to determine whether firm performance improves, and not whether the volatility increases.

Denis and Denis (1995) present empirical evidence that voluntary changes are not preceded by significant changes in operating performance but followed by small increases. On the other hand, forced changes are preceded by large and significant operating performance declines and followed by significant improvements. These findings are supported by Huson et al. (2004). Together, existing evidence is quite robust.

5. Theory

5.1 Firm Performance and CEO Turnover

We want to establish a broad examination of the relationship between firm performance and CEO turnover. Therefore, we must introduce some definitions to set the stage. One main goal for a public company is to improve firm performance. There have been several definitions regarding this particular term, and Bartoli and Blatrix suggest that the definition could be achieved through elements such as evaluation, piloting, efficiency, and quality (Taouab & Issor, 2019). Hence, the importance of strong firm performance is indisputable as it controls the perception of a firm, and more importantly, a firm with poor performance over time is simply not viable. Also, investors require a fair return on their investment.

A CEO is the highest-ranked executive in a firm. Its responsibilities include being the firm's public face, taking corporate decisions, managing overall operations, and communicating with the board (Kenton, 2019). CEO turnover is broadly speaking a replacement of the firm's previous CEO and can happen for several reasons. It can be either forced or voluntary. The first typically include those where the controlling

body is the active power in the process. The controlling body is usually the board which monitors the performance of the CEO (Leker & Alomo, 2000). In the latter case, the CEO leaves his/her position due to other events, such as a new job, mandatory retirement, illness, or death. If the CEO is the driving force in the decision, and not the board, the turnover is said to be voluntary (Leker & Alomo, 2000).

5.2 Efficient Market Hypothesis

When evaluating the effect of new information, such as announcements of new CEOs on stock prices, we find it necessary to discuss the efficient market hypothesis (EMH). The methodology for our event study will assume this hypothesis to be true. Bodie, Kane and Marcus (2014) state that the EMH refers to the idea that stocks reflect all available information. In our case, the information about the successor and his/her strategy. Further, they separate between three forms of the hypothesis:

1. The weak form states that prices reflect all information one can obtain from historical trading data. Hence, trading on past trends will not be profitable because this information is publicly available. If it ever were to predict the future, investors would already be exploiting this strategy.
2. The semi-strong form states that prices reflect both historical trading data as well as the future prospects of the company, such as management quality, forecast of earning, and patents.
3. The strong form includes all of the above, also taking into account inside information. This is an extreme version of the hypothesis, as insider trading is prohibited and regulated by commissions in different countries.

Given what we know about efficient markets, prices will adjust once announcements get public. This complies with the semi-strong form of market efficiency, which is assumed for the financial markets in our research. In this sense, the news of a CEO turnover might affect the stock prices on the announcement day. Hence, we can evaluate stock price changes for intervals pre- and post-announcement. If the semi-strong form of EMH is assumed to hold, we can make robust inferences about the relationship. On the other hand, some inside information could be present prior to events. The assumption of the semi-strong form of EMH could then lead to biased arguments and conclusions.

5.3 Earnings Management and Managerial Discretion

The topic of earnings management is well known and documented. Former CEO could have incentives to pursue his/her private benefits before the turnover since he/she knows that he/she will not lead the company in the future. The new CEO might also blame the old management for poor performance to enhance larger earnings and private benefits in the future. Discussing this topic might help us understand how CEOs act around turnovers.

Williamson (1963) defines managerial discretion as the manager's freedom to chase his/her objectives, such as power status, prestige, and pay, rather than shareholder interests. A high degree of discretion is the equivalent of being able to pursue personal goals without being punished. This might occur in several different circumstances. For example, in companies which perform below par, the current CEO might focus on reaching adequate financial results in the short-term, rather than taking long-term variables into account. Also, poor performance might be a result of a manager's pursuing private benefits.

Pecchiari and Pogliani defined in lecture 16 in the course Fraud Detection and Risk Assessment, November 2019 that earnings management is "reasonable and legal management decision-making and reporting intended to achieve stable and predictable financial results." Incentives might be to meet analysts' expectations or bonus plan requirements, or to smooth earnings toward a long-term sustainable trend. Big bath is one strategy within earnings management used to portray a loss in the current period to obtain larger profits in the future (Walsh, Craig & Clarke, 1972). Earnings management and big baths are sometimes applied when changing management, using the restructuring period to incorporate larger costs than necessary. Moreover, the management can increase income in the future. This might affect the firm performance immediately after the new CEO is established with the firm. Earnings management may influence the reported accounting performance of a company surrounding a turnover. We must therefore take its presence into account when interpreting changes in operating performance.

5.4 Board's Role in the Process of CEO Turnover

To fully understand the relationship between CEO turnover and change in firm performance, we find it relevant to discuss some aspects of the board's role in a potential CEO turnover. Firstly, the board has to be capable of identifying underperformers to initiate the resignation in the first place. One can assume that the level of CEO monitoring by the board will determine the accuracy of the estimates of CEO ability. Hence, increased monitoring might increase the probability of identifying underperformers. Inside companies, it is often unclear who manages the CEO. Even though the CEO reports to the board of directors, some of the members may not be part of the company on a daily basis, referred to as outsiders. Correct monitoring might therefore be tough to implement. CEO performance is measured mainly through the dimensions of leadership, people management, operating metrics, and relationships with external constituencies (Kaufman, 2008).

Another important role the board has in a turnover process is the recruitment of a successor. This decision has an impact on firm performance as this is usually the new CEOs responsibility in the long run. Leadership can be defined as "a combination of personal behaviors that allow an individual to enlist dedicated followers and create other leaders in the process" (Bennis & O'Toole, 2000, p.172). Bennis and O'Toole (2000) argue that boards, more often than not, fail at recruiting and finding a worthy replacement.

Many boards emphasize hard facts such as previous improvements in stock prices or market shares, and past experience, as it is easy to obtain. However, by focusing solely on technical skills and experience, they are prone to ignore the personal aspects of the CEO. Bennis and O'Toole (2000, p.172) define great leaders as someone who "demonstrate integrity, provide meaning, generate trust, and communicate values." These traits, which are just as important, are somewhat difficult to measure and quantify. Hence, political and human skills are often neglected when picking a successor (Bennis & O'Toole, 2000).

6. Data Collection and Descriptive Statistics

6.1 Data Collection

6.1.1 Sample

We wanted to obtain a sample from the beginning of 2008 until the end of 2018. Using OSE's database OBI Financial Data, we collected the names of all companies listed on OSE between 1980 and 2018. This resulted in a list of 933 companies. After excluding firms that were last observed before 2008, our list was narrowed to 382 firms. Further, we removed companies with foreign ISIN-numbers, due to Brønnøysundregistrene not being available to provide information on these companies. The updated list was then sent to Brønnøysundregistrene in order to collect information about all CEO turnovers since 2008. They provided us with a list of 189 companies, where 168 companies had been through a CEO turnover with a total of 426 changes for the period. However, this list also consisted of interim CEOs, turnovers happening before the firm was listed, companies listed on Oslo Axess, and CFO turnovers. Thus, we excluded those that did not fit our criteria. We ended up with a final list of 165 CEO changes, 56 forced, and 109 voluntary events. Further, the CEO changes were manually looked up at Newsweb.no as we needed to find the exact announcement day. We collected adjusted stock prices from Yahoo Finance[1]. Operating income (OI) and total assets (TA) were obtained from the Eikon database.

The CEO turnovers are separated into two categories - forced and voluntary turnovers. Information regarding the announcements was mostly collected through Newsweb and other relevant financial journals and papers. Since firms often release insufficient reasoning for CEO departure, we used some criteria to determine whether a turnover was forced or voluntary, see chapter 4.2.2.

6.1.2 Data Selection

In order to be part of the sample, the following criteria must be satisfied:

1. The firm is listed on OSE within the timespan of 01.01.2008 - 31.12.2018
2. The CEO turnover is done while the firm is listed

[1] An adjusted closing stock price accurately reflects the value after accounting for any corporate actions (Ganti, 2019)

3. The firm has a Norwegian ISIN-number
4. Data for the firms is available for one year and a half before and after the announcement

Temporary hirings are excluded unless a new long-term CEO has not been appointed within a year. In that case, the temporary CEO will be seen as a long-term CEO, and its initial announcement date is used.

6.2 Descriptive Statistics

To fully understand our dataset, we want to evaluate different aspects of it. The nature of change in management is of particular interest and we need to draw inferences from our forced and voluntary observations to find out if they have any specific characteristics.

Year	**Voluntary**	**Forced**	**Total**
2008	7	6	13
2009	14	2	16
2010	9	10	19
2011	7	1	8
2012	6	3	9
2013	12	4	16
2014	9	5	14
2015	13	6	19
2016	11	7	18
2017	11	3	14
2018	10	9	19
Total	109	56	165
in %	66.06%	33.94%	

Table 1: Distribution of turnovers by year and type

The number of forced and voluntary resignations seem to correspond to what Denis and Denis (1995) found for their sample. Their data suggested that forced and voluntary top management changes accounted for 36% and 64%, respectively, which is approximately the same as our sample.

	Average Total Assets	Median Total Assets	Average Operating Income	Median Operating Income
Forced departure	9 796 687	1 384 713	297 405	8 038
Voluntary departure	30 377 034	5 986 350	2 111 951	92 609

Table 2: Size and profitability at event date in 1000s (NOK)

	Average OI/TA	Median OI/TA
Forced departure	3.04%	0.58%
Voluntary departure	6.95%	1.55%

Table 3: Operating return on assets (OROA) at the event date in percentage

Evaluating accounting metrics for our sample firms, we observe that events of voluntary departures are on average more than three times bigger than those of forced measured in total assets. Hence, our sample suggests that smaller companies fire their CEO more often than larger companies. One reason might be that larger companies tend to give larger golden parachutes to their CEO. This will make a forced turnover more costly, arguing for why forced resignations happens more often in smaller companies.

Also, operating income is more than seven times larger for events of voluntary departures, on average. This implies less profitability in events with forced resignations, which might in turn argue for more financial distress.

7. Research Methodology

7.1 Methods Used in Previous Studies

As mentioned in chapter three, literature review, there have been several studies on this particular topic. Huson et al. (2004) focused on financial measures three years

before and after each turnover to evaluate the relationship between performance and turnover. In order to assess the firm performance, they estimated unadjusted changes in operating performance, in addition to controlling for industry effects. Warner et al. (1988) used an event study to examine the relationship between stock performance and top management changes. The market model was used to measure abnormal stock performance. A standardized test statistic was then constructed to test the statistical significance of average prediction errors (Warner et al., 1988).

Denis and Denis (1995), on the other hand, conducted both in their analysis. They used an event study to examine whether the new CEO improved the stock return. The significance of abnormal returns was computed using cross-section t-statistics. They constructed significance tests for cumulative abnormal returns for the event days -252 to -2 and 1 to 252, and abnormal returns at the event window. In addition, they used accounting measures to evaluate the change in profitability three years before and after the announcement (Denis & Denis, 1995). Similarly, we want to construct an analysis based on both event study and operating performance in order to evaluate our data. The event study focuses on the short-term effect on stock returns, while the operating performance analysis evaluates the operating income on a three-year perspective, six quarters before and after the announcement.

7.2 Measurement for Firm Performance

Whether we can detect any relationship might depend on how we measure firm performance. A company's performance could be evaluated through different measures and enables the comparison of performances between different companies and periods. It is critical for effective management and offers invaluable information that allows for monitoring performance, reporting progress, improving motivation and communication, and pinpointing problems. Measurement of firm performance can be calculated in countless ways, for example, through changes in stock prices, return on assets, return on equity, or operating income (Al-Matari, Al-Swidi & Hanim, 2014). Therefore, we want to conduct multiple analyses to examine the relationship between CEO turnover and firm performance. The procedure of evaluating how certain estimates change is when modifying the model specification is called robustness checks (Lu & White, 2014).

7.3 Event study

7.3.1 Methodology

We have from Bodie, Kane and Marcus (2014) that an event study can be used to evaluate the effect of an identifiable event on stock returns or other financial variables. Hence, we are testing the semi-strong version of the efficient market hypothesis introduced in our theory.

The conduction of an event study can be divided into steps, as pointed out by MacKinlay (1997). These steps are the same structure as used in Denis and Denis (1995). First, an appropriate estimation window, event window, and post-event window must be set. Our estimation window is 15 days until two days before the announcement. Secondly, the event window is set to the day of the release. Lastly, the post-event window is one day until 15 days after the announcement. Unlike Denis and Denis (1995), we focus on evaluating the short term pre- and post-announcement effect. Moreover, we use +/- 15 days instead of 252, as conducted in their study. The reason for this is to avoid our measured abnormal returns to be influenced by other market changes. A shorter time period seems more applicable in our opinion.

Second, a proxy for normal returns $E(R_{i,t}|X_t)$ must be determined. We need to calculate the return for the stock that would have been expected if the event did not happen. This way, we can isolate the impact of the event. MacKinlay (1997) states that several approaches are available, loosely grouped into two main categories - statistical and economic. The former relies on certain statistical assumptions regarding the behavior of asset returns. The latter is not based solely on statistical assumptions, but rather on assumptions concerning investors' behavior. Still, it is needed to add some statistical assumptions to economic models. Hence, an economic approach allows calculating more precise measures taking into account economic restrictions. In statistical models, one assumes that asset returns are independently and identically distributed through time and jointly multivariate normal. Since the assumption is empirically reasonable and inferences using the normal return models tend to be robust to deviations from the assumption, this will generally not lead to biased results (MacKinlay, 1997). Also, the gains of using economic models over statistically motivated models are small, and such models

are not widely represented in previous event studies. We will therefore not focus on economic models in our analysis.

There are two main statistical models of measuring normal performance - constant mean return model and market model. The constant mean model assumes constant mean return for future periods and is often the simplest model to use. Mean return for asset *i* is

$$R_{i,t} = \mu_i + \zeta_{i,t}$$

$$E(\zeta_{i,t}) = 0 \qquad var(\zeta_{i,t}) = \sigma_{\zeta_i}^2$$

where $R_{i,t}$ is the return on security i in period t and $\zeta_{i,t}$ is the disturbance term (MacKinlay, 1997).

On the other hand, the market model is a more sophisticated statistical model that relates the return of the securities to the return of the market portfolio. The market model for any security *i* is

$$R_{i,t} = \alpha_i + \beta_i R_{m,t} + \varepsilon_{i,t}$$

$$E(\varepsilon_{i,t}) = 0 \qquad var(\varepsilon_{i,t}) = \sigma_{\varepsilon_i}^2$$

where $R_{m,t}$ is the market's rate of return in the period and $\varepsilon_{i,t}$ is the part of the stock's return that stems from an event that is company-specific, such as a CEO turnover in our case. β_i measures the firm's sensitivity to market returns, and α_i is the constant implying the firm's average rate of return in the case of no market rate of return (Bodie et al., 2014). Empirics show that the market model provides a potential advantage over the constant mean model. By subtracting the portion of the variation due to changes in the market, one can reduce the variance of calculated abnormal returns and increase the possibility of revealing significant event effects (MacKinlay, 1997). Therefore, we have chosen to use the market model in our analysis. Further, since the market model is more widely used across previous studies, this model makes it more convenient to compare our results to what others have found.

Like Denis and Denis (1995), we want to use an index as a proxy for the market model. Oslo Stock All Share Index (OSEAX) is a market index for all companies

listed on the Oslo Stock Exchange, adjusted for daily corporate actions and dividend payments (Oslo Børs, 2020). Our sample contains all companies on the Oslo Stock Exchange from 2008 until the end of 2018, regardless of firm size and industry. OSEAX can therefore be argued to provide the best fit for the normal performance in our analysis.

Further, MacKinlay (1997) suggests that we use our normal returns to obtain abnormal returns, ARs. We separate the impact of events from other unrelated movements in prices and construct abnormal returns, denoted

$$AR_{i,t} = R_{i,t} - E(R_{i,t}|X_t)$$

subtracting normal performance from the return of each company to obtain abnormal returns for company *i* at time *t*. Using risk-adjusted return we get

$$RAR_{i,t} = R_{i,t} - (\alpha_i + \beta_i R_{m,t}) = \varepsilon_{i,t}$$

The equation has the following interpretation: the residual $\varepsilon_{i,t}$ is the difference due to firm-specific events, the return above what one could predict based on the market movements in the period (Bodie et al., 2014). Our general hypotheses are the following:

Null hypothesis: $H_0: R_{i,t} - E(R_{i,t}) = 0$

Alternative hypothesis: $H_A: R_{i,t} - E(R_{i,t}) \neq 0$

The null hypothesis states that the event of a CEO turnover does not impact firm performance, while the alternative hypothesis states it does.

The abnormal returns must then be accumulated to extract general inferences about the effect of an event. Similar to Denis and Denis (1995), we construct an aggregation through time, introducing the concept of cumulative abnormal return (CAR). Hence, we obtain a multiple period event window. MacKinlay (1997) defines CAR_i as the sum of the included abnormal returns

$$\mathrm{CAR}_i(\tau_1, \tau_2) = \sum_{\tau=\tau_1}^{\tau_2} AR_{i\tau}$$

Also, we construct an aggregation across both securities and through time. The ARs must be aggregated across companies in order to investigate the impact of events on our pool of firms. Hence, the abnormal returns are aligned in event time (Peterson, 1989). MacKinlay (1997) suggests that average abnormal returns (AAR) are obtained through

$$\mathrm{AAR}_t = \frac{1}{N}\sum_{i=1}^{N} AR_{i,t}$$

but instead of using averages, we use medians due to the relatively low number of observations. Then we want to evaluate the average effect of events on a multiday period. Abnormal returns are cumulated over two periods: i) 14 trading days ending two days before the management change announcement and ii) 14 trading days starting from one day after the same announcement. We create time-series aggregation of our calculated AARs, obtaining cumulative average abnormal returns (CAAR) by summing over time the AARs (MacKinlay, 1997):

$$\mathrm{CAAR}(t_1, t_2) = \sum_{t=t_1}^{t_2} AAR_t$$

7.3.2 Hypothesis Tests

Once we have obtained abnormal returns aggregated across observations and through time, we need to test for significant results to draw inferences about the relationship between CEO turnover and firm performance. Our results must be assumed as statistically significant for it to have any economic relevance. That is, their difference from zero must be verified using a significance test. Literature offers two types of tests - parametric and non-parametric. Parametric tests assume that our sample follows a normal distribution. Non-parametric tests, on the other side, can be used when the former is not applicable and do not require as stringent assumptions about return distribution (MacKinlay, 1997). Event studies typically report both types (Cowan, 1992). We will follow the same procedure as Denis and Denis (1995) to evaluate potential effects.

Like Denis and Denis (1995), we want to construct a significant test of our obtained CARs and ARs. Hence, we will explore any significant effects using an ordinary paired t-test and Wilcoxon signed rank test. Differences in cumulative abnormal

returns are tested before and after announcement using the intervals (-14,-1) and (2,15). Also, we test for significant abnormal returns from the event window. We obtain hypotheses for t-tests assuming normal distribution (average):

$$H_0: \mu_D = \mu_1 - \mu_2 = 0$$
$$H_A: \mu_D = \mu_1 - \mu_2 \neq 0$$

For Wilcoxon signed rank test (median) we have:

$$H_0: Difference\ of\ medians = 0$$
$$H_A: Difference\ of\ medians \neq 0$$

The general interpretations of our hypotheses are the following:

1. Testing pre-announcement CARs

H_0: Announcements of CEO turnover do not affect stock prices prior to the announcement (CAR = 0, i.e. cumulative abnormal returns are not significantly different from zero). This argues against inside information in the market.

H_A: Announcements of CEO turnover do affect stock prices prior to the announcement (CAR ≠ 0, i.e. cumulative abnormal returns are significantly different from zero)

2. Testing event window ARs

H_0: Announcements of CEO turnover do not create abnormal returns (AR = 0, i.e. abnormal returns are not significantly different from zero)

H_A: Announcements of CEO turnover do create abnormal returns (AR ≠ 0, i.e. abnormal returns are significantly different from zero)

3. Testing post-announcement CARs

H_0: Announcements of CEO turnover do not affect stock prices in the following period (CAR = 0, i.e. cumulative abnormal returns are not significantly different from zero)

H_A: Announcements of CEO turnover do affect stock prices in the following period (CAR ≠ 0, i.e. cumulative abnormal returns are significantly different from zero)

4. Testing for differences in CAARs before and after announcement

If we are able to obtain significant post-announcement CARs, i.e., prove that announcements of CEO turnover do in fact affect stock prices, we want to conduct a paired sample analysis on the CAARs. We want to test for differences between pre- and post-turnover samples. The same procedure was conducted in Clayton et al. (2005) evaluating the volatility of returns. We will evaluate the time periods (-14,-1) and (2,15), testing the following hypotheses:

$$H_0: \text{Pre} - \text{turnover CAAR} = \text{Post} - \text{turnover CAAR}$$

$$H_A: \text{Pre} - \text{turnover CAAR} \neq \text{Post} - \text{turnover CAAR}$$

Hence, if the null hypothesis is accepted, the announcement of a new CEO does not create larger abnormal returns than what already existed in the pre-announcement period. If the null hypothesis is rejected, then the post-announcement CAARs around a CEO turnover is larger or smaller than the pre-announcement CAARs.

The hypotheses are tested separately for the full sample, voluntary resignations and forced resignations using a two-tailed test. Hence, significant results could be on both sides of the mean. Also, we will draw inferences using 1%, 5% and 10% level of significance.

7.4 Operating Performance Analysis

7.4.1 Methodology

In our event study, we evaluate the short-term effect of a management turnover. Stock price effects of such events could be due to several factors, for example a partial anticipation of the event or actual changes in expected future performance. Also, the turnover itself may be an economically unimportant event, potentially because the board of directors cannot identify poor corporate performance or sort out a replacement manager capable of reversing past poor performance (Denis & Denis, 1995). To evaluate whether one of these alternatives is true, we will analyze whether changes in profitability occur after CEO turnovers.

In accordance with Denis and Denis (1995), we want to analyze the change in performance surrounding management turnover, focusing only on the top executive

changes, referred to as CEO turnovers. However, the data is limited to 6 quarters before and after the announcement to obtain more independent observations[2]. We will examine the firm performance in the years surrounding management changes for our sample firms. Firm performance is measured similarly to the methodology implemented by Denis and Denis (1995), using operating income. Also, to control for differences in firm size and changes in the firm's asset base across years, we scale operating income by the book value of total assets.

Initially, we used the same sample as obtained for our event study existing of 165 observations, 109 voluntary and 56 forced resignations. Similar to Denis and Denis (1995), we have included only one CEO change per year for our sample firms. Hence, we have consolidated multiple events into one recorded observation for companies with several turnovers in the same fiscal year. Also, observations without reported operating income and total assets were deleted, resulting in a final sample of 134 observations with 47 forced and 87 voluntary resignations.

Further, we obtain industry-adjusted changes in performance to adjust for market movements unrelated to our events. The industry-adjusted ratio of the parameters can be defined as "the change in ratio of operating income to total assets for the sample firm minus the change for the median firm" (Denis & Denis, 1995, p.1039). The median firm is obtained by the ratio of median operating income and total assets for companies in the same two-digits NACE number (EU classification of economic activity). Hence, the median firm works as a control firm in our study. In addition, we merged two digit-groups with very few firms into other suitable groups in an approximately similar industry to increase the robustness of all control firms[3]. We get the following expression for the industry-adjusted change in ratio:

$$\Delta = (Y_{F,t+n} - Y_{F,n}) - (Y_{C,t+n} - Y_{C,n})$$

7.4.2 Hypothesis Tests

The profitability analysis will focus on the relationship between operating income and the announcement of CEO turnover. We will use a traditional paired t-test and Wilcoxon signed rank test to test for differences between several time periods. This

[2] Due to relatively small sample, a larger evaluation period would force us to eliminate more observations

[3] Groups of companies with approximately similar level of operating income and total assets

is repeated for the full sample, and forced and voluntary resignations, in order to explore if there exist any significant differences in operating performance. The same test procedure was conducted in Denis and Denis (1995) and in our event study, using both averages and medians to discover potential effects.

The analysis provides significance tests for changes in operating income/total assets for intervals of five quarters: -6 to -1, -4 to 1, -2 to 3, and 0 to 5. These particular intervals are chosen since companies sometimes report the same numbers for a whole fiscal year. In order to avoid the illusion of "no accounting change" within companies, we use intervals larger than one year. Our structure matches the procedure conducted by Denis and Denis (1995). However, they evaluated six years per event, unlike three years in our case.

8. Analysis

8.1 Issues

8.1.1 Normality

In both our analyses, we provide results from a paired t-test and a Wilcoxon signed rank test. Since parametric tests assume normally distributed observations, we need to consider this issue when evaluating our estimates. Our sample contains 165 observations from all industries. Forced and voluntary resignations have 56 and 109 observations, respectively. Brown and Warner (1985) argue that the Central Limit Theorem ensures that the distribution of the sample mean excess return converges towards normality as the number of securities increases. This holds if the abnormal returns in the cross-section of securities are identically distributed and independent drawings from finite variance distributions. Also, a rule of thumb says that more than 30 independent observations ensures that n (number of observations) is "large." Hence, the distribution of the sample mean is approximately normal (Siegrist & York, 1997). There is evidence that the distribution of the cross-sectional daily mean return converges to a normal (Brown & Warner, 1985). Moreover, this argues that both test statistics are suitable for interpretation.

8.1.2 Median versus Average

We provide estimates for medians and averages in our analyses, and a discussion between them is necessary before we interpret the findings. Median and mean are reasonable measures to identify the central tendency of a data set but work best under different circumstances. The mean, which is the most applied, can be used with discrete and continuous data. In many cases, it is preferable since it minimizes errors when predicting any one value from the data set. However, it has a disadvantage of being easily affected by outliers. Median, on the other side, is a more robust indicator of central tendency due to lower sensitivity to large outliers and skewness (Lund & Lund, 2020). Hence, it can be argued that the median provides a better fit for our sample due to relatively small sample size.

8.2 Event Study

Differences tested for	**Estimation window CARs (-14,-2)**		**Event Window ARs (-1,0)**		**Post-event window CARs (1,15)**	
	Mean	Median	Mean	Median	Mean	Median
All changes	-1.10%	-0.76%	0.23%	0.06%	-3.67% ***	-3.34% ***
Forced resignations	-1.26%	-0.76%	0.13%	0.49%	-4.25% **	-3.58% ***
Voluntary resignation	-1.02%	-0.76%	0.29%	-0.15%	-3.38% ***	-3.34% ***

Table 4: Testing CARs and ARs using paired t-test (t-stat) and Wilcoxon signed rank test (p-value). ***, ** and * denote significance at 0.01, 0.05 and 0.1 levels, respectively.

8.2.1 Pre-Announcement CARs

Table 4 provides estimates on how CEO turnovers affect stock prices, divided into three periods. The two weeks preceding the announcements show negative cumulative abnormal returns for all types of changes. Results from the first period do not show any significant differences from zero in neither mean nor median but might still be interesting. The CEO turnovers in our sample are associated with a median abnormal return of -0.76% (p-value=0.34). Further, we observe that the median abnormal returns for forced and voluntary resignations are somewhat at the same level. Due to the lack of significant results, we cannot conclude whether there

is an unusual performance prior to the announcement, but we observe a downward trend.

Several papers such as Denis and Denis (1995) and Warner et al. (1988) have found proof that companies tend to experience poor corporate performance preceding a turnover. As mentioned, our results show an insignificant negative trend in stock returns in the pre-announcement period. Hence, this supports our expectation of decreased firm performance prior to a CEO resignation to a certain degree. However, these papers also find considerable differences between forced and voluntary resignations. Events with forced turnovers suffer from larger equity wealth losses (Denis & Denis, 1995). This is not the case for Norwegian listed companies according to our results. It is worth mentioning that the time interval in this study is shorter than the one used by Denis and Denis (1995). Still, it might be interesting to discuss why we cannot find any significant results and why there is no statistical difference between forced and voluntary turnovers.

One might argue that our short time intervals do not provide enough time to monitor the stock price performance. A company experiencing forced resignation is likely to have had troubles for a long time. Poor performance might therefore already exist before our estimation window. Hence, our analysis could be unable to discover the effects of poor performance prior to the announcement. Still, evaluating movements for a longer period might lead to the influence of other firm specific announcements which we tried to avoid.

On the other side, we know from the theory section that EMH states that stock prices should reflect all publicly available information. Since new information about the announcement is not available until the point of the event, stock prices should not reflect that new information is expected. Based on the semi-efficient theory, one can argue that we should not be able to find any significant changes prior to the announcement. Our results support the fact that insider information does not create significant movements.

8.2.2 Event Window ARs

The event window is the actual day of the announcement. Estimates of abnormal returns are tested by comparing stock returns of the event window to the day before. We expected higher significant abnormal returns for forced departures than

voluntary. Even though none of the results are statistically significant, according to Table 4, our sample firms have a median abnormal return of 0.06% (p-value=0.3696). Also, voluntary turnovers have a lower median abnormal return than forced, -0.15% (p-value=0.3693) and 0.49% (p-value=0.3696), respectively.

Unlike our findings, Denis and Denis (1995) found significant average abnormal returns of 0.63% and 2.5% for all turnovers and forced turnovers, respectively. Voluntary events experienced insignificant average increases of 0.61%. They stress that even though they find significant results, the stock price reaction to top executive changes is economically small. Warner et al. (1988), on the other hand, found insignificant price reactions. Hence, earlier studies have not revealed strong abnormal returns in the announcement period.

One reason for our results may be partial anticipation of the announcement. We know from earlier studies that forced events often experience poor firm performance prior to resignations. Companies experiencing a negative trend in their stock price for a long time eventually need to take some sort of action, arguing for a certain anticipation from the investors. Some investors may be reluctant and interested in observing the market response rather than taking actions themselves. This pattern could provide a smoothing of the announcement effect, shifting some of the immediate price movements to the post-announcement period.

In our analysis, we use an event window of one day, the date for which companies published press releases for the CEO turnovers. However, to make the interpretation less vulnerable to event date uncertainty, one can expand the event window (MacKinlay, 1997). This may induce a cost related to a less precise interpretation of the potential effects. MacKinlay (1997) finds that the costs are worth bearing, rather than potentially missing out on the actual announcement day. This is supported by Ball and Torous (1988), who developed an extensive maximum likelihood estimation procedure, which took the uncertainty of the event into account, and still found similar results. We decided to run a separate analysis using an expanded event window but did not get any new results. Therefore, we chose to stick with our one-day event window.

8.2.3 Post-Event Window CARs

The post-event window starts the day after the announcement and lasts for 14 days. After the announcement, we expected to observe overall positive abnormal returns. We also expected events with forced resignation to perform better than events with voluntary resignation. This is partly due to poorer average performance before the announcement for forced resignations (Warner et al., 1988). Our study provides some interesting results regarding the cumulative abnormal returns. We find significant negative results for all changes equal to -3.34%, forced resignations at -3.58% and voluntary at -3.34%. We notice that firms with forced resignations seem to drop considerably more in value than those with voluntary.

Denis and Denis (1995) and Warner et al. (1988) both document negative drift in stock prices following the announcement of a forced departure, which corresponds to our results. However, none can provide reasonable explanations for this pattern. For voluntary departures, on the other hand, Denis and Denis (1995) found a significant 6% average stock returns after the announcement.

Our results seem to be inconsistent with the hypothesis stating that forced resignations should create more substantial abnormal returns than voluntary resignations. We find that there could be several reasons for this. It may take some time for companies with a long run of poor performance to gain investors' trust. E.g., they have been witnessing the prior CEO's shortcomings in creating growth. This, in turn, can create doubt in board's ability to pick a successor, which will be discussed later in this chapter. However, companies with voluntary turnovers tend to do better before the announcement (Denis & Denis, 1995). Thus, one might argue that they are better equipped to handle a turnover compared to a forced event that might need to change its course entirely.

A forced CEO turnover is likely to be interpreted in multiple ways by the investors. The CEO change could signal that the board wants to incorporate a new strategy that could change previous poor performance. This view supports our general hypothesis. On the other side, investors could feel that changing the CEO is not enough of a strategic action to turn over the company's financial position in the long run. This would in turn induce more uncertainty. Clayton et al. (2005) found that forced resignations create larger volatility after turnover announcements than voluntary resignations. Our results may suggest that investors are unwilling to pay

as much for a company's stock due to increased uncertainty and risk, with stronger effects for forced than voluntary resignations.

From descriptive statistics, we know that companies experiencing voluntary resignations are on average more than three times larger than those with forced. Larger companies are likely to have more outside shareholders and being followed by analyses to a higher degree, arguing for more active shareholders. Further, this argues that voluntary resignations, as large companies, should react quite substantial to the announcement, which is supported by our results. Still, we observe that forced events experience more negative stock returns which is against our initial belief.

8.2.4 Testing for Differences

We also want to evaluate our cumulative average abnormal returns, tested in Table 5. As mentioned in the methodology, we have aggregated the median abnormal return for each event day and accumulated them over 30 event days. Hence, we can evaluate the event period in total. From our paired t-test and Wilcoxon signed rank test, we obtain significant differences between pre- and post-resignations for all firms and forced and voluntary resignations. Hence, we can reject the null hypothesis stating that pre-turnover CAAR equals post-turnover CAAR. Evaluating the median of differences for each group, we have that estimates for forced and voluntary turnovers are -1.11% and -0.53%, respectively.

	Paired t-test	**Wilcoxon signed rank test**
	Average	Median
All changes	-0.59% ***	-0.61% ***
Forced resignations	-0.92% ***	-1.11% ***
Voluntary resignations	-0.50% ***	-0.53%***

Table 5: Testing CAARs for differences before and after announcement

We want to emphasize that this supports our results of negative post-announcement CARs from the discussion above. It seems like forced resignations create larger negative CAAR than voluntary resignations. In addition, these test statistics argue that even though forced events tend to perform worse before the announcement, the negative shift after the announcement is even bigger than for the voluntary events. Figure 1 illustrates and supports our findings. We can observe that CAARs of forced

resignations experience a more substantial decrease prior to the announcement. Also, forced turnovers tend to create larger negative returns in the period after. These inferences support earlier studies from Denis and Denis (1995) and Warner et al. (1988).

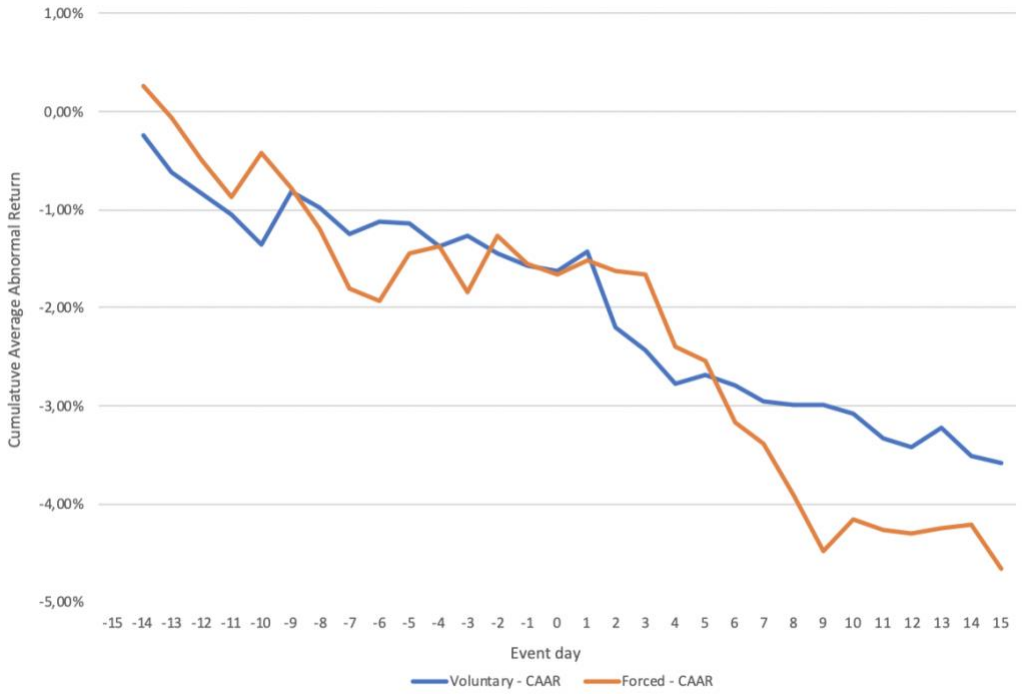

Figure 1: Graph of cumulative average abnormal returns (CAAR) over the event period

8.3 Operating Performance Analysis

8.3.1 Overview

We will start the discussion by observing the graph of median operating income divided by total assets. Figure 2 contains data for six quarters before and after an announcement of CEO turnover, centered around the quarter of management change. Our discussion will mainly focus on industry-adjusted ratios, and medians are emphasized throughout to reduce the influence of large outliers.

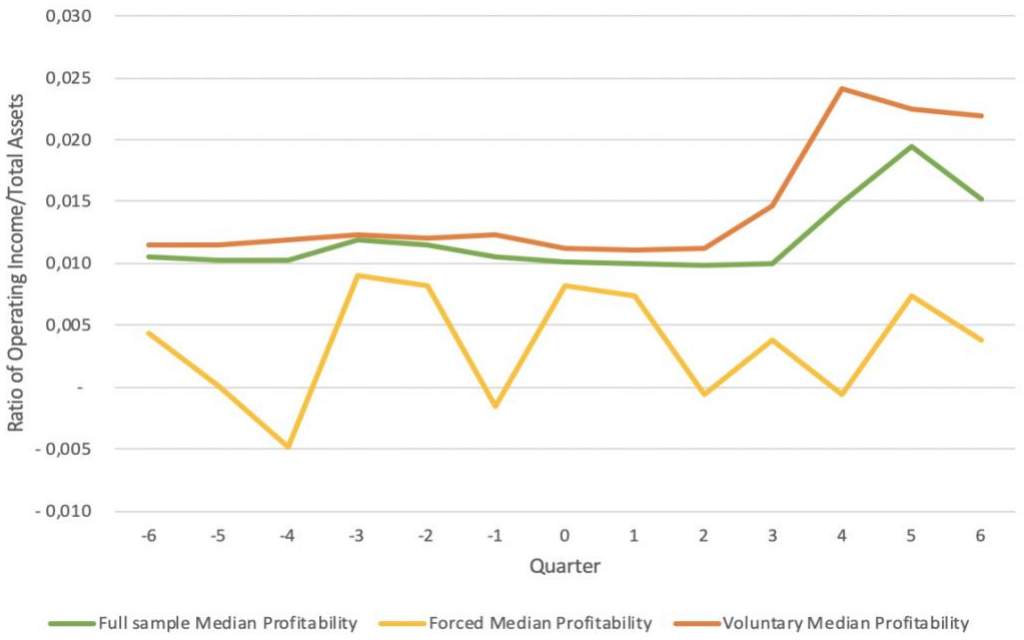

Figure 2: Median levels of operating income/total assets (OI/TA) for our sample

We observe that forced resignations seem to have a lower ratio in all quarters before and after the announcement. Also, the ratios for forced resignations are more volatile and occasionally below zero due to negative operating income. The trend for voluntary resignations is relatively consistent around 1.2% with a substantial increase in the last period. However, it seems to be too steady according to economic intuition, arguing for biased data. One reason might be that companies report the same accounting numbers throughout a whole fiscal year. We tried to avoid this issue by using intervals of five quarters in testing for significant changes in Table 6. Still, it might be that the median firm is reported correctly because our sample contains most observations around these levels. Since medians are emphasized, big outliers are neglected. In any case, we have tried to solve this potential issue by constructing a similar figure evaluating performance for four years instead of three and yearly reported numbers.

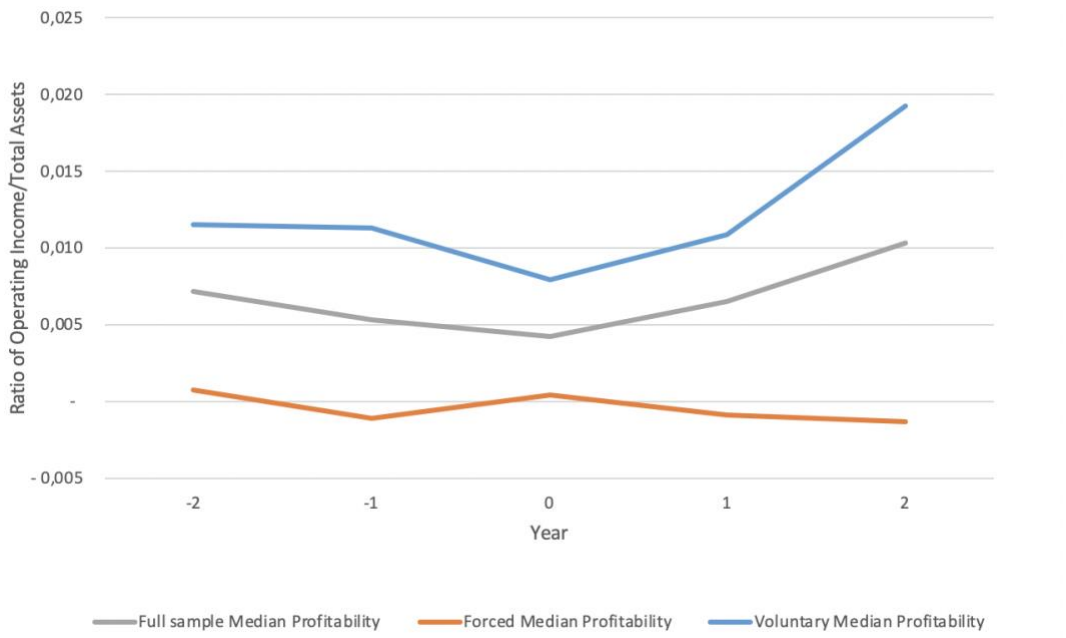

Figure 3: Median levels of OI/TA for our sample +/- 2 years around announcement. Companies with turnover in 2018 are included, but we eliminated key metrics from 2020 which are not available.

Similar to Figure 2, forced events provide lower ratios than voluntary events throughout the period. Figure 3 illustrates less volatility for forced resignations than the previous figure. However, voluntary still has somewhat the same volatility, and the trend seems to continue as we extend the pre-and post-announcement period to two years.

8.3.2 Average versus Median

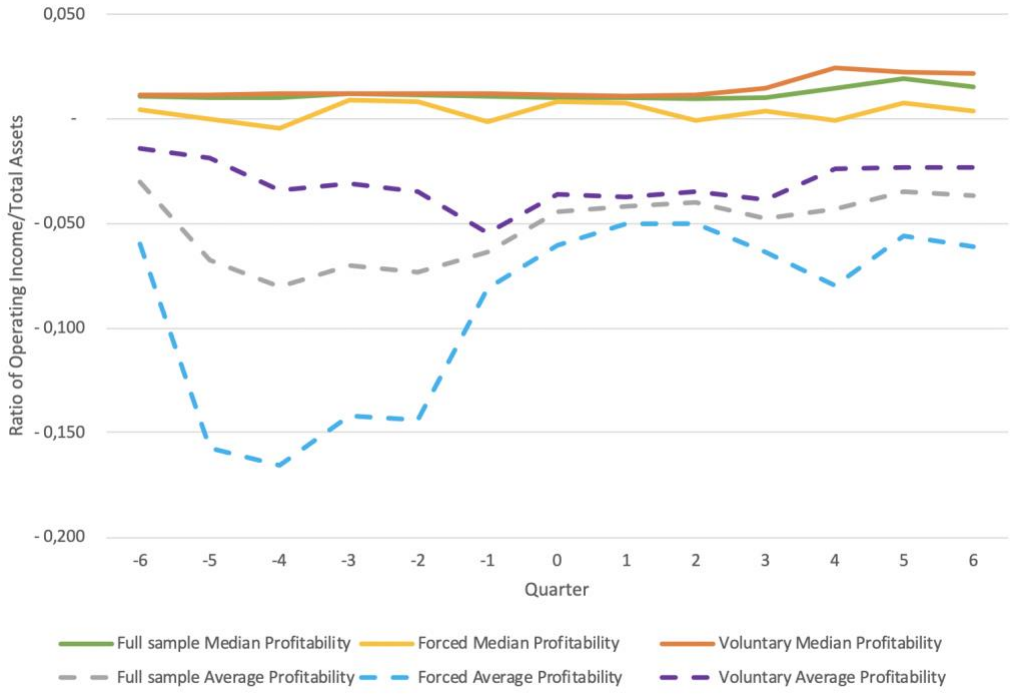

Figure 4: Difference between average and median levels of OI/TA for our sample

As mentioned in the introduction to the analysis section, our discussion's emphasis will be on the obtained estimates for the median. Still, we find it expedient to mention that we experience quite substantial differences when comparing mean and median estimates. If we evaluate Figure 4, we observe that average ratios seem to be negatively skewed. Also, forced events manage to improve substantially from one year prior to the announcement, but still underperform. Both voluntary and forced events are below zero throughout the whole period. These observations argue for a large spread in how companies react to such events. Some companies manage to increase operating performance, while others suffer from a negative trend in profitability. One reason could be that other important characteristics determine whether firms manage to increase firm performance after CEO turnover. On the other side, CEO turnover could also increase overall risk and volatility. In both cases, changing the CEO seems to create performance volatility in one way or another.

8.3.3 Before Announcement

We evaluate the first period, which starts six quarters before the announcement and lasts until one quarter prior to the announcement (-6,-1). The results from Table 6 show that negative changes in the median precede all types of CEO resignations. Focusing on the industry-adjusted median changes, we observe significant negative changes for the full sample and forced resignations of -0.32% and -1.74%. Hence, our results argue that profitability for events of forced resignations tends to be significantly decreasing before the announcement. Even though industry-adjusted median change for the same period is -0.20% for voluntary events, we cannot make the same inferences since the estimate is not statistically significantly different from zero.

		All changes		**Forced Resignations**		**Voluntary Resignations**	
		N = 134		**N = 47**		**N = 87**	
Quarters		Unadjusted	Industry-adjusted	Unadjusted	Industry-adjusted	Unadjusted	Industry-adjusted
-6 to -1	Median	-0.53%***	-0.32%**	-2.65%**	-1.74%*	-0.36%**	-0.20%
	Average	-3.35%*	-3.21%*	-2.07%	-2.11%	-4.04%***	-3.80%***
-4 to 1	Median	0.14%	0.22%	1.46%*	0.97%*	-0.04%	0.06%
	Average	3.86%	3.88%	11.54%*	11.43%*	-0.29%	-0.21%
-2 to 3	Median	0.32%	0.38%	0.94%	0.47%	0.03%	0.38%
	Average	2.54%	2.63%	7.99%	7.94%	-0.40%	-0.24%
0 to 5	Median	0.24%	0.23%	0.28%	0.43%	0.21%	0.20%
	Average	0.97%	0.94%	0.41%	0.60%	1.27%	1.12%

Table 6: Estimates of changes in OI/TA surrounding announcement of CEO turnover. Significance of median and average changes are evaluated using a two-tailed Wilcoxon signed rank test (median) and a standard two-tailed paired t-test (average). We have presented industry-adjusted and unadjusted ratios, and the changes are tested for both median and average.

Denis and Denis (1995) found significant results for forced and voluntary resignations prior to the announcement. They obtained negative changes of -1.2% for forced resignations, while for voluntary, they found a small positive median change of 0.8%. Thus, our results partly support Denis and Denis (1995), who found that events with forced resignations tend to experience lower profitability prior to an announcement than those with voluntary.

Weak profitability for a company may not be viable in the long run. Therefore, one can argue that a company's board wishes to change the CEO and/or strategy after a period of low earnings. Moreover, our results may suggest that companies experiencing forced resignations change their CEO due to poor performance and eager to improve performance in the future. This intuition supports our general hypothesis and the findings of the study from Warner et al. (1988), which argue that the likelihood of changing a company's CEO increases after a period of low stock returns. Moreover, we assume that decreased stock price is affected by weak reported profitability (Hall, Hamao and Harris, 1994). These inferences also assume that the board is able to identify that the former CEO is the key issue for poor performance. We will later stress this assumption in our discussion of post-announcement profitability. Events of voluntary resignations do not experience the same pattern in profitability prior to the announcement. Hence, the operating

performance is stable, and the board does not necessarily want to change CEO and strategy.

8.3.4 After Announcement

Table 6 also provides estimates for changes in intervals that include the announcement of CEO turnover. Our hypothesis stated that we expected improved firm performance after a CEO turnover. The second period looks at the difference between quarters -4 and 1. We find industry-adjusted median changes for forced resignations at 0.97%, significant at a 10% level. For voluntary turnovers, the median change is insignificant and close to zero. For the last two periods, we have not found any significant results, neither for forced nor voluntary resignations. Still, we observe positive medians of 0.47% and 0.43% for forced, and 0.38% and 0.20% for voluntary. For the full sample, our tests reveal insignificant changes of 0.38% and 0.23% in the last two periods.

Denis and Denis (1995) did not find significant results for the interval between -1 and 1. For the last two intervals, spanning from one year before the announcement until two and three years after, they found significant results for all changes, including forced and voluntary. However, forced resignations are followed by higher increases in the operating performance ratio than voluntary, which is what we expected for our results. We want to stress that our periods are divided by quarters, while Denis and Denis (1995) used years. Therefore, it does not make sense to compare the different periods with each other, but rather the general effects before and after the announcement.

Our results show an immediate effect on the operating measures following a forced CEO turnover. We find significant industry-adjusted changes in the period -4 to 1. Hence, these companies tend to report better operating performance after controlling for total assets in the wake of the announcement. Even though the median change is rather small at 0.97%, we find an average effect of 11.43%, which is almost twelve times larger. In order to discuss this relationship, we want to evaluate our dataset for this particular time period. Our sample data reports that 21% of forced events experience more than 10% performance increase. Also, we find that some companies manage to obtain extraordinary value creation immediately after the announcement. From Figure 5, we observe examples of

300%, 100%, and 50% rise in the first period ending one quarter after the announcement. Moreover, we can argue that some companies experiencing forced resignations seem to create substantial operating performance increases. Due to large outliers, we can argue that the median change of 0.97% is more appropriate to emphasize when interpreting the effect of forced resignations on firm performance. Still, we bear in mind the variability in our sample.

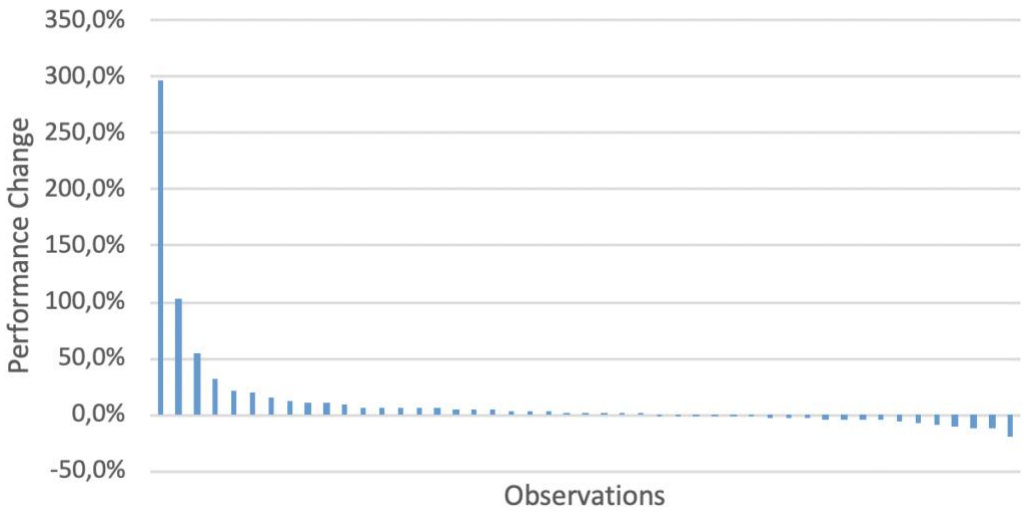

Figure 5: Observations of performance changes for forced resignations (-4,1). Observations are presented in descending order.

Increased firm performance for forced events suggests that these companies tend to be more profitable than one year before the CEO turnover. Evaluating Figure 2, on the other hand, one can observe that the ratio decreases from announcement until one quarter after. This might in turn argue that the performance increase in period -4 to 1 is not due to the new management, but instead that -4 seems to have very low performance ratios. Moreover, the trend argues for exogenous factors. Also, the new CEO is likely to need some time in his/her position to create robust performance increases.

A forced turnover is often initiated to enhance a new strategy for the company (Clayton et al., 2005). The new CEO will have to incorporate some costs into the financial statement related to the strategy. Therefore, a firm's accounting metrics might not reflect the correct state of operating profitability until all costs are incorporated. It might create incentives for the new CEO to take advantage of the situation. By including future costs and blaming previous poor management, he/she

can report good results in the future to achieve his/her private benefits of good corporate performance, known as the big bath-strategy.

Figure 2 argues that earnings management might be present. The ratio of OI/TA for forced resignations decreases after the announcement. Two quarters after the announcement, the trend appears to be somewhat positive. This pattern might argue for a period of restructuring until the second quarter. Still, the performance does not exceed the initial ratio before the CEO turnover. Based on our sample, the new management seems to fail at improving firm performance overall, at least for our evaluation period. This argument is supported by Murphy and Zimmermann (1993), who found evidence that new CEOs use the big bath-strategy, making accruals lower in the year the turnover has taken place.

As mentioned, we cannot extract any significant increases after the first period. The following discussion will focus on why events with forced turnovers cannot keep increasing operating measures for further periods.

The companies' boards may be relevant in discussing why we cannot find that firms are able to maintain improved performance after changing their CEO. As described in the theory section, the board plays a vital role in a firm's success or failure. First, the board may not be able to pick the correct successor for its company. Previous studies show that they often fail to recruit a new CEO (Bennis & O'Toole, 2000). This comes down to several things, but one typical error is focusing on the wrong skills. They also found that boards often focus on technical skills and experience when choosing a successor. However, factors such as political and human skills are considered just as important in some situations.

The board might change the CEO of a company even though other factors could have affected previous poor performance more. One reason could be related to the board's inability to identify underperformers, where appropriate use of CEO monitoring is a key factor. From the theory section, we know that the level of monitoring determines the accuracy of CEO ability estimates. Therefore, increased monitoring enhances the probability of identifying underperforming CEOs. A result of inadequate monitoring might be firing a CEO instead of improving factors actually causing poor performance. This is an argument for why companies are not

able to improve performance, as the root of the problem might lie deeper than removing the former CEO.

The last three periods do not imply any significant increases in the ratio for voluntary turnovers. A voluntary turnover is initiated by the former CEO, and the process is usually more seamless. In addition, the turnover does not necessarily imply drastic changes in the company's strategy. Even though the median change is close to zero in the quarters following the announcements, these results are still worth interpreting. Having a median result close to zero argues for no change in the company's operating performance.

According to our estimates, the median company having a voluntary turnover does not seem to face a negative trend prior to the announcement, also observed in Figure 2. This is supported by our descriptive statistics implying that events of voluntary resignations have more than twice as large OROA than forced. Without a strong negative trend in operating performance, there may not be any immediate fires to put out in order to increase profitability. Also, from Clayton et al. (2005), we have that companies facing voluntary turnovers usually do not find it beneficial to change their strategy and daily operations. Instead, the new CEO is recruited to lead the original path from before the announcement. This is an argument for why these firms do not have any significant post-announcement trends one way or another[4].

8.4 Event Study and Profitability Analysis

To discuss our hypotheses, we have used two different approaches. The relationship between the two approaches lies in how stock prices and reported accounting measures react and correlate with each other. Hall et al. (1994) analyzed the relationship between accounting measures and stock prices in the US. They found a correlation between 0.45 and 0.5 over a decade between P/B and ROE. Similarly, Chen and Zhang (2006) provide evidence on how accounting measures can explain cross-sectional variations in stock prices. They find significant results that

[4] Our sample firms may have more than one CEO change over the three years for which we measure operating income/total assets. Hence, our observations in the sample may not necessarily be independent, which could lead to biased significance tests. To avoid this potential issue, we examined the operating performance for our new sample, excluding observations with announcement closer than six quarters from another within the same company. Obtained results were nearly identical to those listed in Table 6.

accounting measures, such as changes in growth and profitability, explain value and return.

We have from the semi-strong form of EMH that stock prices should reflect all available information. Price movements will reflect any new information from reports or official announcements. Hence, we have that stock price movements react after earnings announcements, assuming no inside information in the market. In evaluating whether or not our hypotheses are true, we find this relationship important to emphasize. Our general hypothesis was that CEO turnover should increase firm performance. Also, we expected that forced turnovers would create more substantial increases. This section will go discuss both hypotheses using the results from our two analyses.

Our findings from chapters 8.2 and 8.3 give rise to discuss our hypotheses. Firstly, we observe negative cumulative abnormal stock returns after the announcements. This change might seem to be against our hypothesis, stating that firm performance increases after a CEO turnover. Still, the stock price movements will reflect reported past performance in addition to the announcement of the turnover. Our results revealed poor operating performance prior to the announcement, significant for forced turnovers. Therefore, declining stock prices following the turnover are not necessarily against our initial beliefs, as potential stock price improvements might not be incorporated until later as it is lag of previous operating performance. On the other hand, we expected the news of CEO turnover to weigh more such that positive abnormal returns would be created after the announcement.

Stock prices seem to react differently to forced and voluntary resignations. We argue that forced turnovers have characteristics that could explain why they experience lower cumulative abnormal stock returns after the announcement. Clayton et al. (2005) argue that a forced turnover provides a signal that the firm's outlook is worse than expected, which might induce uncertainty about the ability to implement the company's future strategy. Our results argue that this might also be the case for Norwegian firms. Overall, our results do not provide evidence for larger increases in stock returns after a forced CEO turnover than voluntary.

If we instead use operating income as a proxy for firm performance, we observe a different reaction after the announcement. The operating performance experience a downward trend after the first period. Both voluntary and forced events reveal estimates of positive median increases in the last two periods. These trends are not significant, but together with Figure 2, we observe that the ratios seem to increase after the second quarter for both CEO characteristics. Hence, we can argue that operating performance increases to some degree, but we cannot conclude whether firm performance exceeds the level from before the announcement.

Lastly, the difference in increased firm performance between forced and voluntary resignations is challenging to distinguish. Evaluating our tests in Table 6, we observe that forced resignations experience larger positive median changes in all periods after the announcement, even though the last two are insignificant. This argues in favor of our sub-hypothesis, stating that forced turnovers seem to create larger operating performance increases than voluntary turnovers.

9. Conclusion

In this paper, we seek to answer whether firm performance improves after a CEO turnover and whether the separation between forced or voluntary turnovers has any significant influence. The research is conducted on firms trading on the Oslo Stock Exchange in two parts. Firstly, an event study analyzing stock prices in the short-term. Secondly, an operating performance analysis for a longer time period.

Prior to the announcement, we find no significant change in stock prices, which implies that news about CEO turnover is not yet available for investors. From the analysis of operating performance, our results suggest that events of forced resignations experience decreased profitability prior to the announcement. We cannot draw a similar conclusion for voluntary events, as the negative median change is not significant.

After the announcement, stock prices experience a significant negative drift over the following 15 trading days, for both forced and voluntary resignations. The effect is larger for forced than voluntary turnover with estimates of -3.58% and -3.34%, respectively. Together with poor operating performance prior to the announcement, the information of a CEO turnover seems to induce more uncertainty and lower

stock returns. The post-announcement operating performance argues that forced turnovers experience a significant increase with a median change of 0.97% in the second period. Voluntary observations experience no robust profitability change immediately after the turnover. In the longer run, both voluntary and forced turnovers seem to increase profitability by less than 0.5% in every period, but none of the estimates are statistically significant.

We cannot conclude that firm performance increases after CEO turnover. Stock prices decrease significantly after the announcement, while operating performance experiences a small insignificant increase for the full sample. Even though forced turnovers suffer from larger equity wealth losses according to the event study, median operating performance changes are somewhat larger than for voluntary resignations in the longer run. Hence, forced turnovers seem to increase more than voluntary after the announcement.

There may exist some weaknesses with our research. As most announcements do not clearly state whether the turnover is forced or voluntary, our distinction is based on some criteria. Moreover, this can cause biased estimates. Further, results can be influenced by wrong announcement dates, as discussed earlier. Other weaknesses related to the event study may include misspecification of model and non-normality (McWilliams, Siegel & Teoh, 1999).

We also want to mention some suggestions for further research to increase knowledge on the subject. First, one could use a larger sample, e.g., by including companies listed on Oslo Axess and other management changes than CEOs. Also, further research could expand the time interval to investigate effects for a longer time perspective. At last, one can use different measures for the operating performance to examine whether other ratios better explain the relationship between CEO turnovers and firm performance.

10. References

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11. Appendix: List of CEO turnovers

Overview of CEO turnovers in our sample (from 01.01.2008 until 31.12.2018)

Company Name	Industry	Year of Turnover
AF Gruppen A	Industrials	2015
Akastor	Energy	2008
		2010
		2014
		2015
		2017
Aker	Financials	2008
Aker BP	Energy	2013
AKVA Group	Industrials	2010
		2016
American Shipping Company	Industrials	2010
		2011
		2014
Arendals Fossekompani	Industrials	2016
ABG Sundal Collier Holding	Financials	2010
Atea	Information technology	2014
Belships	Industrials	2011
Biotec Pharmacon	Health care	2010
		2017
Byggma	Industrials	2010
Carasent	Health care	2014
		2018
DNO	Energy	2012
Electromagnetic Geoservices	Energy	2009
		2015
		2015
		2018
Element	Materials	2008
		2011
		2013
		2016
Endúr	Energy	2013
		2015
		2017
		2018
Entra	Real estate	2015
Equinor	Energy	2014
Dolphin Drilling	Energy	2009
GC Rieber Shipping	Industrials	2010

		2017
		2018
Goodtech	Industrials	2014
		2016
Grieg Seafood	Consumer staples	2008
		2015
Gyldendal	Consumer discretionary	2015
Helgeland Sparebank	Banking	2010
		2014
		2016
Hexagon Composites	Industrials	2013
Hiddn Solutions	Information technology	2009
		2012
		2013
		2017
Høland og Setskog Sparebank	Banking	2008
IDEX Biometrics	Information technology	2018
Scana	Materials	2008
		2013
		2015
		2018
Insr Insurance Group	Financials	2015
InterOil Exploration and Production	Energy	2010
		2013
		2017
Kid	Consumer discretionary	2018
Kitron	Information technology	2013
		2014
Kongsberg Automotive	Consumer discretionary	2010
		2016
Kongsberg Gruppen	Industrials	2016
Kværner	Energy	2018
Lerøy Seafood Group	Consumer staples	2008
		2009
		2010
Magnora	Energy	2011
		2016
Medistim	Health care	2009
Melhus Sparebank	Banking	2013
Mowi	Consumer staples	2008
		2010
Navamedic	Health care	2009
		2013
		2015

Nekkar	Industrials	2014
		2016
NEL	Industrials	2012
		2014
		2015
NEXT Biometrics Group	Information technology	2017
Nordic Nanovector	Health care	2018
Norsk Hydro	Materials	2009
Norway Royal Salmon	Consumer staples	2014
Norwegian Energy Company	Energy	2011
		2013
		2015
		2017
		2018
Norwegian Finans Holding	Financials	2017
Norwegian Property	Real estate	2009
		2015
		2017
NRC Group	Industrials	2008
		2009
		2016
Oceanteam	Energy	2018
Orkla	Consumer staples	2010
Otello Corporation	Communication services	2010
Panoro Energy	Energy	2012
		2015
PGS	Energy	2008
		2017
Petrolia	Energy	2009
		2010
Photocure	Health care	2018
Pioneer Property Group	Real estate	2018
Q-Free	Information technology	2014
		2016
Reach Subsea	Energy	2008
		2012
		2014
REC Silicon	Information technology	2009
		2013
SalMar	Consumer staples	2011
		2014
		2016
		2018
Sandnes Sparebank	Banking	2016

Schibsted	Communication services	2009
		2018
Selvaag Bolig	Real estate	2018
Skue Sparebank	Banking	2009
Solon Eiendom	Real estate	2010
		2011
		2013
		2015
		2016
		2018
Sparebank 1 BV	Banking	2015
Sparebank 1 Nord-Norge	Banking	2012
Sparebank 1 SMN	Banking	2018
Sparebank 1 SR-Bank	Banking	2010
SpareBank 1 Østfold Akershus	Banking	2013
Sparebank 1 Østlandet	Banking	2009
Sparebanken Møre	Banking	2016
Sparebanken Vest	Banking	2013
Sparebanken Øst	Banking	2010
Storebrand	Financials	2010
		2012
Storm Real Estate	Real estate	2016
StrongPoint	Information technology	2018
Techstep	Information technology	2008
		2011
		2012
		2016
		2017
Telenor	Communication service	2015
TGS NOPEC Geophysical Company	Energy	2009
		2016
Tomra Systems	Industrials	2009
Veidekke	Industrials	2013
Voss Veksel- og Landmandsbank	Banking	2012
		2017
Wallenius Wilhelmsen	Industrials	2017
Yara International	Materials	2008
		2015